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Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

October 4, 1990

Martin A. Smith, Ph.D., Manager
Environmental Permitting Programs
Florida Power & Light Company
P. O. Box 078768
West Palm Beach, FL 33407-0768

Enclosed is Permit Number AC 64-180842, PSD-FL-150, to Florida Power & Light Company to test Orimulsion fuel at Sanford Power Plant Unit 4 Boiler in Volusia County, Florida, issued pursuant to Section 403 Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appeallate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy o fthe Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

Copies furnished to:

William Green, Esq. , runner picked up 10-4-90 RBM
David Schwartz, Esq.
Chuck Collins, CF District
Tom Hansen, EPA
Cindy Phillips
Reading File
} 10-5-90 RBM

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of buisness on 10/05/90.

FILING AND ACKNOWLEDGEMENT FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk

10/05/90
Date

Final Determination

Florida Power & Light Company
Orimulsion Test for Sanford Power Plant Unit 4
Volusia County, Florida

Permit Number: PSD-FL-150
AC64-180842

Florida Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Regulation

October 2, 1990

Final Determination

The Technical Evaluation and Preliminary Determination for Florida Power & Light Company to test Orimulsion fuel at Sanford Power Plant Unit 4 boiler in Volusia County, Florida, was distributed on August 3, 1990.

Copies of the evaluation were available for public inspection at the Department's offices in Orlando and Tallahassee, and at the Seminole County Public Library System North Branch in Sanford. Public notice of the Department's intent to revise the State Implementation Plan and issue a PSD permit in accordance with the request to conduct research and testing was published in newspapers of general circulation in the Sanford area and in the Florida Administrative Weekly between August 2 and 7, 1990. No petitions were filed. A public hearing was held in DeBary, Florida on September 6, 1990 to receive public comment. No public comment adverse to the project was made at the public hearing.

The U.S. EPA requested that a particulate matter full impact analysis be performed to determine if PSD increments or 24-hour Ambient Air Quality Standards would be violated. Based upon modeling performed by KBN, 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 PM_{10} AAQS impacts account for 35 percent of the State of Florida AAQS standards. These impacts include an appropriate background concentration.

In a letter dated August 24, 1990, the applicant's attorney submitted minor revisions to incorporate information for an additional test of a larger, 20-foot baghouse. The Department accepted these revisions as this test should provide better data for FPL to use in evaluating the pollution control devices.

In a letter dated August 24, 1990, the applicant's attorney submitted FPL's comments concerning the draft permit. Following is a summary of the applicant's comments and the Department's response.

1. Comment: The applicant requested that the project description be changed to (1) revise descriptions for baghouse, (2) indicate SOXAL is not a pollution control device, and (3) show that the CEM for CO is at the economizer rather than at the stack.

   Response: The Department has clarified the project description to reflect these comments.

2. Comment: The applicant requested that the temporary amendments to the permits for Units 3 and 5 be made in the final order rather than in Specific Condition No. 2 of the permit for Unit 4.

Response: The Department has included the amendments to the permits for Units 3 and 5 in the final order. Specific Condition No. 2 references these amendments which are made to the permits for Units 3 and 5.

3. Comment: The applicant requested that the words "for soot-blowing and load changes" be deleted from the excess emissions limitation of Specific Condition No. 3(a) as the definition of excess emissions also includes start-up, shutdown, and malfunction.

   Response: The Department revised Specific Condition No. 3(a) to include startup, shutdown, and malfunction with a 2-hour limitation.

4. Comment: The applicant requested that Specific Condition 3(b) be deleted as particulate matter includes PM10.

   Response: The Department deleted this condition as it was duplicative.

5. Comment: The applicant requested that the words "heat input" be added to Specific Condition 3(c) for clarification.

   Response: The Department added this clarification.

6. Comment: The applicant requested that the words "for soot-blowing or load changes" be deleted from the excess emissions limitation of Specific Condition No. 3(d) as the definition of excess emissions also includes start-up, shutdown, and malfunction.

   Response: The Department revised Specific Condition 3(d) to include startup, shutdown, and malfunction with a 2-hour limitation.

7. Comment: The applicant requested that the first steady-state particulate matter test be conducted within two weeks of startup of burning Orimulsion fuel rather than one week as stated in Specific Condition No. 5(a).

   Response: The Department revised Specific Condition No. 5(a) to require the testing within 10 days of start-up rather than within one week to clarify the fact that FPL is to conduct testing after the unit has been firing Orimulsion for one week.

8. Comment: The applicant requested that Specific Condition 6(d) be revised to require the use of the EPA Draft Multimetals train for the testing of trace elements and metals rather than the EMTIC Interim Test Method recommended by EPA.

   Response: After discussions with Paul Reinermann of EPA and Walter Smith of Entropy Environmentalists, Inc., the

Department revised Specific Condition 6(d) to require the EPA Draft Multimetals train for the testing of trace elements and metals.

9. Comment: The applicant requested that the Specific Condition 7(a) requirement for 15-day prior written notification of scheduled test dates be deleted. The applicant requested that verbal notification of changes to the scheduled test dates be given as soon as practicable due to the uncertain nature of testing circumstances.

   Response: The Department's requirement of a 15-day prior written notification allows the District office the opportunity to schedule a compliance inspection during the compliance tests. This requirement was not deleted but the Specific Condition was modified to add that the Department shall be verbally notified of test cancellations as soon as possible, and compliance tests that have been cancelled verbally may be rescheduled to a time agreed to by the Department.

10. Comment: The applicant requested that the words "achievable when burning Orimulsion" be added on to the end of Specific Conditions 7(b) and 7(c) to clarify the fact that the unit might not achieve the same capacity with Orimulsion as it realizes with Oil.

    Response: The Department revised Specific Conditions 7(b) and 7(c) by adding the words "achievable when burning Orimulsion" for clarification.

11. Comment: The applicant requested that the requirement for monthly pilot test stream reports be replaced by a requirement for a detailed report of the pilot pollution control equipment test results within ninety days after the permittee has notified the Department that the Orimulsion test burn has been completed.

    Response: The Department decided that a complete report submitted at the end of the test project would be more practical than incomplete test reports submitted on a monthly basis.

12. Comment: The applicant requested that Specific Conditions 7(e)(v) and 7(e)(vi) be combined and edited for clarification.

    Response: The Department revised these Conditions for clarification.

In a letter dated August 30, 1990, the U.S. EPA submitted comments concerning the draft permit. Following is a summary of those comments and the Department's response.

1. Comment: The SIP revision and Specific Condition 3 of the draft permit must explicitly state that the relaxed emission limits for SO_2 and opacity only apply during the firing of Orimulsion. The relaxed limit for particulate matter was approved in 1980 and is still in effect. The relaxed limits were approved due to the shortage of low-sulfur oil which existed at that time. Since this shortage no longer exists, the Region feels that the State of Florida should consider revocation of the variance and a return to the SIP limits for this unit once this test burn period has expired.

   Response: The Department included in the Order for the proposed SIP revision, and in the permit specific conditions, the statement that the emission limiting standards shall apply while Unit No. 4 is firing Orimulsion fuel. In addition, a specific condition which states what emission limits apply while all other fuels are being fired was included in the permit for clarification. The Department will decide at a later date whether or not to revoke the existing particulate matter variance once the test burn period has expired. This action will not be included in the currently proposed SIP revision.

2. Comment: The SIP revision must reflect the SO_2 emission limitation of 1.1 lb SO_2 for Units 3 and 5 during the firing of Orimulsion as the ambient air modeling assumed this as the maximum for SO_2 emissions from those units. In addition, the draft construction permit in Specific Condition 2 states that Units 3 and 5 can only be fired with natural gas or fuel oil with one percent sulfur content (by weight) which is equivalent to 1.1 lb SO_2/MMBtu.

   Response: The Order for the proposed SIP revision states that Units Nos. 3 and 5 shall be fired only with natural gas and/or fuel oil with a sulfur content limit equivalent to 1.1 lb SO_2/MMBtu. The amendments to the permits for Units 3 and 5 limit SO_2 emissions to 1.1 lb SO_2/MMBtu.

3. Comment: Specific Condition 3 of the draft permit should include a NO_x emission limit of 0.7 lb NO_x (as NO_2)/MMBtu in order to report the frequency of excess emissions as required by Specific Condition 7(e)vi. This recommended NO_x emission limit was utilized by FPL in the document entitled "Description of Orimulsion Test Burn at FPL Sanford Unit 4." A CO emission limit of 0.03 lb CO/MMBtu should also be considered for the same reasons as the NO_x limit.

   Response: The Department has not included NO_x or CO emission limitations in the permit. Unit 4 currently has no emission limitations for NO_x and CO and the Department does not consider them necessary for this temporary project. FPL is required to continuously monitor NO_x and CO emissions to gather research data.

4. Comment: If the emission limits recommended in comment 3 above are not incorporated into the final permit, then a requirement to report all hourly averages of NO_x and CO CEM data should be incorporated into Specific Condition 7(e) of the draft permit.

   Response: The Department included language in Specific Condition 5.b) to require the NO_x and CO CEM data to be averaged hourly, recorded and maintained. Specific Condition 8.e)iv. requires a monthly summary of the hourly averages of NO_x and CO CEM data to be submitted to the Department.

5. Comment: Calibration and maintenance of the CEMs should be required. These CEMs should be required to be evaluated by the respective Performance Specification Test of 40 CFR Part 60, Appendix B.

   Response: The Department included Specific Condition 5c) which states that the CEMs shall be maintained, calibrated, and evaluated by the respective Performance Specification Test of 40 CFR Part 60, Appendix B.

6. Comment: A requirement for fuel sampling and analysis of the fuel oil to be burned in Units 3 and 5 should be specified in Specific Condition 4 and the procedures in Method 19 of 40 CFR Part 60, Appendix A should be followed.

   Response: The Department included Specific Condition 7.e) which requires that Orimulsion fuel be sampled and analyzed for percent sulfur content (by weight) once per month. Rather than Method 19, the Department approved ASTM method of analysis shall be used.

7. Comment: Specific Condition 5 should state that the average of three tests runs will be used to determine compliance.

   Response: To Specific Conditions 6a) & 6b), the Department added "For each 3-run test, the average result of the three one-hour runs shall be used to determine compliance."

8. Comment: In Specific Condition 6, tests for CO by Method 10 should be specified. If CO and NO_x limits are established (see Comment 3), the recommended CO test and NO_x test requirements should be part of Specific Condition 5.

   Response: The Department did not require CO and NO_x emission limitations. Research emission data is to be acquired by use of CEMs.

9. Comment: Instead of utilizing both Method 101 and the EMTIC metals test procedures for trace elements and metals (Specific Condition 6(d)), a single test procedure, the Multiple Metals Train developed for RCRA could be utilized.

Response: The Department incorporated the test method change into Specific Condition 7.d).

10. Comment: In Specific Condition 7(e)vi, a time period for averaging CEM data to report exceedances should be specified. Exceedances for opacity should be any 6 minute average above the opacity limit and for SO_2, any hourly average above the SO_2 limit.

