



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

FEDERAL EXPRESS

April 11, 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 1-7, 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 1-7, 1991 as follows:


<u>Required in</u> <u>Specific Condition No.</u>	<u>Report Title</u>
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

Sanford Plant, Unit No. 4
Orimulsion Test Burn
Weekly Compliance Reports
Page 2

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.)



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FEDERAL EXPRESS

April 11, 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 1-7, 1991

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<u>Required in Specific Condition No.</u>	<u>Report Title</u>
8h & 8i (Order Condition No. 15)	Burn Schedule/Fuel Usage/Full Power Burn Days
8j (Order Condition No. 15)	Daily Opacity Logs
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FPL SANFORD PLANT
WEEKLY ORIMULSION SUMMARY

WEEK ENDING 04/07/91

ORIMULSION
HEAT VALUE 4.576 MMBTU/BBL

#6 OIL
HEAT VALUE 6.322 MMBTU/BBL

DAY	DATE	ORIMULSION BURNED BBLs	FULL POWER BURN DAYS	#6 OIL BURNED BBLs
MONDAY	04/01/91	15761	0.7420	0
TUESDAY	04/02/91	15848	0.7461	0
WEDNESDAY	04/03/91	17120	0.8060	0
THURSDAY	04/04/91	15989	0.7527	0
FRIDAY	04/05/91	14919	0.7024	0
SATURDAY	04/06/91	12287	0.5784	0
SUNDAY	04/07/91	11741	0.5527	0
TOTALS		103665	4.8804	0

Temporary 80% thru 5/31/91

Sanford PLANT
DAILY OPACITY EMISSIONS REPORT
 Form 4954 (Non-Stocked) Rev. 2/84

UNIT NO. **MON APR** DATE **1 1991**
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	C280	C280	C280								12MN	3	3
1AM						C281	C281		C282	C282	1AM	4	7
2	C284	C284	C288	C286	C284	C284					2	6	13
3											3		
4											4		
5											5		
6		C281	C282	C285	C291	C286	C291				6	6	19
7			C282	C284	C287	C288					7	4	23
8											8		
9											9		
10											10		
11											11		
12N											12N		
1P											1P		
2											2		
3									82C2	81C2	3	2	25
4											4		
5											5		
6		84C2	81C2	90C2		82C2			81C2		6	5	30
7	97C2	88C2	94C2		91C2	91C2	84C2	82C2		84C2	7	8	38
8	85C2	90C2	95C2	99C2	88C2	90C2		81C2			8	7	45
9											9		
10											10		
11											11		

A MALFUNCTION

MALFUNCTION

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

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.

Document chart lab will provide reason codes

Temporary 80% thru 5/31/91

Sanford PLANT
DAILY OPACITY EMISSIONS REPORT
 Form 4954 (Non-Stocked) Rev. 2/84

UNIT NO. **TU** DATE **APR 2 1991**
 4 (80% Opacity)

Time	SIX MINUTE INTERVALS										Six Minute Intervals > 80%		
	1	2	3	4	5	6	7	8	9	10	This Hour	Last 24 Hours	
12MN						84 C2	89 C2	84 C2	86 C2	83 C2	12MN	5	5
1AM						86 C2	87 C2	83 C2			1AM	3	8
2											2		
3		84 C2	83 C2		85 C2	84 C2	94 C2		97 C2	92 C2	3	7	15
4	91 C2	85 C2	100 C2	85 C2	97 C2	92 C2	89 C2			81 C2	4	8	23
5	82 C2	81 C2	86 C2	87 C2	90 C2	89 C2	88 C2	90 C2	91 C2	84 C2	5	10	33
6				84 C2	86 C2	83 C2					6	3	36
7											7		
8											8		
9		-				C284	C284				9	2	38
10		C281	C281				C282	C296			10	4	42
11											11		
12N									C290	C286	12N	2	44
1P	C284										1P	1	45
2											2		
3				C282							3	1	46
4											4		
5											5		
6											6		
7											7		
8											8		
9											9		
10											10		
11							C281	C294		C286	11	3	49

A MALFUNCTION

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

B START-UP/SHUT-DOWN

- 1 Start-Up
- 2 Shut-Down

C LOAD CHANGE/SOOT-BLOWING

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Document chart lab will provide reason codes

