



September 4, 1990

Ms. Cindy Phillips
Bureau of Air Regulation
Department of Environmental Regulation
2600 Blair Stone Road, Third Floor
Tallahassee, Florida 32399-2400

Re: Florida Power & Light Company Sanford facility
Orimulsion Test Burn in Unit 4 PM Impacts

Dear Ms. Phillips:

Based on the EPA evaluation for this plant, the proposed PM emissions increase in Unit 4 for the test burn is above the PSD significance level. Therefore, a full impact analysis has been conducted for PM. The results of the analysis are presented in the attachment to this letter, and are to be considered as an addendum to the original PSD application for the proposed test burn. Model printouts in support of the PM analysis are being sent to Cleve Holliday today via Federal Express.

Maximum NO_x and CO impacts were still below their respective significant impact levels. If I can provide you with any additional information, please don't hesitate to call.

Sincerely yours,

A handwritten signature in black ink that reads "Steven R. Marks". The signature is written in a cursive, flowing style.

Steven R. Marks
Senior Meteorologist

cc: Ken Kosky, KBN
Cleve Holliday, FDER
William H. Green, Hopping, Boyd
Elsa Bishop, FPL

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FPL SANFORD - ORIMULSION

GENERAL

An air quality impact analysis was performed for FPL's proposed Orimulsion test burn. Previous analyses have been submitted to Florida Department of Environmental Regulation (FDER) and U.S. Environmental Protection Agency (EPA) for sulfur dioxide. The following summary with supporting tables includes an additional analysis for particulate matter.

RECEPTOR LOCATIONS

The EPA-approved ISCST model was used to estimate PM-TSP and PM10 impacts for the annual and 24-hour averaging periods. Screening runs were performed using a polar grid of 36 radials with 10-degree spacing and downwind distances of 300, 600, 1,000, 1,500, 2,000, 2,500, 3,000, 4,000, 5,000 and 6,000 meters. The center of this grid is located at UTM 468.3 km east and 3190.4 km north, which corresponds to the location of Unit 4, the site of the proposed burn. Refinement runs were performed by increasing receptor resolution to every 100 meters and every 2-degree radials.

EMISSION INVENTORY

The emission inventory was developed using both Air Pollutant Information System (APIS) and in-house information. Sources within a 50 km radius of the proposed site and whose PM emissions were greater than 100 TPY were initially selected for the inventory. These sources are listed in Table 1. These sources were screened further using the "screening threshold" technique as depicted in Table 2. Table 3 shows the stack information used in the model for the finalized inventory.

RESULTS

The impacts for PM-TSP and PM10 are listed in Table 4. Based on this information, 17 percent of the current allowable 24-hour Class II PSD increment for PM-TSP will be consumed with the Orimulsion burn. The 24-hour PM10 AAQS impacts account for 35 percent of the State of Florida AAQS standards. These impacts include an appropriate background concentration.

Table 1. PM Sources (>100 TPY) Within 50 km of the FPL -Sanford Plant

APIS Facility Identification Number	Facility	County	UTM Coordinates (km)		Relative Location (km) to Sanford Facility		Distance From Sanford Facility (km)	Direction From Sanford Facility (degrees)	Maximum Allowable PM Emissions (TPY)
			East	North	X	Y			
30ORG480024	Florida Rock Industry	Orange	459.2	3174.2	-9.1	-16.2	18.6	209	129
30ORG480038	Rinker Materials Corporation	Orange	450.8	3145.5	-17.7	-44.9	48.3	202	209
30ORG480053	Winter Garden Citrus Corp.	Orange	443.8	3159.8	-24.5	-30.8	39.4	219	225
30ORG480058	Al Block Corporation	Orange	462.5	3155.0	-5.8	-35.4	35.9	189	141
30ORG480061	Orlando City Incinerator	Orange	458.3	3152.7	-12.0	-37.7	39.6	198	184
30ORG480063	Florida Hospital	Orange	463.8	3180.7	-4.5	-29.7	30.0	189	1,481
30ORG480071	Florida Rock Industry	Orange	463	3145.5	-5.3	-44.9	45.2	187	119
30ORG480137	OUC -Stanton Energy Center	Orange	463.5	3150.6	15.2	-39.8	42.6	159	1,086 a
30ORG480140	TPS Technologies, Inc.	Orange	470.7	3184.2	2.4	-26.2	26.3	175	106
30ORL350016	E R Jahna Industries	Lake	431.9	3158.4	-36.4	-34.0	49.8	227	158
30ORL640005	Ardmore Farms	Volusia	470.3	3215.4	2.0	25.0	25.1	5	689
30ORL640019	Tarmac Florida Inc.	Volusia	468.1	3192.7	-0.2	2.3	2.3	355	29
30ORL640020	Florida Power -Turner	Volusia	473.4	3193.3	5.1	2.8	5.9	60	1,435
30ORL640028	Florida Power -De Bary	Volusia	467.5	3197.2	-0.8	6.8	6.8	353	246
30ORL640042	Rinker Materials	Volusia	500.8	3225.4	32.5	35.0	47.8	43	322