    Response: The Department revised Specific Condition 8.e)vi. to state that exceedances for opacity shall be any 6-minute average above the opacity limit and for SO_2, any hourly average above the SO_2 limit.

In a letter dated September 5, 1990, the applicant's attorney submitted FPL's additional comments concerning the draft permit. Following is a list of the applicant's comments and the Department's response.

1. Comment: FPL requested that Specific Condition No. 2 wording be revised to restrict Units 3 and 5 to be fired with natural gas and/or fuel oil with a sulfur content limit equivalent to 1.1 lb SO_2/MMBtu, rather than with a one percent sulfur content (by weight) or less.

   Response: As the intent of the restriction on Units 3 and 5 is to limit the emissions to 1.1 lbs SO_2/MMBtu, the Department revised Specific Condition 2 to clarify this.

2. Comment: FPL requested that Specific Condition Nos. 3(a) and 3(c) be changed to eliminate the excess emission limitations for startup, shutdown and malfunction. FPL requested that the requirements of Rule 17-2.250(1) and (2), F.A.C. suffice.

   Response: Rules 17-2.250(2) and (3), F.A.C. are intended for existing fossil fuel steam generators with proven operating practices during startup, shutdown, and malfunction. The use of an experimental fuel at Unit 4 involves unproven operating practices and can not be considered a best operating practice. The Department revised Specific Conditions 3a) and 3c) to allow excess emissions of 3 hours for startup and shutdown, rather than two hours, as the air impact modeling was performed based upon excess emissions of 3 hours per 24-hour period. No other change was made to these conditions.

3. Comment: FPL requested that the words startup and shutdown be removed from Specific Condition 4.d) as startup and shutdown are not limited to 2 hours.

   Response: The Department eliminated the words startup and shutdown to be consistent with Unit No. 4's current operating permit.

4. Comment: FPL requested that the stack emission test results be submitted no later than 45 days after the last run when a 3-run test is completed, but that the stack test emission results not be included in every monthly report.

   Response: The Department deleted the requirement for copies of the stack test emission results to be included in each monthly report.

In a letter dated September 7, 1990, the applicant's attorney submitted additional comments concerning the draft permit. FPL again requested that excess emissions from malfunctions have no emission limitation and that excess emissions from startup and shutdown have no time limitation or emission limitation. As the air impact modeling was based on time and emission limitations and, as the public was told these limitations would be in the permit, the excess emission limitations were not changed.

In a letter dated September 21, 1990, the applicant's attorney informed the Department that FP&L had recommended that the pilot-scale lime spray dryer and accompanying fabric filter be eliminated from the test because it could be designed on the basis of data obtained from coal-fired units.

However, in their petition for authorization to conduct testing and research, FP&L stated that performance information must be generated through a demonstration test burn of Orimulsion in order to enable proper design and sizing of necessary sulfur dioxide control equipment such as spray dryers and particulate control systems such as baghouses or precipitators. Therefore, as FP&L reversed their decision that a spray dryer could only be properly designed by the testing Orimulsion, the Department requested to know why the burning of Orimulsion was still necessary to test the other pilot-scale pollution control equipment.

FP&L responded by saying that no one has tested the ability of baghouses to remove the very fine particulate matter anticipated to be produced from the combustion of Orimulsion. That is why FP&L proposed extensive testing of baghouse fabric materials to determine whether the collected particulate matter will cause that material to become blinded and ineffective, and also to determine whether pressure drops created by collected particulate matter will be tolerable.

The reasons that the testing of the spray dryer is no longer necessary are that since FP&L petitioned for testing, the Florida Institute of Technology has successfully determined the stability characteristics of the dryer-generated waste in the laboratory and the Electric Power Research Institute has confirmed that spray dryer technology can be scaled up from recent high sulfur fuel test data.

The Department accepted this explanation and agreed to the removal of the spray dryer and associated baghouse from testing.

The Final Action of the Department will be to issue the permit to construct as proposed in the Technical Evaluation and Preliminary Determination except for the changes discussed above. The Permit will not constitute a federal PSD permit until such time as the proposed revision of the State Implementation Plan (SIP) is authorized by the U.S. EPA. Any construction undertaken by the permittee prior to the approval of the proposed SIP revision is understood to be at the exclusive financial risk of the permittee. No Orimulsion fuel shall be fired until the permittee receives written notice from the Department that the SIP has been approved to allow the firing of Orimulsion fuel.

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

PERMITTEE:
Fla. Power & Light Co.
P. O. Box 078768
West Palm Beach, FL 33407-0768

Permit Number: AC 64-180842
PSD-FL-150
Expiration Date: June 30, 1992
County: Volusia
Latitude/Longitude: 28°50'31"N
81°19'32"W
Project: Orimulsion Fuel
Test Burn

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of test equipment and modification of existing equipment at Sanford Power Plant's Unit 4 in order to burn Orimulsion fuel up to 120 full-capacity equivalent burn days during an 18-month period for the purpose of research and testing. The research program will consist of boiler performance testing and testing of certain experimental pilot-scale pollution control equipment in slipstreams numbered 1 and 2.

The 1 MWe Slipstream 1 emissions control research equipment will consist of a precoating system, a high volume/low pressure (HVLP) pulse-jet fabric filter baghouse for particulate matter and a booster fan. The baghouse is rated for approximately 5,000 ACFM at an air-to-cloth ratio of 4 ft/sec.

The 2.5-5 MWe Slipstream 2 emissions control research equipment will consist of a reverse air/sonic fabric filter baghouse for particulate matter, a vertical-packed alkali scrubber for sulfur dioxide, and a booster fan. The baghouse is rated for 14,400 ACFM and the packed scrubber is rated for 10,800 ACFM.

The pilot-scale SOXAL regeneration system will consist of an alkali sorbent regenerator, a regenerated sorbent tank, a spent sorbent tank, and a steam stripper.

Emissions from the side streams will exhaust through the Unit 4 stack, which will be equipped with continuous opacity, nitrogen oxides (NOx), and SO_2 monitors. A continuous carbon monoxide (CO) monitor will be located at the economizer outlet.

Side stream 2 will be equipped with SO_2 monitors and side streams 1 and 2 will be sampled for particulate matter to gather research data.

The UTM coordinates are 17-468.3 km East and 3190.3 km North. The unit is located at Lake Monroe off U.S. Highway 17-92.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

The documents listed below are available from the Department upon request:

1. FP&L's petition received April 2, 1990.
2. EPA's letter dated May 22, 1990.
3. FP&L's application received May 22, 1990.
4. William Green's letter dated June 13, 1990.
5. DER's letter dated June 20, 1990.
6. DER's letter dated June 21, 1990.
7. FP&L's additional information received June 25, 1990.
8. EPA's letter dated June 26, 1990.
9. DER's letter dated June 28, 1990.
10. EPA's letter dated July 2, 1990.
11. FP&L's additional information received July 11, 1990.
12. FP&L's additional information received July 16, 1990.
13. FP&L's additional information received July 20, 1990.
14. FP&L's additional information received August 1, 1990.
15. DER's Technical Evaluation, Preliminary Determination and draft permit dated August 2, 1990.
16. William Green's letter received August 24, 1990, concerning draft permit.
17. William Green's letter received August 24, 1990, concerning revised attachments.
18. EPA's letter dated August 30, 1990.
19. Second Draft Permit (8/31/90).
20. KBN's letter dated September 4, 1990.
21. William Green's letter dated September 5, 1990, concerning EPA's comments.
22. William Green's letter dated September 5, 1990, concerning second draft permit.
23. Third Draft Permit (9/5/90).
24. FP&L information provided at Public Hearing entitled "Answers to questions about FP&L's plan to burn a new fuel at the Sanford Plant."
25. FP&L presentation at Public Hearing.
26. William Green's letter dated September 7, 1990, concerning third draft permit.
27. DER's response to William Green dated September 13, 1990.
28. DER's letter to EPA dated September 13, 1990.
29. EPA's response to DER dated September 14, 1990.
30. William Green's letter dated September 21, 1990.
31. DER's response to William Green dated September 26, 1990.
32. William Green's letter dated September 28, 1990.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance,

GENERAL CONDITIONS:

provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance

records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

14. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were

incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

15. This permit also constitutes Determination of Prevention of Significant Deterioration (PSD).

SPECIFIC CONDITIONS:

1. Heat Input Rate:

The permitted heat input rate for this source is 4,050 MMBtu/hr.

2. Permitted Fuels:

Unit 4 shall be fired with Orimulsion Fuel, No. 6 Residual Oil, No. 2 Fuel Oil, or Natural Gas only. By separate permit amendments, the Department has temporarily restricted Units 3 and 5 to be fired only with Natural Gas and/or Fuel Oil with a sulfur content limit equivalent to 1.1 lb SO_2/MMBtu.

3. Source Emission Limiting Standards for Unit No. 4 While Firing Orimulsion Fuel:

a) Particulate Matter: Steady-state - 0.3 lb/MMBtu; Excess emissions, not to exceed 3 hours per 24-hour period, for soot-blowing, startup, shutdown and load changes - 0.6 lb/MMBtu; Excess emissions, not to exceed 2 hours per 24-hours period for malfunction - 0.6 lb/MMBtu.

b) Sulfur Dioxide: 4.3 lb/MMBtu heat input.

c) Visible Emissions: Steady-state - 60% opacity; Excess emissions, not to exceed 3 hours per 24-hour period, for soot-blowing, startup, shutdown and load changes - 100% opacity; Excess emissions, not to exceed 2 hours per 24-hour period, for malfunction - 100% opacity.

4. Source Emission Limiting Standards while Firing No. 6 Residual Oil, No. 2 Fuel Oil, and/or Natural Gas:

a) Particulate Matter: Steady-state - 0.1 lb/MMBtu; Excess emissions, not to exceed 3 hours per 24-hour period, for soot-blowing and load changes - 0.3 lb/MMBtu.

b) Sulfur Dioxide: 2.75 lb/MMBtu heat input.

SPECIFIC CONDITIONS:

c) Visible Emissions: Steady-state - 40% opacity; Excess emissions not to exceed 3 hours per 24-hour period, for soot-blowing and load changes - 60% opacity.

d) Excess emissions resulting from malfunction shall be allowed providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by the Department for a longer duration.

e) Excess emissions resulting from startup or shutdown shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized.

5. Source Emissions Monitoring:

a) Continuous emission monitors (CEMs) for emissions of carbon monoxide (CO), nitrogen oxide (NOx), sulfur dioxide (SO_2) and opacity shall be operating at the start-up of burning Orimulsion fuel and shall remain in operation throughout the duration of this permit regardless of what type of fuel is being burned.

b) The CO, NOx, and SO_2 CEM data shall be averaged hourly. Opacity CEM data shall be averaged every six minutes. This data shall be recorded and retained.

c) The CEMs shall be maintained, calibrated, and evaluated by the respective Performance Specification Test of 40 CFR Part 60, Appendix B.