Temp 70% thru 5/31/91

Sanford PLANT
DAILY OPACITY EMISSIONS REPORT
 Form 4954 (Non-Stocked) Rev. 2/84

UNIT NO. **WEB** APR 3 1991
 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		C282							C288	C294	12MN	3	3
1AM	C296	C285	C283		C289						1AM	4	7
2	C280		C289				C2100+	C288	C289	C296	2	6	13
3	C292	C289	C296		C299	C2100+	C2100+	C299	C297	C2100+	3	9	27
4	C2100	C294	C295	C293	C293		C291	C287	C284		4	8	30
5			C282	C280	C281	C287	C280	C284			5	6	36
6											6		
7			C283		C280						7	2	38
8	88C2										8	1	39
9											9		
10											10		
11											11		
12N											12N		
1P											1P		
2											2		
3											3		
4											4		
5											5		
6											6		
7											7		
8											8		
9											9		
10											10		
11			100C2	100C2	79C2	84C2	93C2	100C2	95C2	100C2	11	8	47

A MALFUNCTION

MALFUNCTION

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

B START-UP/SHUT-DOWN

- 1 Start-Up
- 2 Shut-Down

C LOAD CHANGE/SOOT-BLOWING

- *1 Rapid Load Change
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Document chart lab will provide reason codes

Temp 80% thru 5/31/91

Sanford PLANT
DAILY OPACITY EMISSIONS REPORT
 Form 4954 (Non-Stocked) Rev. 2/84

UNIT NO. _____ DATE **THU APR 4 1991**
 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	99 c2	100 c2		95 c2	98 c2	99 c2	100 c2	99 c2	99 c2	98 c2	12MN	9	9
1AM	100 c2	95 c2	92 c2	99 c2	81 c2					85 c2	1AM	6	15
2	90 c2	87 c2	86 c2	84 c2	86 c2	96 c2		90 c2	86 c2	86 c2	2	9	24
3					84 c2	81 c2					3	2	26
4									82 c2	80 c2	4	2	28
5											5		
6											6		
7			84 c2	88 c2	90 c2	83 c2	82 c2				7	5	33
8											8		
9											9		
10											10		
11											11		
12N											12N		
1P			86 c2	87 c2	93 c2	96 c2	94 c2	88 c2	82 c2	96 c4	1P	8	41
2	97 c4	89 c4	99 c4	92 c4	85 c4						2	5	46
3											3		
4											4		
5											5		
6											6		
7											7		
8											8		
9											9		
10		91 c2		82 c2	90 c2						10	3	49
11											11		

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MALFUNCTION

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B START-UP/SHUT-DOWN

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*Need cause & corrective action

Temporary 80% thru 5/31/91

Sanford PLANT
DAILY OPACITY EMISSIONS REPORT
 Form 4954 (Non-Stocked) Rev. 2/84

UNIT NO. **FR** DATE **1 APR 5 1991**
 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						C281	C298	C294	C299	106C2	12MN	5	5
1AM	C296	C289	C2180	C298	C299	C291	C2100	C299	C297	C295	1AM	10	15
2			C299	C294		C294	C294	C290	C290	C284	2	7	22
3	C286	C290	C294		C290	C285	C282	C282	C282	C281	3	9	31
4	C280										4	1	32
5											5		
6	C280	C281	C282	C281	C281	C280					6	6	38
7											7		
8											8		
9											9		
10											10		
11											11		
12N											12N		
1P											1P		
2							C282	C286	C232	86C2	2	4	42
3	C286	C292	96C2	84 C2							3	4	46
4											4		
5											5		
6											6		
7											7		
8											8		
9											9		
10											10		
11							82C2	90C2	100C2	100C2	11	4	50

- A MALFUNCTION**
 MALFUNCTION
- * 1 Monitor Out of Service
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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. _____ DATE
 4 (80% Orimulsion) SAT APR 6 1991

Time	SIX MINUTE INTERVALS										Six Minute Intervals > 80%		
	1	2	3	4	5	6	7	8	9	10	This Hour	Last 24 Hours	
12MN	99c2		99c2	92c2	96c2	87c2	87c2	82c2	82c2	93c2	12MN	9	9
1AM	97c2	100c2	95c2	90c2	80c2	88c2	82c2				1AM	7	16
2		96c2	88c2			89c2	81c2		95c2		2	5	21
3						86c2	88c2	86c2		98c2	3	4	25
4	92c2	88c2	97c2								4	3	28
5											5		
6											6		
7				82c2		85c2	81c2	81c2			7	4	32
8	84c2	98c2	96c2	84c2	84c2			84c2			8	6	38
9											9		
10	80c2										10	1	39
11										81c2	11	1	40
12N											12N		
1P											1P		
2											2		
3											3		
4		86c2									4	1	41
5											5		
6							84A3	82A3	81A3		6	3	44
7			A3 87		S2 A3						7	2	46
8											8		
9											9		
10			83c2				80c2				10	2	48
11										80 c2 c200	11	2	50

