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

FPL

FEDERAL EXPRESS

April 25, 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 15-21, 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 15-21, 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 25, 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 15-21, 1991

Dear Mr. Alexander:

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 15-21, 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

FPL SANFORD PLANT
WEEKLY ORIMULSION SUMMARY

WEEK ENDING **04/21/91**

ORIMULSION HEAT VALUE 4.537

#6 OIL HEAT VALUE 6.322

DAY	DATE	ORIMULSION BBLS BURNED	FULL POWER BURN DAYS	#6 OIL BBLS BURNED
MONDAY	04/15/91	0	0.0	5184
TUESDAY	04/16/91	0	0.0	4520
WEDNESDAY	04/17/91	14264	0.7	0
THURSDAY	04/18/91	16079	0.8	0
FRIDAY	04/19/91	16209	0.8	0
SATURDAY	04/20/91	14299	0.7	0
SUNDAY	04/21/91	12732	0.6	0
TOTALS		73583	3.4	9704

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.	DATE
4 (80% Orimulsion)	4-17-91

Time	SIX MINUTE INTERVALS 1	2	3	4	5	6	7	8	9	10
12MN										
1AM										
2										
3										B-190
4	B-192									
5										
6							82			
7						82 C2	82 C2	82 C2	83 C2	
8										
9										
10					85 C2	85 C2			88 C2	
11										
12N										
1P						81 C2	81 C2			
2				80 A2	80 A2	82 A2	82 A2	82 A2	81 A2	
3										
4										
5										88 C2
6		81 C2				81 C2				
7									81 C2	
8		81 C2						81 C2		80 C2
9										
10										
11				82 C2						

	Six Minute Intervals > 80% This Hour	Last 24 Hours
12MN		
1AM		
2		
3	1	1
4	1	2
5		
6	1	3
7	4	7
8		
9		
10	3	10
11		
12N		
1P	2	12
2	6	18
3		
4		
5	1	19
6	2	21
7	1	22
8	3	25
9		
10		
11	1	26

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.

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 18 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											12MN	0	
1AM											1AM	0	
2											2	0	
3											3	0	
4	83 C-2							90 C-2	95 C-2		4	3	3
5											5	0	3
6				81 C-2	82 C-2	86 C-2	84 C-2	86 C-2	88 C-2	88 C-2	6	7	10
7	81 C-2	82 C-2	88 C-2	93 C-2	86 C-2	90 C-2		89 C-2			7	7	17
8											8		
9					84 C-2 / C-4	93 C-2 / C-4	97 C-2 / C-4	93 C-2 / C-4	83 C-2 / C-4		9	5	22
10					80.5 C-1 / C-4	81 C-1 / C-4	85 C-1 / C-4	87 C-1 / C-4	93 C-1 / C-4	95 C-1 / C-4	10	6	28
11	86 C-4	88 C-4	90 C-4	84 C-4							11	4	32
12N											12N		
1P											1P		
2											2		
3											3		
4											4		
5											5		
6											6		
7											7		
8											8		
9									81 C-2 / C-4		9	1	33
10									83 C-2 / C-4	82 C-2 / C-4	10	2	35
11	80 C-2 / C-4	82 C-2 / C-4	84 C-2 / C-4	91 C-2 / C-4	83 C-2 / C-4				80 C-2	82 C-2	11	7	42

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Temporary 80% thru 5/31/91

FRI APR 19 1991

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

UNIT NO.	DATE
4 (80% Orimulsion)	

Time	SIX MINUTE INTERVALS 1	2	3	4	5	6	7	8	9	10
12MN										81 C2
1AM										
2										
3				E3 C2	81 C2	81 C2		82 C2	86 C2	86 C2
4				82 C2			85 C2		82 C2	83 C2
5	85 C2									
6										
7										
8	81 C2								85 C2	86 C2
9	87 C2	85 C2	83 C2	88 C2	81 C2		81 C2			
10										
11										
12N										
1P										
2						93 A4	81 A4	Loss of BFP Turbine run back		
3		86 C2	98 C2	85 C2		E4 C2	84 C2	82 C2	84 C2	90 C2
4	84 C2	82 C2	86 C2				83 C2	86 C2	100 C2	100 C2
5	93 C2	89 C2	83 C2	83 C2	81 C2		81 C2	82 C2	81 C2	81 C2
6										
7										
8										
9										
10										
11										