6. Compliance Stack Test Requirements:

a) Particulate Matter: EPA Test Method 5 or 17 (40 CFR 60 Appendix A; July 1989 version) shall be used to conduct eight 3-run steady-state tests and two 3-run soot-blowing tests. The first steady-state test shall be conducted within ten days of start-up of burning Orimulsion Fuel. For each 3-run test, the average result of the three one-hour runs shall be used to determine compliance.

b) Sulfur Dioxide: EPA Test Method 6C (40 CFR 60, Appendix A; July 1989 version) shall be used to conduct eight 3-run steady-state tests and two 3-run soot-blowing tests. For each 3-run test, the average result of the three one-hour runs shall be used to determine compliance.

SPECIFIC CONDITIONS:

c) Visible Emissions: Opacity CEM with six minute averages.

7. Research Testing Requirements:

a) Sulfuric Acid Mist: EPA Test Method 8 (40 CFR 60, Appendix A) shall be used to conduct one 3-run steady-state test.

b) Nitrogen Oxides (NOx): EPA Test Method 7E (40 CFR 60, Appendix A) shall be used to conduct eight 3-run steady state tests and two 3-run soot-blowing tests.

c) Volatile Organic Compounds (VOC): EPA Test Method 25A (40 CFR 60, Appendix A) shall be used to conduct eight 3-run steady-state tests and two 3-run soot-blowing tests.

d) Trace elements and metals which shall include at least the following: mercury, vanadium, chromium, cadmium, arsenic, nickel, maganese, beryllium, copper, zinc, lead, selenium, phosphorous, thallium, silver, antimony, and barium. The EPA Draft Multimetals train shall be used to conduct one 3-run steady-state test for these elements and metals. A separate Method 5 train shall be used to test for vanadium pentoxide using the analysis method described in the NIOSH Manual of Analytical Methods.

e) Orimulsion fuel shall be sampled and analyzed for percent sulfur content (by weight) once per month and as received per tanker. The Department approved ASTM method of analysis shall be used.

8. Testing Related Requirements:

a) Written notification of compliance test dates shall be given to the Department's Central District and the Bureau Air Regulation at least 15 days prior to testing. The Department shall be verbally notified of test cancellations as soon as possible. Compliance tests that have been cancelled may be verbally rescheduled to a time agreed to by the Department.

b) Testing of trace elements, metals, and sulfuric acid mist shall be conducted with the source operating within 90-100% of its full capacity achievable when burning Orimulsion fuel.

c) At least one 3-run test for particulate matter, sulfur dioxide, nitrogen oxides, and volatile organic compounds shall be conducted with the source operating within 90-100% of its full capacity achievable when burning Orimulsion fuel.

SPECIFIC CONDITIONS:

d) The stack sampling facility must comply with Rule 17-2.700(4), F.A.C.

e) Results obtained from the test burn shall be reported monthly to the Department. The monthly reports shall include but not be limited to:

i. Orimulsion and any other fuel usage (recorded in barrels, MMBtu, and schedule of days burned),

ii. Number of full power test day equivalents during the month,

iii. Characteristics of Orimulsion and any other fuel used during the month (percent sulfur, heating value, and percent ash). This includes fuel used for Units 3 and 5,

iv. A monthly summary of the hourly averages of NOx and CO CEM data,

v. A monthly summary of opacity readings, including a daily log of excess opacity emissions, and

vi. Frequency of excess emissions. Exceedances for opacity shall be any 6-minute average above the opacity limit and for SO_2, any hourly average above the SO_2 limit.

Monthly reports shall be submitted to the Bureau of Air Regulation and the Central District office within 21 days following the end of the month.

f) A copy of the stack emission test results shall be submitted no later than 45 days after the last run when a 3-run test is completed.

g) A detailed report of the pilot pollution control equipment test results shall be submitted within ninety days after permittee has notified the Department that the Orimulsion test burns have been completed. The report shall include an ultimate analysis of the Orimulsion fuel.

9. Other Requirements:

The permit holder may also need to comply with county, municipal, federal, or other state regulations prior to construction.

SPECIFIC CONDITIONS:

10. Test Length:

The testing of Orimulsion fuel shall be allowed for 90 full-capacity equivalent burn days. With permission from the Department, an additional 30 full-capacity equivalent burn days may be allowed to complete testing if necessary.

11. Permit Renewal:

While effective, this permit supercedes existing permit No. AO 64-132055. This permit shall expire on June 30, 1992, or at the end of the Orimulsion test burn project, whichever comes first. This permit shall not be renewed or extended. When it expires only permit AO 64-132055 shall be effective.

12. By accepting this permit, the permittee recognizes that it does not constitute a federal PSD permit until such time as the proposed revision of the State Implementation Plan (SIP) is approved by the U.S. EPA. Any construction undertaken by the permittee prior to the approval of the proposed SIP revision is understood to be at the exclusive financial risk of the permittee. No Orimulsion fuel shall be fired until the permittee receives written notice from the Division of Air Resources Management that the SIP has been revised to allow the firing of Orimulsion fuel.

Issued this 4th day
of October, 1990

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Dale Twachtmann

Dale Twachtmann, Secretary

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Dale Twachtmann

FROM: Steve Smallwood

DATE: October 3, 1990

SUBJ: PSD Construction Permit AC 64-180842, PSD-FL-150
Sanford Plant Unit No. 4 Boiler

Attached for your review and signature is the PSD air construction permit to allow Florida Power and Light (FP&L) Company to construct the equipment necessary for the testing of Orimulsion fuel at Sanford Power Plant Unit No. 4 Boiler.

Though the State Implementation Plan (SIP) has not yet been revised to allow FP&L to fire Orimulsion, Tom Hansen of the EPA has no objection to the Department issuing the construction permit now, provided that the permit contains the proposed Specific Condition No. 12.

When the SIP has been revised, FP&L will be permitted to test the Orimulsion fuel by firing it for up to 120 full-power burn days equivalent. Due to the prohibitive cost of pollution control equipment, during this test period the current emission limitations will be relaxed. However, should FP&L decide to burn Orimulsion on a regular basis, they will need to submit another construction permit application explaining how the current emission limitations will be met.

Amendments to the operating permits for Units No. 3 and 5 to reduce SO_2 emission limitations during the firing of Orimulsion fuel in Unit No. 4, will be signed by Alex Alexander of the Central District office.

SS/CP/t

Technical Evaluation
and
Preliminary Determination

Florida Power & Light Company
Orimulsion Test for Sanford Power Plant Unit 4
Volusia County, Florida

Permit Number: PSD-FL-150
AC64-180842

Florida Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Regulation

August 2, 1990

I. Application

A. Applicant

Florida Power & Light Company (FPL)
P. O. Box 078768
West Palm Beach, FL 33407-0768

B. Project and Location

The applicant proposes to conduct a pilot test program for burning Orimulsion fuel at its Sanford power plant's existing Unit 4 boiler located in Volusia County, Florida. Orimulsion is an emulsion of 71 percent bitumen in 29 percent water and is being marketed by the Petroleos de Venezuela, national petroleum company of Venezuela. The test burn will evaluate the performance of air emissions control equipment as well as the economic and operational performance of using Orimulsion as a fuel. The test will temporarily increase Unit 4's emissions of particulate matter (PM), particulate matter less than 10 micrometers in diameter (PM10), sulfur dioxide (SO_2), and opacity.

The UTM coordinates of the facility are Zone 17, 468.3 km east and 3190.3 km north.

C. Facility Category

The Sanford facility is major in accordance with Rule 17-2.100 of the Florida Administrative Code (F.A.C.). It is classified in accordance with Standard Industrial Classification (SIC) Code as Industry No. 4911.

The source is classified best by NEDS Source Classification Code (SCC) 1-01-004-01.

FPL's application was received on May 22, 1990, and was deemed complete on August 1, 1990.

II. Project Description

The Orimulsion test burn at Sanford Unit 4 will demonstrate the practicality of firing Orimulsion fuel in a large, front wall-fired utility boiler. Sanford Unit 4 has a maximum heat input of $4,050 \times 10^6$ Btu/hour and fires No. 6 fuel oil. This unit has a net summer capacity of 362 MW and was commercially in-service in July 1972. The purpose will be to evaluate the performance of air emissions control equipment and to generate a technical database for the engineering and design of the potential future conversion to Orimulsion of the Sanford plant and several other large generating units in FPL's system.

ORIMULSION TEST BURN
AIR EMISSIONS CONTROL
PILOT TESTING CONFIGURATION

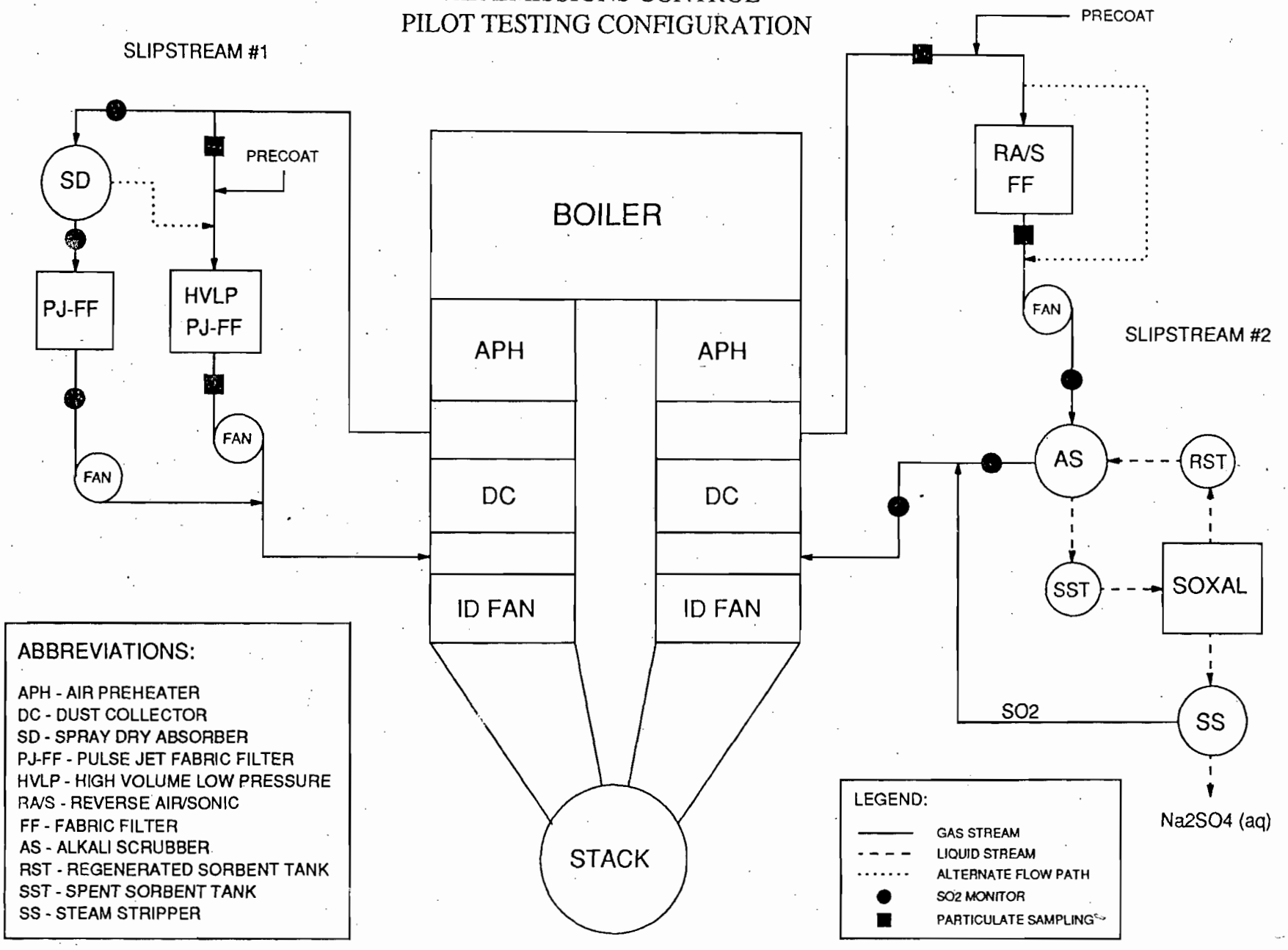

FIGURE 1

Table 1. Proposed Unit 4 Emissions (Page 1 of 2)