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Temp 80% thru 5/31/91

Sanford PLANT
 DAILY OPACITY EMISSIONS REPORT
 Form 4954 (Non-Stocked) Rev. 2/84

UNIT NO. DATE
 4/80% Orimulsion SUN APR 7 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		92C2	85C2								12MN	2	2
1AM	C288	C298	C286	C293	C290	C296		84C2	86C2	82C2	1AM	9	11
2	C284		T1.17	C4.1.6							2	1	12
3			C281		C287	C286	89C2	C284			3	5	17
4											4		
5			C282								5	1	18
6	C283	C283	C280	C286	C281					C284	6	6	24
7											7		
8					93C2		83C2			81C2	8	3	27
9						82C2					9	1	28
10											10		
11											11		
12N						82C2					12N	1	29
1P					83C2						1P	1	30
2											2		
3					80C2						3	1	31
4											4		
5											5		
6				C284	C285			84C2	C284		6	4	35
7	91C2	84C2		86C2	85C2	84C2					7	5	40
8			84C2		85C2						8	2	42
9											9		
10											10		
11											11		

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**CONTINUOUS EMISSIONS MONITORING REPORT
FLORIDA POWER AND LIGHT
SANFORD PLANT
UNIT FOUR
OPACITY MONITOR
ORIMULSION TEST BURN PROJECT
APRIL 1-7, 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 1, 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.	80	80	80	76	70	69	69	68.5	69	70	73.15
1: A.M.	71	72	69.5	70	77	81	81.2	78	82	82	76.37
2: A.M.	84	84	88	86	83.5	84	73	72	73	77	80.45
3: A.M.	78	78	75		71	70.5	70.5	70.2	70	70	72.58
4: A.M.	69.5	69.5	71.5	70	71	70.5	70	69.8	69.8	69.5	70.11
5: A.M.	70	70	72	70.2	70	70.2	74	78	75	75.5	72.49
6: A.M.	79	81	82	85	91	86	91	78	79.8	74.2	82.70
7: A.M.	72.5	73.5	81.5	84	87	88.5	78	70.2	69.5	69.5	77.42
8: A.M.	69	68	72	75	64	63	62	62	69	70	67.40
9: A.M.	68	74	72.2	69.5	68	62	62.5	62.5	63	64.1	66.58
10: A.M.	64	68	72	64	73	69	60	60	61	63.2	65.42
11: A.M.	61	64.6	68		77.5	65	59	64	63	63.5	65.07
12: NOON	62	61	66	67	63	63	66	62	64	61.5	63.55
1: P.M.	66.8	65	67	66	62	67	70	65.5	60	58	64.73
2: P.M.	59	63	71	63	62	65	62	64.5	66.8	65	64.13
3: P.M.	63	63	65	64	63	73	73	78.5	82	81	70.55
4: P.M.	73	65	67	64	63.5	64	64.5	63	63	66	65.30
5: P.M.	63	63	63	63	65	64	63	63.5	72	66	64.55
6: P.M.	63	84	80.2	90.2	76.5	82	70	67	80.5	74	76.74
7: P.M.	97	88	94		91	91	83.5	81.5	78	84.5	87.61
8: P.M.	85	90	95	99	88	90	76	81	74	71.5	84.95
9: P.M.	70	70	69.5	69.5	69.5	69.5	69.5	69.5	69	68	69.40
10: P.M.	69	68.5	68.5	69	69	68	68	68	68	68	68.40
11: P.M.	68.8	69	70	70	70	70	70	70	70	70.2	69.80