* The UTM coordinates of the FPL -Sanford Plant are 466.3 km East and 3190.4 km North.

a Potential emissions used

Table 2. Summary of PM Facilities Eliminated From Modeling Using the "Screening Threshold" Technique

APIS Facility Identification Number	Facility	Distance From Sanford Facility (km)	Direction From Sanford Facility (degrees)	Maximum PM Emissions (TPY)	Q, Emission Threshold (TPY) (20 x Distance)	Included in Modeling
30ORG480024	Florida Rock Industry	18.6	209	129	372	NO
30ORG480038	Rinker Materials Corporation	48.3	202	209	966	NO
30ORG480053	Winter Garden Citrus Corp.	39.4	219	225	788	NO
30ORG480058	Al Block Corporation	35.9	189	141	718	NO
30ORG480061	Orlando City Incinerator	39.6	198	184	792	NO
30ORG480063	Florida Hospital	30.0	189	1,481	600	YES
30ORG480071	Florida Rock Industry	45.2	187	119	904	NO
30ORG480137	OUC -Stanton Energy Center	42.6	159	1,088	852	YES
30ORG480140	TPS Technologies, Inc.	26.3	175	106	526	NO
30ORL350016	E R Jahna Industries	49.8	227	158	896	NO
30ORL640005	Ardmore Farms	25.1	5	689	502	NO*
30ORL640019	Tarmac Florida Inc.	2.3	355	29	46	NO*
30ORL640020	Florida Power -Turner	5.9	60	1,435	118	YES
30ORL640028	Florida Power -De Bary	6.8	353	246	136	YES
30ORL640042	Rinker Materials	47.8	43	322	956	NO

* Facility not used in inventory due to incomplete stack information

Table 3. Modeling Parameters for PM Facilities Interacting with FPL Sanford

Model ID No.	Source	Name	Emissions		Stack Height		Velocity		Temperature		Diameter	
			lb/hr	(g/s)	ft	(m)	fps	(mps)	F	(K)	ft	(m)
20002	FPC Turner	Boiler #2	38.0	4.5	237	72.3	58	17.7	280	400	6.0	1.83
20003	FPC Turner	Boiler #3	82.0	10.3	237	72.3	79	24.1	315	430	6.0	1.83
20004	FPC Turner	Boiler #4	82.0	10.3	237	72.3	76	23.2	270	405	6.4	1.95
20012	FPC Turner	GT 1,2	23.5	2.96	39	11.9	63	19.2	960	789	12.9	3.93
20034	FPC Turner	GT 3,4	61.9	7.8	35	10.7	100	30.5	900	755	19.1	5.82
28012	FPC Debary	Boiler 1,2	5.2	0.66	30	9.15	20	6.1	320	433	2.5	0.76
28016	FPC Debary	GT 1-6	126.0	15.6	30	9.15	70	21.3	750	672	7.8	2.4
63012	Florida Hosp	Stdby Boiler 1,2	329.0	41.4	35	10.67	11	3.35	450	505	3.0	0.91
99937	OUC-Stanton	Steam Generators	248.0	31.2	550	167.6	83	25.3	127	326	19.0	5.79

Table 4. Refined PM Modeling Results for the FPL Sanford Orimulsion Burn

Averaging Time	Maximum Predicted Concentration ($\mu\text{g}/\text{m}^3$)		Allowable PSD Class II Increment for PM-TSP ^c (ug/m^3)	State of Florida AAQS for PM ₁₀ ($\mu\text{g}/\text{m}^3$)
	PSD (PM-TSP)	AAQS ^a (PM ₁₀)		
Annual	0.4	34.1	19	50
24-hour ^b	6.2	53.2	37	150

- a. Includes PM₁₀ background concentrations of 32 and 40 ug/m^3 for the annual and 24-hour averaging times, respectively.
- b. Short-term values reported are highest, second-highest concentrations
- c. Note: Proposed Class II PSD Increments for PM₁₀ are 17 and 30 ug/m^3 , for the annual and 24-hour averaging times, respectively.