Parameters	
Boiler Heat Input, Btu/hr	4,050
Stack Height, ft (m)	400 (121.9)
Stack Diameter, ft (m)	19.2 (5.84)
Stack Gas Velocity, ft/sec (m/sec)	73.4 (22.38)
Stack Gas Exit Temperature, °F (K)	313 (429)

Current Emission Limits and Rates		
SO_2 Limit		
lb/10^6 Btu		2.75[a]
lb/hr (g/sec)		11,137.5 (1403.3)
	Steady-State	3 hrs/24 hrs Excess Emissions
PM Limit		
lb/10^6 Btu	0.1	0.3
lb/hr (g/sec)	405.0 (51.0)	1215.0 (153.1)
PM10 Rate		
lb/10^6 Btu	0.09	0.09
lb/hr (g/sec)	359.0 (45.2)	359.0 (45.2)
Visible Emission Limit		
Opacity	40%	60% with up to four 6-minute periods of up to 100% if unit has an operational opacity CEM (continuous emissions monitor)

Table 1. Proposed Unit 4 Emissions (Page 2 of 2)

Projected Emission Rates		
SO_2		
$lb/10^6$ Btu		4.3[b]
lb/hr (g/sec)		17,415 (2,194)
	Steady-State	3 hrs/24hrs Excess Emissions
PM		
$lb/10^6$ Btu	0.3	0.6
lb/hr (g/sec)	1215.0 (153.1)	2430.0 (306.2)
PM10		
$lb/10^6$ Btu	0.3	0.6
lb/hr (g/sec)	1215.0 (153.1)	2430.0 (306.2)
Visible Emissions		
Opacity	60%	100%

Note:
Btu/hr = British thermal units per hour.
ft/sec = feet per second.
g/sec = grams per second.
K = degrees Kelvin.
$lb/10^6$ Btu = pounds per million British thermal units.
lb/hr = pounds per hour.
m = meters.
m/sec = meters per second.

[a]Baseline emission rates are 1.1 lb $SO_2/10^6$ Btu; 4,455 lb/hour (561.3 g/sec).

[b]Based on 13,000 Btu/lb and 2.8 percent sulfur.

The proposed temporary increase in PM, SO_2, and visible emission limits must be approved by the Environmental Protection Agency (EPA) as part of Florida's State Implementation Plan.

The proposed project is subject to the compliance testing and reporting requirements in accordance with F.A.C. Rule 17-2.700. Testing for PM, visible emissions, and SO_2 will be performed to demonstrate compliance with the proposed emission limits. Testing for Sulfuric Acid Mist, Nitrogen Oxides (NO_x), Volatile Organic Compounds (VOCs), and metals will be performed for informational purposes only. Stack tests will be conducted using the following test methods:

a. 40 CFR 60 Appendix A, EPA Method 5 or 17 for PM
b. 40 CFR 60 Appendix A, EPA Method 8 for Sulfuric Acid Mist
c. 40 CFR 60 Appendix A, EPA Method 7E for NO_x
d. 40 CFR 60 Appendix A, EPA Method 6C for SO_2
e. 40 CFR 60 Appendix A, EPA Method 25A for VOCs
f. EMTIC Interim Test Method for Metal Emissions
g. 40 CFR 61 Appendix B, EPA Method 101 for mercury
h. Continuous Emission Monitor for opacity

IV. Source Impact Analysis

A. Emission Limitations

The emission limitations for this project are shown in Table 1.

B. Air Quality Analysis

Preliminary modeling of the Sanford plant's increase in emissions indicated that the predicted SO_2 concentration were above the significant impact levels. The predicted PM concentrations were predicted to be below the significant impact levels. Therefore, the modeling analysis considered only the potential interaction of SO_2 emissions between the Sanford plant and other sources.

An emission inventory for other SO_2 sources was developed from the FDER's AIR10 and APIS inventories, permits, and prior modeling studies. These databases were used to obtain a list of all sources within 50 km of the Sanford plant. The counties included in this inventory were Volusia, Orange, Seminole, and Lake. For the FPL Sanford and the FPC Turner and DeBary plants, source parameters were obtained from permits and previous air dispersion modeling analyses. The AIR10 and APIS inventories were used to obtain stack parameters for other sources.

All facilities located within 50 km of the Sanford site with SO_2 emissions greater than 25 tons per year (TPY) were included for consideration in the modeling analysis. A listing of facilities, locations, relative position with respect to the Sanford plant, and maximum allowable emissions is enclosed with the application.

The air quality impact analysis required by the PSD regulations for SO_2 includes:

- An analysis of existing air quality;
- A PSD increment analysis;
- An Ambient Air Quality Standards (AAQS) analysis;
- An analysis of impacts on soils, vegetation, visibility, and growth-related air quality impacts; and
- A Good Engineering Practice (GEP) stack height determination.

The analysis of existing air quality generally relies on FDER monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analysis depend on air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on these required analyses, the Department has reasonable assurance that the proposed facility, as described in this permit and subject to the conditions of approval proposed herein, will not cause or contribute to violation of any PSD increment or ambient air quality standard.

a. Modeling Methodology

All modeling completed by the applicant followed the EPA Guideline on Air Quality Models (Revised), w/Supplement A (1987). The Industrial Source Complex Short-Term (ISCST) model (version 6-88207) was used to predict the current and proposed impacts of the fuel switch on the surrounding ambient air. The model determines ground-level concentrations of inert gases and small particles emitted into the atmosphere by point, area, or volume-type sources. It incorporates elements for plume rise, transport by the mean wind, and Gaussian dispersion. In addition, the model allows for the separation of sources, building wake downwash, adjustment for calm conditions, and various other input and output features.

Five years of sequential hourly meteorological data (1982-1986) from the National Weather Service (NWS) office in Orlando was used in the model. The model uses each hour of meteorology separately to calculate short-term concentrations. Since 5 years of data was used, the highest, second-high short-term predicted concentrations are compared with the appropriate ambient standards. For the annual averages, the highest predicted yearly average was compared to the standards.

The stack and emission characteristics used in the ISCST modeling are listed in Table 1. All other major SO_2 sources within 50 kilometers (km) of FPL Sanford were included in the analysis. A background value taken from air quality measurements, was added to the modeling impacts for the AAQS analysis. Building wake downwash effects were included in the modeling by inputting the appropriate building characteristics for Units 4 and 5. Unit 3, being below GEP, was affected by downwash. Unit 4 is within 2% of GEP stack height.

For the screening phase, receptors were located in radial grids that consisted of 36 radials with radials located at 10° increments. Two sets of receptor grids were used. The first set consisted of receptors located along each radial at distances of 1,000, 2,000, 3,000, 5,000, 7,500, 10,000, 20,000, 30,000, 40,000, and 50,000 meters (m) to determine the significant impact area. The second set of receptors, which were used to determine maximum impacts, were input at distances of 100, 400, 700, 1,000, 1,300, 1,600, 2,000, 3,000, 4,000, and 5,000 m along each radial. For both grids, the Sanford plant was assumed to be at the center of the grids. Modeling with the latter receptor grid indicated that maximum short-term impacts were occurring at the 5,000-m distance in the direction of the FPC Turner plant. Therefore, additional receptors located at distances of 5,500, 6,000, 6,500, 7,000, and 7,500 m were modeled for directions from 50° to 70° from the Sanford plant.

The refinement phase of the modeling used receptor grids with a radial receptor spacing of 100 m and a 2° spacing centered on the receptor at which the highest, second-highest maximum concentration was produced in the screening grid. The refined grids were bordered by the adjacent screening grid receptors. To ensure that a valid highest, second-highest concentration was calculated, concentrations were predicted for the entire year with the refined grid.

The nearest PSD Class I area to the Sanford plant is the Chassahowitzka National Wilderness Area, located 125 km west-southwest of the Sanford plant. Since this area is over 100 km from the plant, impact analyses are not required. In addition, impacts are not expected to be significant.

A more detailed description of the modeling analysis, along with the model output, is contained in the Sanford application.

b. Analysis of Existing Air Quality

Volusia County had one continuous SO_2 monitor located in DeBary, but it was removed January 19, 1989. Ambient air quality data from the year 1988 are summarized in Table 2. The highest measured concentrations reported by FDER in 1988 were assumed to represent the background SO_2 levels in the vicinity of the Sanford plant. These concentrations are 100, 28, and 4 $\mu g/m^3$ for the 3-hour, 24-hour, and annual averaging periods, respectively. It should be noted that the highest measurements most likely include contributions from the nearby DeBary and Turner plants. Because these plants are also modeled in the analysis, the background values are considered to provide a conservative estimate of total air quality.

c. PSD Increment Analysis

The results for SO_2 Class II increment consumption for the proposed Orimulsion test burn at the Sanford plant and other PSD sources in the Sanford plant's vicinity are presented in Table 3. The maximum 3-hour, 24-hour, and annual average concentrations are 348, 59, and 4.8 $\mu g/m^3$, respectively, which are 68, 65, and 24 percent of the allowable increments, respectively.

Table 2. Summary of Ambient SO_2 Data, Volusia County, 1988

Site No.	Site Name	Time Period	No. Obs.	Sulfur Dioxide Concentration ($\mu g/m^3$) Max. 3-hr	2nd Max. 3-hr	Max. 24-hr	2nd Max. 24-hr	Arith. Mean
0930001F02	DeBary	Jan-Dec	8425	100	90	28	25	4

Source: FDER, 1988.