	Six Minute Intervals > 80% This Hour	Last 24 Hours
12MN	1	1
1AM		
2		
3	6	7
4	4	11
5	1	12
6		
7		
8	3	15
9	6	21
10		
11		
12N		
1P		
2	2	23
3	8	31
4	7	38
5	9	47
6		
7		
8		
9		
10		
11		

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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 APR 20 1991 SAT

Time	1	2	3	4	5	6	7	8	9	10
12MN										
1AM						C283		C288		
2								C282		
3		C281	C282	C283			93 C2		82 C2	85 C2
4										92
5	C288	C283				C282	C288	C295	88 C2	
6			81 C2	80 C2	81 C2	80 C2		C287		82 C2
7	80.5 C2	85 C2	94 C2	86 C2	93 C2	87 C2				
8		82 C2	86 C2	83 C2						
9					81 C2	82 C2	81 C2			
10					81 C2	81 C2				
11	82 C2		83 C2	83 C2	83 C2			82 C2	82 C2	
12N	92 C2			84 C2	87 C2	82 C2	82 C2			
1P										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										

Six Minute Intervals > 80%

	This Hour	Last 24 Hours
12MN		
1AM	2	2
2	1	3
3	6	9
4	1	10
5	6	16
6	6	22
7	6	28
8	3	31
9	3	34
10	2	36
11	6	42
12N	5	47
1P		
2		
3		
4		
5		
6		
7		
8		
9		
10		
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
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Document chart lab will provide reason codes

Tempor● 80% thru 5/31/91

Sanford ● PLANT

DAILY OPACITY EMISSIONS REPORT

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

UNIT NO. 4 (80% Orimulsion) SUNATE APR 21 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						86 C2	89 C2	89 C2			12MN	3	3
1AM	C2 84	85 C2	84 C2				91 C2		84 C2	90 C2	1AM	6	9
2	C2 88	C2 88	92 C2		90 C2	94 C2	87 C2	93 C2		96 C2	2	8	17
3	C2 88	87 C2	84 C2	82 C2		88 C2	93 C2	82 C2	82 C2		3	8	25
4											4		
5											5		
6											6		
7											7		
8						81 C2				84 C4	8	2	27
9	89 C4	84 C4	82 C4			84 C2	89 C2	84 C2	86 C2		9	7	34
10											10		
11											11		
12N											12N		
1P											1P		
2		81 C2				81 C2	81 C2				2	3	37
3									84 C4		3	1	38
4		84 C4	89 C4	98 C4	92 C4	84 C4	82 C4	87 C4			4	7	45
5											5		
6											6		
7											7		
8											8		
9									82 C2		9	1 1	46
10		84 C2	81 C2								10	11 2	48
11											11		48

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

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Document chart lab will provide reason codes

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Use the comment column where additional explanation is appropriate.

*Need cause + corrective action

CONTINUOUS EMISSSIONS MONITORING REPORT
FLORIDA POWER AND LIGHT
SANFORD PLANT
UNIT FOUR
OPACITY MONITOR
ORIMULSION TEST BURN PROJECT
APRIL 15-21, 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 17, 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.	11	0	0	0	0	0	0	0	0	0	1.10
1: A.M.	0	0	0	0	0	0	0	0	0	0	0.00
2: A.M.	15	16	19	8		0	30	40	42	48	24.22
3: A.M.	54	0	68	74	42	52	66	79	90	92	61.70
4: A.M.	76	55			45	71	78	77	65	64	66.38
5: A.M.	68	70	72	72	70	70	70	70	70	72	70.40
6: A.M.	72	72	74	74	75	78	82	76	74	78	75.50
7: A.M.	76	76	74	74	78	83	82	82	82	73	78.00
8: A.M.	70	74	72	71	71	70	69	69	69	68	70.30
9: A.M.	68	68	67	67	68	68	68	70	70	70	68.40
10: A.M.	68	70	70	72	85	85	76	76	88	75	76.50
11: A.M.	71	72	70	76	73	70	71	77	75	74	72.90
12: NOON	74	69	68		47	63	66	67	69	68	65.67
1: P.M.	70	69	70	77	80	81	81	79	75	76	75.80
2: P.M.	76	77	78	80	80	82	82	82	81	74	79.20
3: P.M.	72	72	77	58	58	58	58	59	59	59	63.00
4: P.M.	59	59	59	59	59	59	59	59	59	59	59.00
5: P.M.	61	62	63	63	64	69	73	76	88	76	69.50
6: P.M.	81	68	75	69	81	73	78	70	72	69	73.60
7: P.M.	74	72	76	72	64	65	75	81	76	73	72.80
8: P.M.	81	76		57	70	77	81	72	80	69	73.67
9: P.M.	66	62	62	61	60	60	60	66	70	78	64.50
10: P.M.	71	76	76	72	64	66	66	64	67	77	69.90
11: P.M.	77	66	82	77	78	75	79	78	78	75	76.50

