Florida Power & Light Company, 6501 South Ocean Drive, Jensen Beach, FL 34957

November 6, 2000

L-2000-231
10 CFR 50.90

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: St. Lucie Unit 1
Docket No. 50-335
Proposed License Amendment
Cycle 17 Reload Supplement

The purpose of this letter is to provide the Florida Power & Light Company (FPL) commitment specifying an upper limit of eight for the maximum number of solid stainless steel rods that could be used as replacement rods for fuel reconstitution when using the Siemens Power Corporation (SPC) methodology. The limit on the total number of replacement rods in any one assembly remains unchanged at 26 percent per assembly. During a conference call with the NRC project manager, NRC reactor systems branch reviewers, FPL, and SPC, on October 18, 2000, the NRC requested FPL to limit the maximum number of solid stainless steel rods that could be used as replacement rods for fuel reconstitution when using the SPC methodology.

By letter L-2000-154, dated July 19, 2000, FPL submitted a proposed license amendment for the Cycle 17 reload for St. Lucie Unit 1. One of the proposed changes requested relief from the fuel assembly reconstitution restrictions for peripheral low power fuel assemblies when using SPC Topical Report, *Application of ANF Design Methodology for Fuel Assembly Reconstitution*, ANF-90-082(P)(A) Revision 1 and Supplement 1, to reconstitute fuel for St. Lucie Unit 1.

Attachment 1 provides the revised description of the change and the revised safety analysis in support of the proposed amendment. Attachment 2, Determination of No Significant Hazards Consideration, of the original submittal remains unchanged and bounds this submittal. In accordance with 10 CFR 50.91 (b)(1), a copy of the change to the proposed amendment is being forwarded to the State Designee for the State of Florida.

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The schedule for approval of this proposed license amendment remains unchanged. Completion of the NRC review is requested by January 31, 2001, to support restart of Unit 1 for Cycle 17, which is currently scheduled for April 2001. Please issue the amendment to be effective on date of issuance and to be implemented within 60 days of receipt by FPL.

Please contact us if there are any questions about this submittal.

Very truly yours,

Rajiv S. Kundalkar

Rajiv S. Kundalkar
Vice President
St. Lucie Plant

RSK/GRM

Attachment

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant
Mr. William A. Passetti, Florida Department of Health and Rehabilitative Services

STATE OF FLORIDA)
) ss.
COUNTY OF ST. LUCIE)

Rajiv S. Kundalkar being first duly sworn, deposes and says:

That he is Vice President, St. Lucie Plant, for the Nuclear Division of Florida Power & Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information and belief, and that he is authorized to execute the document on behalf of said Licensee.

Rajiv S. Kundalkar

STATE OF FLORIDA

COUNTY OF ST. LUCIE

Sworn to and subscribed before me

this 6 day of November, 2000
by Rajiv S. Kundalkar, who is personally known to me.

Leslie J. Whitwell
Name of Notary Public - State of Florida

Leslie J. Whitwell
MY COMMISSION # CC646183 EXPIRES
May 12, 2001
BONDED THRU TROY FAIN INSURANCE, INC.

(Print, type or stamp Commissioned Name of Notary Public)

ATTACHMENT

REVISED SAFETY ANALYSIS

Revisions to the original submittal are marked with a line at the right of the paragraphs that include changes.

Revised Discussion of the Proposed Change for Item 2.8

2.8 FUEL ASSEMBLY RECONSTITUTION

The restrictions imposed on the SPC fuel assembly reconstitution methodology, documented in Siemens Power Corporation (SPC) Topical Report, *Application of ANF Design Methodology for Fuel Assembly Reconstitution*, ANF-90-082(P)(A) Revision 1 and Supplement 1, for limiting the number of inert rods/guide tubes per subchannel are proposed to be waived for core peripheral fuel assemblies. Additionally, it is proposed to allow solid stainless steel rods (no clad) as inert rods for reconstitution (a maximum of eight per assembly). The total number of inert replacement for fuel reconstitution (cladded inert rods plus a maximum of eight solid stainless steel rods) will remain unchanged from that in the SPC topical report (26 per assembly).