Table 3. Maximum Predicted SO_2 Concentrations From the Refined Analysis for Comparison to PSD Class II Increments

Averaging Period	Maximum Concentration ($\mu g/m^3$)	Receptor Location[a] Direction (°)	Receptor Location[a] Distance (km)	Period Julian Day	Period Hour Ending	Period Year	PSD Class II Increment
3-Hour[b]	348	22	1.2	209	15	1984	512
24-Hour[b]	59	202	1.1	148	24	1985	91
Annual	4.8	126	4.4	-	-	1984	20

[a] Relative to the location of the Sanford plant.
[b] Highest, second-highest concentrations predicted for this averaging period.

d. Ambient Air Quality Standards (AAQS) Analysis

The maximum SO_2 impacts due to all sources in the vicinity of the Sanford plant are presented in Table 4. The maximum refined 3-hour, 24-hour, and annual average concentrations are 895, 254, and 31 micrograms per cubic meter ($\mu g/m^3$), respectively, which are below the AAQS of 1300, 260, and 60 $\mu g/m^3$, respectively. The Sanford plant's contributions to the maximum 3-hour, 24-hour, and annual concentrations are 23, 24, and 16 percent of the total concentration (including background) for each respective averaging time.

e. Additional Impacts Analysis

1. Impacts on Soils and Vegetation

The total ground-level ambient concentration of SO_2 is predicted to be less than the secondary air quality standard. The secondary standard for SO_2 is equal to the primary standard and is designed to protect public welfare-related values. As such, SO_2 is not expected to have a harmful effect on soils and vegetation.

2. Growth-Related Air Quality Impacts

The proposed Sanford facility is not expected to significantly change employment, population, housing, or commercial/industrial development in the surrounding area to the extent that a significant air quality impact will result.

3. GEP Stack Height Determination

Good Engineering Practice (GEP) stack height is defined as the greater of: (1) 65 meters or (2) the maximum nearby building height plus 1.5 times the building height or projected width, whichever is less. Applicants cannot take credit for additional pollutant dispersion from stacks built higher than GEP stack height. Unit 4 is 2% taller than GEP stack height, but the overall effect of this difference on model-predicted ambient air concentrations is insignificant (1 ug/m^3, 3-hour PSD concentration).

Table 4. Maximum Predicted Total SO_2 Concentrations From the Refined Analysis for Comparison to AAQS

Averaging Period	Concentration ($\mu g/m^3$) Total	Total Due To: Modeled Sources	Total Due To: Background	Receptor Location[a]: Direction (°)	Receptor Location[a]: Distance (km)	Period: Julian Day	Period: Hour Ending	Period: Year
3-hour[b]	895	795	100	60	7.0	165	12	1982
24-hour[b]	254	226	28	60	7.2	165	24	1982
Annual	31	27	4	346	3.0	—	—	1984

Note: AAQS are 1,300 $\mu g/m^3$, 3-hour
260 $\mu g/m^3$, 24-hour
60 $\mu g/m^3$, annual

[a]Relative to the location of the Sanford plant.
[b]Highest, second-highest concentrations predicted for this averaging period.

V. Conclusion

The proposed Orimulsion test burn in Sanford Unit 4 will produce maximum predicted SO_2 and PM concentrations that are expected to comply with the AAQS and PSD Class II increments. These results are based on PM emission rates for the proposed test burn that include excess emissions occurring for 3 hours during a 24-hour period at all three units.

For PM, the maximum concentration due to the test burn alone is predicted to be less than the significant impact levels. For SO_2, the maximum concentrations due to emissions from the Sanford plant and other sources are predicted to be below the AAQS and PSD Class II increments.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAY 22 1990

4APT-AE

Mr. Clair H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Florida Power & Light (FPL) - Sanford Unit #4 Orimulsion Testing

Dear Mr. Fancy:

We have received an April 2, 1990, letter from Mr. William H. Green, representing the above referenced facility, requesting that EPA conduct a review of the proposed test burn of Orimulsion in Unit #4 at their Sanford plant. We have reviewed this submittal and offer the following comments.

APPLICABILITY OF NSPS

We concur with the conclusion by FPL that NSPS should not apply to the firing of Orimulsion because a modification as defined in 40 C.F.R. Section 60.14 will not occur because of the exemption at 40 C.F.R. Section 60.14(e)(4). The exemption at 40 C.F.R. Section 60.14(e)(4) is applicable because, as originally constructed, Sanford Unit 4 could accommodate Orimulsion with only minimal changes to the burners.

COMPLIANCE AND PERFORMANCE TEST METHODS AND PROCEDURES

We do not concur with the proposed test procedures for SO_2 and NO_x proposed in Table 4-1 of Exhibit 1. We believe that SO_2 and NO_x CEMs should be utilized and that short term averages (3-hour block) should be used to determine compliance. In addition, similar test procedures for Units 3 and 4 should be proposed. Appendix F should be followed in order to ensure the quality of the emissions data. The basis for the use of both SO_2 and NO_x CEMs is that fuel sampling and analysis will not detect possible swings in the sulfur content of Orimulsion and that the NO_x emissions may be erratic due to the unknown firing characteristics in Sanford Unit 4. We recognize that Method 7E utilizes a CEM, however, the method test run is too short term to be acceptable.

Method 5 of 40 C.F.R. Part 60, Appendix A, is acceptable for determining compliance with the particulate matter emission limitation; however, the frequency should be clarified. Historically, the average of three 1-hour long Method 5 test runs is used to determine compliance. In addition, the enclosed procedure which can be performed in conjunction with a Method 5 test run should be considered for determining compliance with the metals emission limits.

PSD APPLICABILITY

1. April 2, 1990, Memorandum: "Ramifications..."

The applicable exemption under PSD for using an alternative fuel states:

> "Use of an alternative fuel or raw material which the facility was capable of accommodating before January 6, 1975, unless such change would be prohibited under any federally enforceable permit condition which was established after 1/6/75, pursuant to 40 C.F.R. 52.21 or under regulations approved pursuant to 40 C.F.R. Subpart I or 40 C.F.R. 51.166."

FPL states (on Page 6) that "No federally enforceable permit condition precludes the use of Orimulsion." This does not appear to be correct. In order for FPL to be able to burn Orimulsion, the State must issue a variance from certain portions of their SIP, i.e., regulations approved pursuant to 40 C.F.R. Subpart I. Although operating permits are not considered to be federally enforceable, any conditions contained in an operating permit which are also a part of the SIP would be federally enforceable permit conditions. The PSD regulations, including the preambles published with these rules, do not discuss all of the possible ramifications of this type of project. For example, it is unclear if a relaxation to the SIP (and permit) would then allow a possible exemption from PSD. Also, as discussed later, the term "capable of accommodating" is not defined in sufficient detail to evaluate the proposed changes to the facility.

As discussed on page 6, the COM test at Sanford Unit #4 required the addition of coal pulverization and conveyance equipment. The modifications were determined to trigger PSD for the facility. Also, even though the boiler modifications themselves were minimal for the COM test, BACT was required at that time. (Note: No additional control equipment was required.) FPL states that "If a modification is exempted from NSPS, then it can be argued that the emissions increases of the source should not require PSD review." This is incorrect. The July 7, 1986, memorandum from Gerald Emison clearly points out that the NSPS exemptions regarding modifications

do not automatically affix themselves to the PSD regulations. FPL will be adding hot water heat exchangers, circulating hot water pumps, a hot water storage tank and an Orimulsion fuel flow meter. The hot water system is needed to ensure that the fuel remains at the proper temperature and is delivered to the boiler without physical breakdown of the fuel. The addition of these appurtenances is analogous to the preconditioning system of any new fuel, e.g., a coal pulverization unit, etc. Therefore, we do not believe that the facility is capable of accommodating Orimulsion. We do, however, agree with FPL in that the boiler itself is capable of accommodating Orimulsion and therefore the company should not be required to perform a BACT analysis. In summary, we have concluded that the proposed burning of Orimulsion at FPL's Sanford Unit #4 will trigger PSD, but a BACT analysis will not be required for the boiler.

2. Pollutants Subject to PSD - Table 3-2:

For PSD purposes, potential emission increases from a modification are compared to past actual emissions. This comparison is performed on a tons per year basis. Therefore, we will assume that the Orimulsion testing will occur within a one-year period. The potential emissions associated with burning Orimulsion during the testing appears to have been calculated correctly, based on 120 full power days. FPL did not, however, include the potential emissions resulting from any fuel oil burning which could occur the remainder of the year (245 full power days) when Orimulsion is not being burned.

The past actual emissions were not based on actual operating data, hours of operation, etc. FPL used AP-42 factors and assumed 120 full power days in the calculation of past actual emissions. These calculations should be based on actual operating hours and emission rates. If actual emission rates are not known, then FPL could use AP-42 emission factors.

As a general note, we feel that the proposed particulate emission limitation of 0.338 lb/mmBTU is too high considering that the uncontrolled particulate emission rate is reported to be 0.22 lb/mmBTU (See Table 3-1 of Exhibit 1).

We hope these comments will aid in your agency's review of this matter. If you have any questions about this letter, please contact Mark Armentrout of my staff at (404) 347-2904.

Sincerely yours,

Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides and Toxics
Management Division

cc: Mr. William H. Green
Hopping Boyd Green & Sams

Martin A. Smith, FPL

HOPPING BOYD GREEN & SAMS
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OF COUNSEL
W. ROBERT FOKES

April 2, 1990

Mr. Winston A. Smith, Division Director
Air Division
Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

RE: Petition for Authorization to Conduct Testing and Research; Prevention of Significant Deterioration Application/Florida Power & Light Company Sanford Unit #4

Dear Mr. Smith:

Please find enclosed two copies of the above-referenced documents that were filed today with the Florida Department of Environmental Regulation (DER) on behalf of our client, Florida Power & Light Company (FPL). Because this test will require DER review of New Source Performance Standards and Prevention of Significant Deterioration regulations and a related revision of the State Implementation Plan, we respectfully request that the Environmental Protection Agency conduct a simultaneous, coordinated review in order to expedite matters. We hope to receive all necessary approvals for the test by September 1, 1990.

Your consideration and assistance in this matter are greatly appreciated.

Sincerely,

William H. Green

WHG/wrn

cc. w/o enc. Dale S. Twachtmann, DER
Steve Smallwood, DER
Clair Fancy, DER
Martin A. Smith, FPL

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SAM J. SMITH
CHERYL G. STUART

OF COUNSEL
W. ROBERT FOKES

April 3, 1990

RECEIVED

APR 02 1990

DER-BAQM

HAND DELIVERED THIS DATE

Dale S. Twachtmann, Secretary
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Petition for Authorization to Conduct Testing and Research and Prevention of Significant Deterioration Application/Florida Power & Light Company Sanford Unit #4

Dear Secretary Twachtmann:

Please find enclosed for filing the original and two copies of the above-referenced Petition, submitted on behalf of our client, Florida Power & Light Company (FPL). As you will note, this Petition is being filed under Department Rule 17-103.120, Florida Administrative Code, which authorizes the approvals necessary to do testing and research of potential sources of pollution. The petition contains an exhibit on air quality analysis of the proposed test. The computer data for the test has been provided separately to Mr. Steve Smallwood of your staff, along with three complete copies of the attached. The proposal would allow a temporary test at FPL Sanford Unit #4 to determine the engineering, economic and environmental feasibility of adding a new fuel, known as Orimulsion, to the Company's fuel base. As is more fully explained in the attached, Orimulsion is a liquid fossil fuel produced in Venezuela that is being marketed at coal-equivalent prices.