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

Opacity Monitors Six Minute Averages, April 18, 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.	75	75	76	79	79	79	79	79		44	73.89
1: A.M.	60	60	61	60	60	62	62	62	63	63	61.30
2: A.M.	62	63	64	64	66	66	66	66	66	66	64.90
3: A.M.	64	64	64	68	68	63	66	71	74	74	67.60
4: A.M.	83	72	67		51	73	73	90	95	68	74.67
5: A.M.	66	66	70	68	68	68	70	70	73	76	69.50
6: A.M.	76	72	75	80	82	86	84	86	88	88	81.70
7: A.M.	81	82	88	93	86	90	72	89	73	70	82.40
8: A.M.	74	73	72	71	68	68	71	72	74	71	71.40
9: A.M.	70	72	70	78	84	93	97	93	83	74	81.40
10: A.M.	70	70	72	78	80	81	85	86	93	96	81.10
11: A.M.	86	88	90	84	79	75	65	72	76	79	79.40
12: NOON	75	76	69		47	66	66	69	67	64	66.56
1: P.M.	60	64	64	69	62	60	65	68	73	77	66.20
2: P.M.	69	75	71	72	70	69	72	68	68	71	70.50
3: P.M.	70	67	68	64	70	65	70	65	64	64	66.70
4: P.M.	67	68	67	64	60	60	62	68	68	65	64.90
5: P.M.	70	70	69	70	69	71	71	73	74	77	71.40
6: P.M.	75	72	79	73	71	67	68	66	75	75	72.10
7: P.M.	80	74	66	61	62	63	70	69	65	70	68.00
8: P.M.	71	68	70		54	72	71	72	67	63	67.56
9: P.M.	63	68	70	73	71	70	68	78	81	78	72.00
10: P.M.	80	78	69	67	70	78	77	77	83	82	76.10
11: P.M.	80	82	84	91	83	72	68	68	80	82	79.00

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

Opacity Monitors Six Minute Averages, April 19, 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.	74	68	68	68	71	70	72	78	78	76	72.30
1: A.M.	81	76	76	72	72	72	72	75	75	72	74.30
2: A.M.	70	70	70	70		68	70	70	72	72	70.22
3: A.M.	71	72	76	83	81	81	82	72	86	86	79.00
4: A.M.	79	74	72	82		66	85	76	82	83	77.67
5: A.M.	85	72	71	70	70	70	70	70	70	71	71.90
6: A.M.	72	74	80	76	78	78	85	71	73	71	75.80
7: A.M.	73	74	76	75	74	74	72	70	71	72	73.10
8: A.M.	81	79	76	71	71	72	73	75	85	86	76.90
9: A.M.	87	85	83	88	81	76	80	70	71	75	79.60
10: A.M.	80	78	75	70	67	66	65	64	64	64	69.30
11: A.M.	63	69	64	64	64	64	63	63	63	63	64.00
12: NOON	63		47	62	62	62	62	63	62	62	60.56
1: P.M.	62	62	62	62	62	62	62	62	62	62	62.00
2: P.M.	62	62	62	56	42	56	93	81	64	66	64.40
3: P.M.	74	85	98	87	80	84	84	82	84	90	84.80
4: P.M.	84	82	86	74	80	80	83	86	100	100	85.50
5: P.M.	93	89	84	83	82	78	80	82	82	80	83.30
6: P.M.	75	77	76	74	74	71	70	71	72	72	73.20
7: P.M.	75	75	76	76	76	76	76	78	79	73	76.00
8: P.M.	72	72		55	72	72	72	73	74	75	63.70
9: P.M.	74	75	75	74	66	64	64	64	64	63	68.30
10: P.M.	63	62	63	62	62	62	62	62	62	63	63.00
11: P.M.	63	62	62	62	62	62	62	62	62	62	62.10