3.0 Revised Basis for Proposed Changes/Analysis of Impact on Safety for Item 3.7

3.7 FUEL ASSEMBLY RECONSTITUTION

St. Lucie Unit 1 has experienced, in the past, limited fuel failures in the peripheral fuel assemblies in locations adjacent to the guide tubes. The peripheral fuel assemblies are typically low powered and are not limiting from safety considerations. The proposed relief from the fuel assembly reconstitution restrictions will allow replacement of the fuel rods with inert solid steel rods near the guide tube locations found to be most susceptible for fretting failures. This change, if found necessary for implementation, will reduce the risk of reactor coolant radionuclide activity increase and subsequent potential adverse impacts.

The SPC methodology for fuel assembly reconstitution is described in the SPC Topical Report, *Application of ANF Design Methodology for Fuel Assembly Reconstitution*, ANF-90-082(P)(A) Revision 1 and Supplement 1. A justification of the use of a different type of inert rod as a replacement for fuel rods (a maximum of eight solid stainless steel) and an increased number of inert rods per subchannel than is allowed by the NRC safety evaluation report is provided below.

Solid Steel Inert Rod

SPC's topical report on fuel assembly reconstitution allows the use of inert replacement rods for fuel rods. The report specifically allows the use of stainless steel or Zircaloy slugs in standard fuel

rod cladding for the inert rod designs. In addition to these configurations, prior to the approval of the topical report, SPC has used solid stainless steel rods and solid Zircaloy rods with geometries machined to approximate the geometry of the fuel rods in reconstituted fuel assemblies and in shield assemblies.

SPC has performed an evaluation and concluded that these solid material rods are equivalent to the inert rods described in the topical report and are also acceptable replacements for fuel rods. This evaluation included the assembly-specific safety, mechanical, and neutronic evaluations described in the reference report.

The use of solid stainless steel rods is not significantly different than using Zircaloy clad inert rods with Zircaloy or stainless steel slugs. Slightly more material exists in the solid rod; however, this is easily accounted for in the reference report methodology.

The solid stainless steel rod is manufactured from common materials (such as 304 or 304L stainless steel) already used in SPC fuel assemblies. While the stainless steel rod provides a different material exposure to the coolant than the Zircaloy clad inert rod, the irradiation and oxide properties are fully acceptable (properties and performance information is available in industry literature). The differences in the material properties between the stainless steel and the Zircaloy cladding are easily accounted for in the topical report methodology.

FPL will restrict the number of solid stainless steel replacement rods to a maximum of eight per assembly. The limit of 26 percent on the total number of inert replacement rods per assembly including a maximum of eight solid stainless steel rods will remain unchanged, consistent with the SPC reconstitution topical report.

Increased Number of Inert Rods per Subchannel

The NRC safety evaluation report for the SPC topical report contains the following restriction:

> *"However, a licensee fuel reconstitution in accordance with this document should conform to certain limitations as described in TER Section 4.3: (1) BWR reconstituted assemblies are limited to 9 rods per assembly, and (2) PWR reconstituted assemblies are limited to two inert rods or one inert rod and a guide tube per subchannel, with a total of no more than 26 percent inert replacement rods per PWR assembly. There is one exception to these limitations and that is for assemblies located on the outer edge of the core where the outer inert rods are used for shielding the pressure vessel from irradiation damage and preventing embrittlement. The maximum limit of 26 percent inert rods per assembly, however, remains applicable to these core edge assemblies. Any further exceptions from these limitations will require review on a case-by-case basis."*

The NRC justification for the exception to the limitation on the number of inert rods and/or guide tubes in a PWR assembly per subchannel is applicable to any assembly on the outer edge of the core whether the edge assembly is for the purpose of shielding the vessel or not. SPC interprets the TER to indicate that the reason for the limitation on the number of inert rods and/or guide tubes in a PWR assembly per subchannel is due to a concern about the applicability of the DNB correlation to configurations with more inert rods. SPC concludes that the exception is granted for assemblies on the core edge due to the low power of these assemblies, these assemblies are not limiting from a DNB perspective, and thus the applicability of the DNB correlation is not a concern. The assemblies on the core outer edge operate at low power regardless of whether they are being used as shielding assemblies. It is therefore concluded that the SER restriction on the number of inert rods and/or guide tubes per subchannel does not apply to assemblies on the core outer edge.