Should the test prove to be successful, FPL is committed to the installation of pollution control equipment, as part of any permanent conversion to the use of Orimulsion, that would achieve a reduction in current emissions of sulfur dioxide and particulate matter. Therefore, the test program could lead to reduced emissions, less expensive fuel, and an expansion of Florida's fuel base. All of these goals appear

to be consistent with the purposes of the Department's test rule and Chapter 403, Florida Statutes.

We hope to obtain all approvals needed for the test prior to September 1, 1990 so that testing can begin in late fall and conclude before the summer peak electrical demand period in 1991. We request that the Department review these submitted materials with a goal toward meeting in the next two or three weeks to discuss any additional information that might be needed to conduct its review. Your consideration in this matter is greatly appreciated.

Respectfully submitted,

William H. Green

WHG/wrn
Enclosure
cc: Steve Smallwood, DER (w/enc.)
Clair Fancy, DER (w/enc.)
Winston A. Smith, EPA (w/enc.)
Martin A. Smith, FPL (w/enc.)

HOPPING BOYD GREEN & SAMS

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OF COUNSEL
W. ROBERT FOKES

MEMORANDUM

April 2, 1990

RE: RAMIFICATIONS OF NEW SOURCE PERFORMANCE STANDARDS (NSPS) AND PREVENTION OF SIGNIFICANT DETERIORATION (PSD) REGULATIONS ON THE PROPOSED ORIMULSION PROJECT

BACKGROUND AND ASSUMED FACTS

Florida Power & Light Company (FPL) is proposing a test burn of an emulsified bitumen fuel, known as Orimulsion, at its Sanford Generating Unit #4. The test burn is part of a more than decade-long effort of FPL to expand its fuel base. This liquid fossil fuel is produced in Venezuela and is handled, stored, transported and burned like residual oil. In view of the vast Venezuelan reserves of the hydrocarbon from which Orimulsion can be produced, the fuel promises to substantially expand the energy base of FPL and potentially the United States. It has been estimated that these reserves may be the equivalent of one-half of the present coal reserves in the United States. The Venezuelan government is marketing Orimulsion at coal-equivalent prices.

FPL operates nine 400 MW generating units that use standard front wall-fired boilers and four 800 MW boilers that are scaled up versions of the 400 MW design. Tests of Orimulsion in the laboratory and in a full-scale demonstration project in Canada have indicated that Orimulsion can be utilized as a fuel in these FPL boilers with no change in boiler design. However, the addition of pollution control equipment would be necessary for a permanent fuel switch if increases in current stack emissions are to be avoided. FPL engineers have proposed a test burn of Orimulsion in order to confirm their projections, and to allow testing of various pollution control methods required to select and size the optimum

control technology to be used with a permanent conversion. The proposed test burn can be carried out at Sanford Unit #4 without changes to the boiler. In fact, the only boiler auxiliaries that will need to be changed will be the burner guns and tips at a cost of approximately $100,000, and the reinstallation of furnace wall blowers. Minimal new fuel handling equipment will be required because Orimulsion behaves essentially the same as the residual oil that the Plant has burned for years. Hot water heat exchangers, circulating hot water pumps, a hot water storage tank and an Orimulsion fuel flow meter will be added. Existing fuel storage tanks, burner feed pumps and tank vertical mixers will be used.

Sanford Unit #4 was designed to accommodate a range of solid, liquid and gaseous fuels. It was placed under construction prior to 1971 and originally brought on-line burning residual fuel oil. The unit was tested over a period of several months with a coal oil mixture (COM) in the early 1980's pursuant to EPA and DER approvals. At that time the agencies confirmed that Sanford Unit #4 was "designed-to-accommodate" coal because the combustion of coal could be accommodated without changes to the boiler. Boiler auxiliaries changed for the COM test included the burner guns, so that steam atomization could be used, and wall blowers to deal with greater ash production. However, the COM test did require the addition of major fuel related facilities at the site, including coal pulverization equipment, conveyors and other fuel handling facilities that did not previously exist. Consequently, EPA determined that a PSD permit was required for the test. The PSD permit did not impose new pollution control equipment to control boiler emissions, although particulate matter emissions and opacity were temporarily increased by the switch to COM.

In the early 1980's, FPL also evaluated the conversion to 100% coal-related fuels at its 400 MW and 800 MW units. EPA developed a policy in 1983 which concluded that such conversions would not trigger NSPS at coal capable boilers, but would trigger PSD review if coal handling equipment had to be added to the sites to allow coal use. (See Attachment 1). EPA's 1983 coal conversion policy also provided that a Best Available Control Technology (BACT) analysis was not required for boilers capable of firing coal, but that it would be required to control emissions from non-boiler related new equipment needed to handle and store coal.

DISCUSSION

FPL is committed, if the Orimulsion test burn proves successful from an operational and economic standpoint, to the installation of continuous emission reduction equipment that will achieve a decrease in current emissions of sulfur dioxide and particulate matter. This commitment will preclude the possibility that NSPS or PSD review will be required for these pollutants at that time. However, like COM, the combustion of Orimulsion at the Sanford facility for a test burn would be expected to temporarily increase emissions. Sulfur dioxide emissions will increase because of the higher sulfur content associated with Orimulsion fuel. Particulate matter and opacity emissions are expected to increase somewhat as well. In light of these temporary emissions increases, the question is raised whether the test would trigger NSPS for boiler emissions and whether the changes would trigger PSD review, potentially including Best Available Control Technology (BACT) requirements. An analysis of pertinent EPA and DER statutes, regulations and precedents follows:

NSPS: THE PROPOSED CHANGES WILL NOT TRIGGER THE APPLICABILITY OF NSPS.

NSPS emission limitations apply to new sources which commence construction on or after the date that applicable NSPS are proposed as well as to existing sources which undergo certain physical or operational changes that result in increased emissions. There are three sets of NSPS that require consideration with regard to the proposed Orimulsion test. These are found at 40 CFR, Part 60, Subpart D, Subpart Da, and Subpart Db.[1/] The applicability years of those standards are 1971, 1978 and 1984. The question is whether the physical and operational changes required to burn Orimulsion would trigger any of these NSPS requirements. The determinative provision of EPA regulations is found at 40 CFR, Section 60.14.[2/] That

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1/ Subparts D, Da and Db are incorporated by reference in DER Rule 17-2.660(2)(a), Table 660-1, F.A.C.
(continued)

section defines modifications that can cause existing sources to be deemed new sources, subject to NSPS. It also establishes certain exemptions from the modification provision, including a provision explicitly covering fuel-switches. In particular, a modification will not include:

> Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type [1971, 1978 or 1984], ... the existing facility was designed to accommodate that alternative use. A facility shall be considered to be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as amended prior to the change... .

40 CFR, Section 60.14(e)(4). (Emphasis added)

The boiler manufacturer, Foster Wheeler Energy Corporation, has evaluated the characteristics of Orimulsion and determined that the original design envelope for the Sanford Unit #4 boiler will accommodate the combustion of Orimulsion with minimal changes (e.g. burners). (See Attachment 2).

The NSPS fuel-switch exemption has been construed and honored by EPA on numerous occasions. As noted earlier, the exemption was applied by EPA with regard to the COM test conducted at the facility in the early 1980's. That ruling was consistent with the later adopted 1983 coal conversion policy of EPA. As for the COM test, the Orimulsion test will involve the use of new burner guns with steam atomization and the use of wall blowers.[3/] Thus, under EPA

2/ Section 60.14 is incorporated by reference in DER Rule 17-2.660(3)(f), F.A.C.

3/ The addition of soot blowers has been held in other situations by EPA to be a minimal change not triggering NSPS requirements. For example, on March 28, 1973, EPA determined that the installation of soot blowers in a power (continued)

NSPS regulations and associated EPA interpretations, the changes in boiler auxiliaries proposed for the Orimulsion project are not of sufficient magnitude to trigger the applicability of NSPS to the boiler emissions.

PSD: PSD REVIEW SHOULD NOT BE REQUIRED FOR THE ORIMULSION TEST BURN BECAUSE, UNLIKE THE COM AND COAL CONVERSION SITUATIONS, THE PLANTWIDE CHANGES NEEDED FOR THE FUEL SWITCH ARE MINIMAL. IN THE EVENT THAT PSD REVIEW IS DETERMINED TO BE APPLICABLE, BACT SHOULD NOT APPLY TO THE BOILER.

PSD review, like NSPS applicability, is ordinarily associated with the construction of new sources. However, certain modifications at existing sources can constitute "construction" which triggers PSD review and, potentially, the imposition of BACT requirements. The threshold test for determining whether an existing source will be modified for PSD purposes is whether non-exempted changes at the facility as a whole will result in a net emissions increase which exceeds significance levels established by agency regulations.[4/] We have assumed that the emissions increases associated with Orimulsion will be significant. The changes will be exempted if they involve the:

> Use of an alternative fuel or raw material which the facility was capable of accommodating before January 6, 1975, unless such change would be prohibited under any federally enforceable permit condition established after January 6, 1975.

Rule 17-2.500(2)(c)4., F.A.C. (Emphasis added).[5/]

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plant did not constitute a modification under 40 CFR, Part 60. (See Attachment 3).

4/ Significant levels are listed in Rule 17-2.500(8), Table 500-2, F.A.C.

5/ This rule has been approved by EPA.

No federally enforceable permit condition precludes the use of Orimulsion. Therefore, the changes will not trigger PSD review if it is determined that the facility was "capable of accommodating" the Orimulsion fuel before January 6, 1975.

The "capable of accommodating" test examines the fuel switch capability of the entire facility rather than simply the boiler itself, which we have already concluded was designed to accommodate Orimulsion. Historically, EPA has denied the PSD fuel switch exemption where the facility involved did not have on-site all of the major fuel handling, storage and preparation facilities needed for the new fuel usage, even where the boiler involved qualified for the NSPS fuel switch exemption. It is for this reason that EPA concluded that the need to add coal pulverization and conveyance equipment for the COM test at Sanford Unit #4 triggered PSD review. The question for the proposed Orimulsion burn is whether the addition of heat exchangers, hot water pumps, a hot water storage tank, and a fuel flow meter would be deemed of sufficient import to negate the PSD exemption.

PSD review is a preconstruction permit program that applies to the "construction" of major sources. Section 169(1)(c) of the Clean Air Act defines the term "construction" as used in the PSD provisions of the Act as follows:

> The term "construction", when used in connection with any source or facility, includes the modification (as defined in Section 111(a) of this Title) of any source or facility.

Section 111(a) referred to in this definition is the NSPS section of the Act. In essence, if an NSPS triggering modification results in a significant net increase in emissions from a "facility", then PSD will be required. If a modification is exempted from NSPS, then it can be argued that the emissions increases of the "source" (boiler) should not require PSD review. Accordingly, where the NSPS regulations which implement Section 111(a) have been construed to exempt changes from NSPS, PSD review should not apply to such changes.