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

Opacity Monitors Six Minute Averages, April 20, 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.	65	62	62	72			66	71	71	64	66.63
1: A.M.	62	63	63	62	68	83	77	88	74	69	70.90
2: A.M.	72	70	72	76	68	63	69	72	82	77	72.10
3: A.M.	72	72	81	82	82	78	77	93	76	82	79.50
4: A.M.	83	75	65		62	64	66	68	80	92	65.50
5: A.M.	88	83	74	74	73	82	88	95	88	79	82.40
6: A.M.	71	75	81	80	82	80	78	87	72	82	78.80
7: A.M.	80	85	94	86	93	86	78	74	75	73	82.40
8: A.M.	76	82	86	83	78	74	73	76	74	76	77.80
9: A.M.	75	73	74	75	81	81	81	80	78	76	77.40
10: A.M.	73	72	74	76	81	81	77	72	73	75	75.40
11: A.M.	82	80	83	83	83	72	71	81	81	80	79.60
12: NOON	92			84	88	82	82	78	72	71	81.13
1: P.M.	70	70	70	70	69	69	68	68	68	68	69.00
2: P.M.	68	67	67	67	66	66	67	66	66	66	66.60
3: P.M.	66	66	66	66	66	68	66	66	66	66	66.20
4: P.M.	66	66	66	66	66	66	66	66	66	69	66.30
5: P.M.	68	70	70	70	71	71	76	72	70	71	70.90
6: P.M.	71	72	71	69	68	68	68	67	67	66	68.70
7: P.M.	66	66	66	65	65	65	65	64	65	68	65.50
8: P.M.			64	64	64	66	69	69	66	63	58.33
9: P.M.	63	63	63	63	63	62	64	67	67	68	64.30
10: P.M.	68	68	68	69	69	69	69	69	69	70	68.80
11: P.M.	70	69	70	70	69	70	70	70	70	70	69.80

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

Opacity Monitors Six Minute Averages, April 21, 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.	70	70	70	72	79	86	89	89	78	70	77.30
1: A.M.	70	84	85	84	76	76	91	75	84	90	81.50
2: A.M.	88	88	92	78	90	94	87	93	79	96	88.50
3: A.M.	88	87	84	83	79	88	93	82	82	76	84.20
4: A.M.	74	70	70					70	66	67	69.50
5: A.M.	71	66	68	65	70	67	77	68	64	64	68.00
6: A.M.	66	68	69	75	70	64	72	69	68	77	69.80
7: A.M.	64	75	72	64	73	73	67	71	77	73	70.90
8: A.M.	76	75	66	72	71	67	81	78	67	74	72.70
9: A.M.	84	89	84	82	78	78	84	89	86	79	83.30
10: A.M.	77	73	72	70	69	70	70	72	70	71	71.40
11: A.M.	70	69	72	74	79	76	76	73	68	68	72.50
12: NOON	68	68			67	68	68	70	70	66	68.13
1: P.M.	66	68	68	72	78	76	76	76	68	68	71.60
2: P.M.	68	81	76	76	77	81	81	73	66	66	74.50
3: P.M.	72	66	78	72	70	74	74	84	76	77	74.30
4: P.M.	84	89	98	92	84	82	85	76	76	78	84.40
5: P.M.	78	76	76	78	75	72	70	70	71	71	73.70
6: P.M.	74	73	68	70	71	76	74	71	76	75	72.80
7: P.M.	74	74	72	76	74	72	78	72	68	72	73.20
8: P.M.	74	65	68			68	68	68	68	68	68.38
9: P.M.	68	70	70	72	70	70	71	82	79	76	72.80
10: P.M.	84	81	70	70	69	69	69	69	69	69	71.90
11: P.M.	69	69	70	70	70	70	69	70	70	70	69.70

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

FPL

Inter-Office Correspondence

To: M.A. SMITH JEN/EDO

Date: APRIL 24, 1991

From: M.P. HALPIN, P.E.

Department: PSN/PLT

Subject: **ORIMULSION WEEKLY REPORT**

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

As reported last week, we are awaiting receipt of orimulsion with 1.20 ± .05 magnesium to vanadium ratio. However, we have concurrently been working on an air/fuel ratio curve which will minimize opacity.
As of this date, a curve has been developed which should minimize opacity based upon a varying "excess air" versus load. As suspected, the data revealed the need to operate the unit with higher amounts of excess air (than is normal with fuel oil) at lower unit loading, and lower amounts of excess air (than is "normal" for fuel oil) at higher unit loading.

This finding was corroborated by representatives of "Powergen" (a British electric utility) who have also done limited testing or orimulsion, and found that at high unit outputs (or their units) testing indicated that mass emission rates were reduced with very low operating levels of excess air.

This "desired oxygen" curve has now been built into our combustion control scheme, and should provide some incremental opacity improvements.

M.P. Halpin
Ops. Supt.

MPH/t

PSN C-29