August 21, 2003

Mr. J. A. Stall
Senior Vice President, Nuclear and
Chief Nuclear Officer
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: SAINT LUCIE PLANT, UNIT 1 - SECOND REQUEST FOR ADDITIONAL INFORMATION REGARDING THE PROPOSED SPENT FUEL POOL SOLUBLE BORON CREDIT AMENDMENT (TAC NO. MB6864)

Dear Mr. Stall:

By letter dated November 25, 2002, Florida Power and Light Company (FPL) submitted a request to amend Facility Operating License DPR-67 for Saint Lucie Unit 1. The proposed amendment would eliminate the need to credit Boraflex™ neutron absorbing material for reactivity control in the Unit 1 spent fuel pool and credit a combination of soluble boron and fuel position within the storage racks to maintain reactivity within the effective neutron multiplication factor limits of Title 10 of the *Code of Federal Regulation*, Section 50.68.

The U.S. Nuclear Regulatory Commission staff issued a request for additional information (RAI) on March 31, 2003, and FPL provided a response on May 14, 2003. The staff reviewed the May 14, 2003, response and identified the need for additional clarifying and supporting information. A response to the enclosed RAI is needed before we can complete the review. This request was discussed with your staff on August 15, 2003, and Mr. Ken Frehafer agreed that a response would be provided by September 30, 2003.

If you have any questions, please feel free to contact me at (301) 415-3974.

Sincerely,

/RA/

Brendan T. Moroney, Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-335

Enclosure: RAI

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

SPENT FUEL POOL SOLUBLE BORON CREDIT AMENDMENT

SAINT LUCIE PLANT, UNIT 1

DOCKET NO. 50-335

1. In the original amendment request, the licensee stated that it determined the bounding assembly by analyzing the two assembly types currently stored in the spent fuel pool (SFP) for both the upper-bound and lower-bound cladding thicknesses. Additionally, the licensee stated that it analyzed the various enrichments, cooling times, and burnups for both Region 1 and 2 racks. Since the licensee's determination of the bounding assembly excluded consideration of most of the manufacturing tolerance reactivity effects, describe how it can be assured that the final calculated maximum effective multiplication factor (k_{eff}) bounds the other assembly type.

2. In its May 14, 2003, request for additional information response, the licensee provided additional information regarding its proposed use of control element assemblies (CEAs) for reactivity control in the SFP. The repeated use of CEAs for multiple cycles may result in bowing, cracking, depletion or other properties which would make them unsuitable for crediting in an SFP criticality analysis. Provide additional information to describe the verification process to be used to determine the acceptability of a CEA before it is placed in the SFP and used for reactivity control. Specifically, describe in greater detail the analysis of the depletion effects on the criticality analyses, the typical life-span of CEAs in the St. Lucie Unit 1 reactor, any previously identified abnormalities in CEAs following removal from the reactor, and any procedures that will be used to determine the acceptability of individual CEAs.

3. In its amendment request, the licensee proposed to credit CEAs for reactivity control in the SFP. Since CEAs are not an integral (nonremovable) part of a fuel assembly or storage rack, the licensee must provide additional information to support their use. The licensee cited an August 19, 1998, letter from L. Kopp (U. S. Nuclear Regulatory Commission (NRC)) to T. Collins (NRC), "Guidance on the Regulatory Requirements for Criticality Analysis of Fuel Storage at Light-Water Reactor Power Plants," as part of the guidance it used in performing its criticality analyses. Additionally, Regulatory Guide (RG) 1.13, "Spent Fuel Storage Facility Design Basis," provides guidance on the methodology for performing criticality analyses in the SFP. Both documents describe strict controls on the use of fixed and/or removable neutron absorbers. Provide additional information on how the proposed amendment will satisfy the guidance in Section 5.B.5 of the Kopp letter and Section 5.1 (a and c only) of RG 1.13. In responding to the guidance in Section 5.1 (a and c only) of RG 1.13, the licensee should apply these criteria to the removable CEAs proposed to be used in the St. Lucie Unit 1 SFP.

4. The licensee stated, in its original amendment request, that it analyzed the misplacement of a fresh fuel assembly in a cell intended to hold a low-reactivity assembly (Case 4, assembly with CEA). However, the licensee stated this was not the bounding misloading event. Provide the following information regarding loading and storage of fuel in the Case 4 configuration, which credits the presence of CEAs:

a. Provide detailed information describing the loading and unloading procedures for movement of fuel assemblies and CEAs into Case 4 storage patterns. Specifically, the response should focus on the procedural controls that will be used to ensure the Case 4 pattern is not violated, even for brief periods of time, while fuel movement is occurring.

b. Submit the results of the misloading event analysis for Case 4, assembly without a CEA configuration. The licensee should provide the following: (1) a detailed description of the assumptions used in the analysis, (2) the basis for each assumption and why it results in conservative or bounding results, (3) the acceptance criteria the licensee evaluated the event against, including a justification for the criteria chosen, (4) a description of the methodology employed to perform the analysis, and (5) a detailed discussion of the results obtained, including a justification for why the results provide a conservative or bounding analysis.

c. The NRC staff has been unable to identify any precedents for crediting CEAs or other nonfixed neutron absorbers in an SFP criticality analysis. Provide additional information on any previous NRC-approved amendments related to this subject.

5. Since the licensee's criticality analyses are based on worst-case tolerance limits that are dependent on quality control measures instead of statistical uncertainties that use actual sample data to develop limits, provide a detailed description of the quality control measures in place that ensure all of the limits used in criticality analyses will be met.

Mr. J. A. Stall
Florida Power and Light Company

ST. LUCIE PLANT

cc:
Senior Resident Inspector
St. Lucie Plant
U.S. Nuclear Regulatory Commission
P.O. Box 6090
Jensen Beach, Florida 34957

Mr. R. E. Rose
Plant General Manager
St. Lucie Nuclear Plant
6351 South Ocean Drive
Jensen Beach, Florida 34957

Craig Fugate, Director
Division of Emergency Preparedness
Department of Community Affairs
2740 Centerview Drive
Tallahassee, Florida 32399-2100

Mr. T. Patterson
Licensing Manager
St. Lucie Nuclear Plant
6351 South Ocean Drive
Jensen Beach, Florida 34957

M. S. Ross, Attorney
Florida Power & Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Vice President, Nuclear Operations Support
Florida Power & Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Mr. Douglas Anderson
County Administrator
St. Lucie County
2300 Virginia Avenue
Fort Pierce, Florida 34982

Mr. Rajiv S. Kundalkar
Vice President - Nuclear Engineering
Florida Power & Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Mr. William A. Passetti, Chief
Department of Health
Bureau of Radiation Control
2020 Capital Circle, SE, Bin #C21
Tallahassee, Florida 32399-1741

Mr. J. Kammel
Radiological Emergency
Planning Administrator
Department of Public Safety
6000 SE. Tower Drive
Stuart, Florida 34997

Mr. William Jefferson, Jr.
Site Vice President
St. Lucie Nuclear Plant
6351 South Ocean Drive
Jensen Beach, Florida 34957