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

Opacity Monitors Six Minute Averages, April 2, 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.	71		72	74.6	75	84	89	84	86	83	79.84
1: A.M.	75	70.2	73.5	72	78	86	87.5	83.5	77	70.5	77.32
2: A.M.	71.2	70.8	72.8	71	70	70	72.4	72	77.6	76	72.38
3: A.M.	76	84	83		85	84	94	75	97	92	85.56
4: A.M.	91	85	100	85	97	92	98.5	74	78	80.8	88.13
5: A.M.	82	80.1	86	86.5	90	89	88	90	91	84	86.66
6: A.M.	76	72	72	77.2	84	86	83	77	73	71	77.12
7: A.M.	71	73.5	72	72	69	64	71	67	63	62	68.45
8: A.M.	62	62	62	63	62	62	61.6	61.5	61.5	61	61.86
9: A.M.	62	61	69	69	71	83.5	84	73	76	74	72.25
10: A.M.	74	81	81	78	70.5	70	81	96		70.5	78.00
11: A.M.	63	62	62		62	65	63	64.5	64	66	63.50
12: NOON	62	62	62.5	64	72	76	72	72.2	80	86	70.87
1: P.M.	83.5	69.2	63	63.2	67	65	63	62	62	68	66.59
2: P.M.	64	64	62.5	68	63.5	63	62.6	64	69	69	64.96
3: P.M.	71	74	79.5	82	73.5	68	70	68.8	68	71	72.58
4: P.M.	67.5	68.5	67	69	67	69	68	68	67.2	67.5	67.87
5: P.M.	67	68	68	67.5	68	67.5	67.7	67.6	67.4	67.4	67.61
6: P.M.	67.4	68.5	67	67	67	68	67	68	67	67.5	67.44
7: P.M.	68	68	67		67.5	67.5	67.7	67.7	67.7	67.7	67.64
8: P.M.	68.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	68	67.65
9: P.M.	68	68	67.5	67.5	67.5	67	67	67	67.2	67.9	67.46
10: P.M.	68	68	68	68.5	68	68	68.5	68.7	69	69	68.37
11: P.M.	70	70	70	70	70	72	80.5	94		86	75.83

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

Opacity Monitors Six Minute Averages, April 3, 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.	76	82	79	74	74	72.5	76	75.5	88	94.5	79.15
1: A.M.	96	85	83	74	88.5	78	78	72	71.8	70.5	79.68
2: A.M.	80	74.5	89	75	70.5	77	100	88	89	96	83.90
3: A.M.	92	89	96		99	100	100	99	96.5	100	96.83
4: A.M.	100	94	95	93.5	93	74	91	86.5	84	75	88.60
5: A.M.	78.5	76	82	80	81	86	80	84	76	77	80.05
6: A.M.	76	74	74	72	71.2	71	70.5	79	74	71.5	73.32
7: A.M.	76	77	83	76	80	75	76.5	79.5	78	77	77.80
8: A.M.	88	74	67	67	66	70	66	76	72	65	71.10
9: A.M.	63	74	72	69	73	64.5	63	62.5	62.5	70	67.35
10: A.M.	72.5	73	70.5	70	70	68	65	63	70	68	69.00
11: A.M.	71	69	64		70	70	66	65.6	65	64	67.18
12: NOON	62.5	67	64	64	64	64	64	64	64	64	64.15
1: P.M.	64	64	64	64	64	64	64	64	64	64	64.00
2: P.M.	64	64	64	65	64	68.4	68.4	68.8	64	62	65.26
3: P.M.	64	66	64	63	63.5	67	64	64	65	65	64.55
4: P.M.	62	62	63	62	63	63	63.5	64	65	64	63.15
5: P.M.	65.5	66	64	63	64.5	64	63	63	63	63	63.90
6: P.M.	63	65	64	64.5	63.5	63.5	67.5	64	64	64	64.30
7: P.M.	66	63	66		66	63	64	67	63	64	64.67
8: P.M.	63	63	63	64	63	63	63	63.5	68	65	63.85
9: P.M.	65.5	64	70	70.5	64.5	65	68	62	67	62	65.85
10: P.M.	64	64	64	65	65.5	65.5	66	67	67	67	65.50
11: P.M.	68	76	100	100	99	84	93	100	95	100	91.50