This interpretation is completely consistent with the coal conversion policy developed by EPA Region IV in 1983. That policy exempted boilers designed to accommodate an alternate fuel from BACT, as follows:

> In the situation where the individual boiler being converted is capable of firing coal with minimal physical changes (for example, change of burners only) BACT analysis would apply to the coal handling and storage equipment as well as other necessary new equipment. BACT analysis would not apply to the boilers since, individually, they were designed to accommodate coal and therefore, will not be undergoing a physical change or change in the method of operation.[6/]

Early this year, EPA reconfirmed an NSPS/PSD determination for a proposed natural gas addition at a generating unit of Detroit Edison which was initially designed to fire either gas or oil. (See Attachment 4). The physical changes at the plant included the addition of equipment necessary to deliver gas to the existing boiler and several minor changes to the boiler including burner modifications. The determination reaffirmed the historical approach that EPA has followed when it applied the fuel switch exemptions of the NSPS and PSD regulations to utility boiler changes:

> ... [A]lthough the addition of gas firing would subject the source as a whole to a PSD review, the requirement to apply BACT is applicable only to those emissions units at the source which undergo both a physical or operational change and a significant net emissions increase. It appears that the only emissions unit at the Greenwood Plant affected by the proposal to fire gas would be the existing boiler. Historically, it has

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6/ See Attachment 1.

> been EPA's policy that where the individual boiler being converted is capable of accommodating the alternate fuel, BACT would not apply.

Though EPA reserved judgement with regard to certain non-burner related changes, it concluded that burner modification would not subject the boiler to BACT review. The Detroit Edison determination supports the view that BACT should not apply to the Sanford Unit #4 boiler changes at hand.

Although the boiler-related changes such as burner changes and the addition of soot blowers (discussed earlier) clearly should be exempted from BACT review, the regulatory consequences of the addition of non-boiler related Orimulsion handling equipment is less clear. Our review of EPA precedent has disclosed an earlier determination that provides some guidance. In 1975, a paper mill in Michigan needed to add oil preheating equipment at two boilers that had previously burned natural gas and No. 2 oil, in order to allow the burning of No. 6 oil which has different heating requirements. EPA concluded that the installation of the No. 6 fuel oil firing equipment, <u>including</u> the oil preheating equipment, would not constitute a modification for NSPS purposes. See Attachment 5. Sanford Unit #4 currently burns No. 6 oil and would be fitted with equipment to optimize heating of Orimulsion, a similar fuel. It can thus be argued that the Orimulsion heating system should also be exempted from consideration under NSPS and PSD. The recent Detroit Edison ruling does require a PSD permit even when the boiler itself was exempted from NSPS and BACT; however, in that case, Detroit Edison did not have equipment to deliver gas to the combustion unit. In the case of Sanford Unit #4, existing equipment is available to deliver Orimulsion to the combustion unit, with only minor changes needed to better assure fuel stability during handling.

CONCLUSIONS

The Orimulsion test should not be deemed to trigger NSPS because Sanford Unit #4 is "designed to accommodate" the fuel. This is borne out by the absence of changes to the boiler itself, by the minimal changes in boiler auxiliaries

needed to burn the fuel, by prior EPA precedent, and by the conclusions of the boiler manufacturer. EPA regulations and precedent clearly support the conclusion that a PSD/BACT analysis should not apply to boiler-related emissions resulting from an Orimulsion fuel switch at Sanford Unit #4.

PSD applicability to the project as a whole is less clear because of the non-boiler related changes needed to burn Orimulsion. An early EPA determination has held that the addition of fuel heating equipment at boilers to allow the burning of a different grade of oil would not be deemed a modification for NSPS purposes; therefore, one can argue that the simple addition of fuel heating equipment at Sanford Unit #4 should not be deemed to constitute a modification for PSD purpose. The recent Detroit Edison decision focused on the absence of any alternate fuel delivery equipment at the site, which is not the case at Sanford Unit #4. In effect, there is ample room for a favorable agency interpretation on this point.

WHG/wrn
4/2/90:1:50 p.m.

JUN 7 1983

4AE-AN

Mr. Steve Smallwood, Chief
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Dear Mr. Smallwood:

This is to inform you of Region IV policy concerning applicability of coal conversions to EPA PSD regulations.

Fuel conversions, in general, are considered major modifications for purposes of PSD review providing emission increases are significant. However, Section 52.21(b)(2)(iii)(e) provides an exemption for certain fuel conversions from the major modification definition. Specifically, this section exempts a fuel conversion from PSD review if the source was capable of accommodating the alternate fuel before January 6, 1975 and such a change is not prohibited by any enforceable permit conditions.

The question then, is whether the source, i.e., the entire plant, was capable of accommodating coal before January 6, 1975. For purposes of converting one or more, but not all of the boilers, we interpret this provision as requiring that the plant be capable of receiving, transferring, and preparing coal, and then transferring coal and combusting coal in the units being converted, and disposing of the ash. It is not necessary for the plant to be capable of carrying out all those operations for every unit at the source, but only for for those being converted. On the other hand, if the plant is capable of receiving coal and transferring and combusting it only in some other unit at the plant, but not the one being converted, the plant would not be deemed capable of accommodating coal for purposes of that project.

In order for a plant to be capable of accommodating coal, the company must show not only that the design (i.e., construction specifications) for the source contemplated the equipment, but also that the equipment actually was installed and still remains in existence. Otherwise, it cannot reasonably be concluded that the use of coal was "designed into the source." Thus, a source that had used coal at a particular unit at an earlier time, but later switched to another fuel, would be capable of accommodating coal as long as the coal handling equipment still existed. If coal handling equipment had been removed or was never installed, the source would not be coal accommodative. If a proposed conversion is not eligible for the exemption under 52.21(b)(2)(iii)(e), it is considered a major modification for the purposes of PSD review if the resulting net emission increases are significant. PSD applicability would be based on all emission increases from the conversion, including emission increases from the coal and ash handling and storage facilities as well as from the boilers, since all the increases are caused by the conversion to coal.

EXHIBIT

Once PSD applicability has been established, it is then necessary to undertake a BACT analysis as required under 52.21(j). That section, under paragraph 3, requires that a major modification apply "best available control technology for each pollutant subject to regulation under the Act for which it would result in a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit." This section clearly intends that technology review be assessed on an emissions unit rather than on a plant-wide basis.

In the situation where the individual boiler being converted is capable of firing coal with minimal physical changes (for example, change of burners only), BACT analysis would apply to the coal handling and storage equipment as well as any other necessary new equipment. BACT analysis would not apply to the boilers since individually they were designed to accommodate coal and therefore will not be undergoing a physical change or change in the method of operation.

In addition to the BACT analysis, requirements for A source impact analysis (52.21(k)), air quality analysis (52.21(m)), additional impact analyses (52.21(o)), and Class I analysis (52.21(p)) must be satisfied.

Once the source has satisfied these requirements and the notice and public comment provisions, permit approval may proceed.

Region IV is aware that guidance on this question has been somewhat vague, and possibly conflicting, in the past. Therefore, we do not intend for this policy to be applied retroactively where it was not adhered to. However, we do expect each Region IV state to immediately implement this policy for all future applicability determinations.

Sincerely yours,

James T. Wilburn, Chief
Air Management Branch
Air & Waste Management Division

cc: Ed Reich
Darryl Tyler

BEST AVAILABLE COPY

FW

FOSTER WHEELER ENERGY CORPORATION

PERRYVILLE CORPORATE PARK • CLINTON NEW JERSEY 08809-4000 • PHONE 201-730-4000

ADDRESS REPLY TO
[illegible] Avenue, Suite 400
[illegible] Florida [illegible]
[illegible]

December 13, 1989

Florida Power & Light Co.
P.O. Box 078768
West Palm Beach, Florida 33407-0768

Attention: Mr. D.L. Christian
Project Manager

Subject: Orimulsion Test Burn

Dear Mr. Christian:

The Sanford Units were originally designed to burn #6 fuel oil with provisions for coal firing. Foster Wheeler has previously engineered and proposed firing coal-oil mixture, (COM) coal-water fuel, (CWF) and pulverized coal (P.C.) in these units, indicating the wide range of acceptable fuels.

A review of the specification and description of Orimulsion, reveals that this fuel has properties similar to the fuels cited above, which are within the design capabilities of the unit.

Specifically, the following comparisons can be made:

1) Viscosity - Similar in range and rheology to CWF, this is more burner related than boiler related.

2) Heat Content - The Orimulsion heating value of 12,733 BTU/LB is similar to pulverized coal and higher than CWF. It is lower than COM, and therefore within the range of fuels already demonstrated as useable in the Sanford Units.

3) The input would be similar to that for CWF in that the moisture contents are comparable.

4) The unit efficiency with Orimulsion should be higher than CWF by virtue of the HHV, but lower than P.C. due to the moisture.

5) The ash impact of Orimulsion should be less than the coal based fuels - P.C., COM, and CWF. The elemental analysis for this Bitumin based fuel is analagous to coal. The Vanadium is similar to a high Vanadium crude.

EXHIBIT
2

Orimulsion Test Burn
December 13, 1989

In summary, the Sanford boilers were originally designed with an operational envelope that would accommodate the combustion of a variety of fuels within specific ranges of moisture content, ash constituents, heat content, etc. Since the properties of orimulsion fall within their design envelope, the firing of orimulsion would be expected to require no boiler modifications beyond those minimal changes required for combustion of any fuel of similar characteristics.

Should further information be required, please do not hesitate to contact us.

Very truly yours,
Foster Wheeler Energy Corp.

H.M. Trammell, Jr.
Regional Vice President

HMT/GTN/va

ENVIRONMENTAL PROTECTION AGENCY

March 28, 1973

D-3

S. T. Smith, P.E.
Chief Engineer
Burns & McDonnell
Post Office Box 173
Kansas City, Missouri 64141

Dear Sir:

This is to be advised that pursuant to 40 CFR §60.5 it is our determination that the installation of soot blowers at the Carl T. Bailey Electric Generating Station at Augusta, Arkansas does not constitute a "modification" as defined in 40 CFR §60.2(a), and, therefore, does not bring you within the scope of applicability of the New Source Performance Standards, 40 CFR §60.

Such determination, however, in no way relieves you of any requirements under State law. You should check with the Arkansas Department of Pollution Control and Ecology for the applicable state requirements and to determine whether the installation of soot blowers, or fuel switching from natural gas to No. 6 oil constitutes a modification within the meaning of State new source review provisions. In those States where EPA has promulgated new source review provisions of the State implementation plans, (this does not include Arkansas), fuel switching does constitute a "modification". The stricter definition in these implementation plans is required in order to meet and maintain the National Ambient Air Quality Standards.