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

Opacity Monitors Six Minute Averages, April 4, 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.	99	100		95	98	99	100	99	99	98	98.56
1: A.M.	100	95	92	99	80.5	75	75.5	72		85	86.00
2: A.M.	90	87	86	84	86	96		90	86	86	87.89
3: A.M.	74.5	73	77		84	80.5	78	74	67	67	75.00
4: A.M.	66	66	65.5	65.5	65.5	65.5	68	71	82	80	69.50
5: A.M.	79	78	74	73	72.5	74	72	75	77	77.5	75.20
6: A.M.	71	71	71	71	70.2	70	74	73	76	75	72.22
7: A.M.	75.5	79	84	87.5	90	83	82	75	70	79	80.50
8: A.M.	68.5	69	66.4	68.2	68	67.5	66	66	65	66	67.06
9: A.M.	65.5	65	67	66	66	64.5	66	67	63.5	63.5	65.40
10: A.M.	63.5	63.8	64	64	64	63	63	63.2	62	63	63.35
11: A.M.	63	63.5	63.5		64	64	63	63	61	61	62.89
12: NOON	61	60.6	60.5	60.6	62	62	63	71	62	61	62.37
1: P.M.	79.5	79	86	87	93	96	94	88	82	96	88.05
2: P.M.	97	89	99	92	85	76	79.8	76	73.5	74	84.13
3: P.M.	74.5	74	74.5	77	76.5	79	76	76	78	73	75.85
4: P.M.	74	72	76	72	69	66	66	66	65	64	69.00
5: P.M.	64	67	66	65.5	65	65	64.5	64			65.13
6: P.M.			64	64	64	64	64	63.6	63.6	63.5	63.84
7: P.M.	63.2	63	63		63	63	63	63	63	63	63.02
8: P.M.	63	63	63	62.2	62.2	62.5	62.2	62.4	63	62.5	62.60
9: P.M.	62	62	62	62	63.5	63	78	65	78.5	72	66.80
10: P.M.	66	91	74.5	81.5	90	72	70	70	70	71	75.60
11: P.M.	71	71	71	71	71	71	71.5	71.7	71.8	72	71.30

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

Opacity Monitors Six Minute Averages, April 5, 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	72	73	72	74.2	80.4	98	94	99	81.62
1: A.M.	100	96	89	100	97.5	99	91	100	98.5	97	96.80
2: A.M.	95		99	94	77	99	94	89.5	89.5	83.5	91.17
3: A.M.	86.5	90.5	94		90	85	82	82	82	81	85.89
4: A.M.	80	79.5	79	78	78	78	78	79	78	78	78.55
5: A.M.	78	78	78	78	78	78	78	78	78	79	78.10
6: A.M.	80	80.5	81.5	81	81	80	76.5	73	74	74	78.15
7: A.M.	74	73.5	73.5	73.5	73.2	73	73	73	73	69	72.87
8: A.M.	69	70	69.5	70	70	70	70	70	70	70	69.85
9: A.M.	70	70	69	70	69.5	70	70	70.2	70	70	69.87
10: A.M.	70	70	69.6	69.6	69.5	69.5	69	69	70	69	69.52
11: A.M.	69.2	69.2	69.5		70	69.2	71	70	71	71	70.01
12: NOON	68.5	70	70	69	64.6	69	69	69	69	69	68.71
1: P.M.	69.5	69.5	70	69	71	75.6	66		64	67.5	69.12
2: P.M.	66	67	66	66	66	65.5	69	82.5	86	82	71.60
3: P.M.	86.5	85.5	93	87.5	84	71	68	68	66.5	66.5	77.65
4: P.M.	67	66.5	66.5	66	66	66	66	66	66	66	66.20
5: P.M.	66	66	66.5	66	65.6	65.6	65.4	65	65	65	65.61
6: P.M.	65	65	65	65	65	65	66	66	65	65	65.20
7: P.M.	65	65	64.5		64.2	64.2	64.5	64.5	64	63.2	64.34
8: P.M.	62	62	62	61.6	62.8	65	65	66	67.5	67.5	64.14
9: P.M.	68	69	68	67.5	68	70	70	72	71	71	69.45
10: P.M.	71.5	74	77	74	73	72	73	72.5	72	72	73.10
11: P.M.	72	72.2	72.3	72.4	72.5		82	90	100	100	81.49