Sincerely yours,

Peter M. Yoell
Attorney-Advisor
DOSD

AGGS:P. Yoell/mas/3/28/73

CONCURRENCE

EXHIBIT
Attachment
3

OFFICIAL FILE COPY

Burns & McDonnell / Engineers - Architects - Consultants
POST OFFICE BOX 173
KANSAS CITY, MISSOURI 64141

March 16, 1973

Director
Division of Stationary Source Enforcement
Environmental Protection Agency
WSM - Room 3220
Washington, D.C. 20460

Subject: Determination
Addition Soot Blowers
Carl E. Bailey Generating Station
Arkansas Electric Cooperative Corporation

Dear Sir:

We were referred to your office by the Kansas City Regional Office of the United States Environmental Protection Agency for a determination. Our client, Arkansas Electric Cooperative Corporation, Little Rock, Arkansas, proposes to install soot blowers at their existing Carl E. Bailey Electric Generating Station at Augusta, Arkansas. The question has arisen as to whether the installation of these soot blowers is included within the applicability of Environmental Protection Regulations on Standards of Performance for New Stationary Sources as set forth in 40 CFR 60; 36 FR 2476, issued December 23, 1971, effective August, 1971. The section that applies in this case is as follows:

> Part 60-3 The definition of modification, as it pertains to increases in production rate and changes of fuel, has been clarified. Increases in production rates up to design capacity will not be considered a modification nor will fuel switches if the equipment was originally designed to accommodate such fuels. These provisions will eliminate inequities where equipment had been put into partial operation prior to the proposal of the standards.

The Carl E. Bailey Electric Generating Station, owned and operated by the Arkansas Electric Cooperative Corporation, is a natural gas and No. 6 oil-fired steam electric generating station with a capacity at peak rating of approximately 125 megawatts. The power generating station feeds electric power into transmission systems which serve several states.

The steam generator was designed to burn both natural gas and No. 6 oil. Due to the availability of natural gas, the soot blowers were not installed with the boiler. The boiler was provided with wall boxes, so that when fuel oil was burned on a continuous basis and soot blowers were needed, the pressure parts of the boiler would not have to be disturbed.

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1500 [illegible] FIRST AVENUE, PORTLAND, OREGON 97201

Additional provisions made for soot blowers were the extra weight of steel required to support the future extended soot blower platforms. Construction was begun at the station site early in 1964, and the station went on the line in January, 1966. Due to curtailment of natural gas over the following years, more No. 6 oil had to be burned each succeeding year. Now it appears it must be burned continuously and soot blowers must be added.

The addition of soot blowers optimizes boiler performance only. There is no increase in production rates nor do they increase the total pollutants going into the air. Further, the equipment was designed to burn No. 6 fuel oil, and also burned it prior to the date any standards became effective. Consequently, it is our feeling the determination should indicate that standards of performance for new stationary sources are not applicable and that the addition of soot blowers is not a modification.

Sincerely,

S. T. Smith

S. T. Smith, P.E.
Chief Engineer
Environmental Division

STS:sf

cc: Arliss Wright

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

M. STERLING
JAN 2 2 1990

JAN 18 1990

Mr. Morton Sterling, Director
Environmental Protection
Detroit Edison Company
200 Second Avenue, 482 WCB
Detroit, Michigan 48226

Dear Mr. Sterling:

This is a followup to the October 19, 1989 meeting during which Detroit Edison further discussed its position that the addition of natural gas firing capacity to the Greenwood Unit I Power Plant should not be subject to a prevention of significant deterioration (PSD) review. At the meeting, you requested that Environmental Protection Agency (EPA) Headquarters review Region V's previous determination that the proposed fuel conversion was a "major modification" for PSD purposes.

As you are aware, in a letter dated December 20, 1988, EPA Region V concluded that the proposed conversion of the oil-fired Greenwood Unit to dual capacity for oil and gas firing would subject the plant to a PSD review for nitrogen oxides (NO_x). The Region's conclusion was based on a determination that 1) the source was not capable of firing natural gas prior to January 6, 1975 (and therefore was not covered by the PSD exemption for modifications under 40 CFR 52.21(b)(2)(iii)(e)(1)); and 2) there would be a significant net increase of NO_x resulting from the change. As you have requested, we have reevaluated this finding in light of the additional information submitted by Detroit Edison during the October 19 meeting.

The information presented by Detroit Edison indicates that the emissions unit at the source was initially designed and permitted to fire both oil and gas. However, there is no evidence to demonstrate that the source as a whole had, or at any time initiated construction on, the equipment necessary to deliver natural gas to the combustion unit. Without such equipment, it would not be possible for the source to utilize natural gas as an alternate fuel. Consequently, it is our view that the source was not capable of accommodating natural gas prior to January 6, 1975. Therefore, the changes necessary to accommodate the firing of natural gas at the Greenwood Plant would, for PSD purposes, be considered a "physical change" to the source.

As requested, we have also evaluated the net emissions change at the source that would result from the modification. It is Detroit Edison's position that the large decreases in "allowable" emissions of sulfur dioxide, particulate matter, and NO_x when burning natural gas rather than oil as a result of the modification, warrants special consideration. Specifically, Detroit Edison feels that the use of a cleaner fuel at the Greenwood Plant warrants a finding that there is no increase in actual emissions and accordingly no "major modification."

ATTACHMENT

EXHIBIT
4

Under the PSD regulation, a "major modification" occurs when the physical or operational change at the source (in this case the installation of natural gas handling facilities and the firing of natural gas) would result in a significant net emissions increase for any regulated pollutant at the source. Whether the proposed use of natural gas at the Greenwood Plant would result in a "significant net emissions increase" depends on a comparison between the "actual emissions" before and after the physical or operational change. Where, as here, the source has not yet begun operations firing natural gas, "actual emissions" after the change to natural gas firing are deemed to be the source's "potential to emit" for that fuel [see 40 CFR 52.21(b)(21)(iv)]. Potential annual NO_x emissions when firing natural gas at the Greenwood Plant greatly exceed its current actual emissions. Therefore, as a result of the ability to fire natural gas after the change, the emissions of NO_x at the source would experience a "significant net emissions increase," within the meaning of the PSD regulations. The fact that current annual "allowable emissions" for the Greenwood Plant when firing oil may greatly exceed future allowable (or potential) emissions when firing natural gas is not relevant for PSD applicability purposes. See Puerto Rican Cement Co., Inc. v. EPA No.89-1070 (First Circuit) (slip op. October 31, 1989).

In summary, our review indicates that Region V correctly applied the PSD applicability criteria.

The PSD requirements include an air quality and additional impact analysis and the application of best available control technology (BACT). The BACT requirement applies to "each proposed emissions unit at which a net emissions increase would occur as a result of a physical change or change in the method of operation in the unit" [see 52.21(j)(3)]. Consequently, although the addition of gas firing would subject the source as a whole to a PSD review, the requirement to apply BACT is applicable only to those emissions units at the source which undergo both a physical or operational change and a significant net emissions increase. It appears that the only emissions unit at the Greenwood Plant affected by the proposal to fire gas would be the existing boiler. Historically, it has been EPA's policy that where the individual boiler being converted is capable of accommodating the alternate fuel, BACT would not apply.

In this case, in addition to the physical changes at the source necessary to deliver natural gas to the existing boiler, a number of canes capable of burning natural gas would be installed in the existing burner assemblies. Modifications to the unit's overfired air duct are also planned. We also understand that there will be no changes in the present oil burning system, which will be retained.

Our review indicates that, by itself, the addition of gas canes to the burners is not a physical change or change in the method of operation in the unit and, consequently, would not subject the boiler to a BACT review. Therefore, if the sole change to the boiler is the addition of the canes, then, in this case, the only requirements necessary for a PSD permit are an air quality analysis, additional impacts analyses, and (if applicable) a Class I impact analysis--the application of BACT is not required. However,

the information submitted by Detroit Edison indicates that changes to the boiler's overfired air duct are also planned. At this time, without additional information on the nature and scope of the work to be done on the overfired air duct, we cannot determine whether these are physical or operational changes to the boiler that are necessary to make the boiler capable of accommodating natural gas. If the ducting work is necessary for this purpose, then a BACT analysis would likely be required.

In addition, it is unclear from the information submitted whether Detroit Edison plans to undertake further modifications to the boiler which would allow 100 percent load when firing natural gas. Currently, the unit as presently configured has the potential of achieving only 75 percent load when firing natural gas. To achieve a higher load, substantial modifications to the unit apparently would be required. These types of physical changes to the boiler likely would require a full PSD review, including a BACT analysis for the boiler. The BACT analysis would require that the source evaluate the use of all available additional air pollution controls for reducing NO_x emissions. The analysis would consider retrofit costs for add-on controls and the fact that gas is a relatively clean-burning fuel. Consequently, in this case, it is possible that the currently planned use of a low-NO_x burner design may be BACT for gas firing. However, such a conclusion would have to be demonstrated through the requisite BACT analysis. I have asked Region V to work with you should you need assistance in preparing the analysis.

Sincerely,

Gerald A. Emison
Director
Office of Air Quality Planning
and Standards

cc: J. Calcagni, EPA/ADMD
D. Kee, EPA/Region V
G. Foote, EPA/OGC

REGION V

Determination of Applicability of New Source Performance Standards (NSPS)

AUG 5 1975

James O. McDonald, Director
Enforcement Division

Richard D. Wilson, Director
Division of Stationary Source Enforcement

The Escanaba (Michigan) Paper Mill Division of the Mead Corporation received State permits for the installation of oil pre-heating equipment and new nozzles on two boilers which burned natural gas or Number 2 fuel oil prior to August 17, 1971, to make it possible for them to burn Number 6 fuel oil as well.

Does the installation of the Number 6 fuel oil-firing equipment constitute a modification as defined by NSPS, or does the use of Number 6 fuel oil fall within the exemption provided in paragraph H(2)(iii) of Section 60.2?

ORIGINAL SIGNED BY JAMES O. McDONALD

James O. McDonald

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AUG 19 1975

MEMORANDUM

SUBJECT: Determination of Applicability of Subpart D (NSPS) to Escanaba Paper Mill Division of the Mead Corporation

FROM: Director, Division of Stationary Source Enforcement

TO: James O. McDonald, Director
Enforcement Division, Region V

In response to your request of August 5, 1975, we have determined that the proposed change to the existing boilers at the Escanaba Paper Mill does not constitute a modification under NSPS since such change fall within the exemption of §60.2(h)(2)(iii).

D-2

Richard D. Wilson

AGGS:GeorgeStevens:bm:8-18-75

D-2

Cindy's

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

October 15, 1991

Martin A. Smith, Ph.D., Manager
Environmental Permitting Programs
Florida Power & Light Company
P.O. Box 078768
West Palm Beach, FL 33407-0768

Dear Dr. Smith:

Re: Sanford Plant Unit #4
Orimulsion Fuel Test Burn

Specific condition no. 8.g) of permit no. AC 64-180842 states "A detailed report of the pilot pollution control equipment test results shall be submitted within ninety days after permittee has notified the Department that the Orimulsion test burns have been completed. The report shall include an ultimate analysis of the Orimulsion fuel."

The Department was notified in a letter dated June 28, 1991 that the Orimulsion test burns were a success. Please submit the detailed report and ultimate analysis to the Department within 14 days of receipt of this letter, or submit an explanation as to why you are unable to provide the requested information within this time frame.

Sincerely,

C. H. Fancy
Chief
Bureau of Air Regulation

c: Alan Zahm, CD