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

Opacity Monitors Six Minute Averages, April 6, 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.	99		99	92	94	87	87	82	82	93	90.56
1: A.M.	97	100	95	90	80	88.5	82	77	69	79.8	85.83
2: A.M.	78.5	96	88	78	76	89	81	77	95	74	83.25
3: A.M.	77	74	78		72	86	88.5	85.5	72.5	98	81.28
4: A.M.	91.5	88	97	77	66	65	66	64.2	64	64.8	74.35
5: A.M.	66	66	65.5	64.5	65	64	64	64.5	64	64	64.75
6: A.M.	69	66	65	64	66	65	70	67	63	62	65.70
7: A.M.	69	70.5	72	82	74	74	87	81	81	73	76.35
8: A.M.	84	98	96	84	84	70	70	84.5	68	66	80.45
9: A.M.	70	74	74.5	73.5	77	77	74	75	76	76	74.70
10: A.M.	80	77	78	72.5	71	64.5	64	68	70	70	71.50
11: A.M.	72	70	70		76	74	75	75	78	81	74.56
12: NOON	73	73.5	73	61	62	62	62	62	62	62	65.25
1: P.M.	62	62	63	62	62	62	61	61.5	62	67	62.45
2: P.M.	67.5	71	68.5	66.5	66	69.5	68.5	74	70	63.5	68.50
3: P.M.	63	68	69	70	76	70	72	75.5	77	77	71.75
4: P.M.	72.5	75	86.2	68	76	74	75	65	71	75	73.77
5: P.M.	72.5	72	73	69.5	71.5	74	71.5	71.5	68	63	70.65
6: P.M.	70	74.5	74	75	74	78	84	82	80.5	78	77.00
7: P.M.	78	79.5	88		82	79	76.5	74	68	68	77.00
8: P.M.	68	68	67.5	67.5	67.5	67	66	62.5	63.5	66	66.35
9: P.M.	65.5	66	66	67	66.5	67	67	66	65	64.5	66.05
10: P.M.	74	69	83	70	75	73	80	70	71	73	73.80
11: P.M.	75	74	75	70	64	64	64	63	80	90	71.90

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

Opacity Monitors Six Minute Averages, April 7, 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.		92	85	66	66	65	65	65	69.5	77	72.28
1: A.M.	88	98	86	93	90	96	79	84	86	82	88.20
2: A.M.	84	Time	Change	Clock	Moved	Forward					84.00
3: A.M.			80.5	79	87	86	89	84	77.5	70	81.63
4: A.M.	70	75	73		69	69	70	71	75.5	74	71.83
5: A.M.	72	74.5	82								76.17
6: A.M.	83	83	80	86	81	77	69.5	69.5	73	84	78.60
7: A.M.	76	76	70	70	70	70	70	70	70	71.5	71.35
8: A.M.	73	78	79.9	75	93	76	83	78	78	81	79.49
9: A.M.	76	79	78	74	76.5	82	75	77	72	79	76.85
10: A.M.	72	69.5	69	69	71	70.5	70	68.5	68.5	70	69.80
11: A.M.	70	72	68	68	70	72	72	76	73	73	71.40
12: NOON	79	79	76	76		82	77.5	76	78	70	77.06
1: P.M.	68.5	68.5	71	76	83	73	78	75	73	70	73.60
2: P.M.	71	68	67	66	66	68	74	70	70.5	72.5	69.30
3: P.M.	74.5	75	72	72	80.2	76	72.5	73	65	67	72.72
4: P.M.	69	68.5	67.5	68	67	70	71	78	79	78.5	71.65
5: P.M.	79	72	77.5	75.5	75.5	74	71	70.5	73	73	74.10
6: P.M.	73.5	79	77	76.5	84	85	78	72	79.8	84	78.88
7: P.M.	84	91	84	76	86	85	83	78	77.5	78	82.25
8: P.M.	76		84	79		85	76	71	70.5	70.2	76.46
9: P.M.	73	70	72	72	68.5	67.5	71	72	72	78.5	71.65
10: P.M.	75	75	76.5	78	67.5	64.5	76.5	65	71.5	68	71.75
11: P.M.	63	80	73.5	63	63	63	63	63	63	62.5	65.70

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



Inter-Office Correspondence

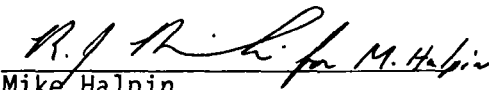
To: M.A. Smith JEN EDO Date: April 10, 1991
From: M.P. Halpin Department: Sanford Plant
Subject: ORIMULSION WEEKLY REPORT

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.


Mike Halpin
Operations Superintendent
Sanford Plant

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cc: PSN File C-29