DEC 1 1986

Docket No. 50-335

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Mr. C. O. Woody
Vice President
Nuclear Energy Department
Florida Power & Light Company
P. O. Box 14000
Juno Beach, Florida 33408

Dear Mr. Woody:

The Commission has issued the enclosed Amendment No. 75 to Facility Operating License No. DPR-67 for the St. Lucie Plant, Unit No. 1. This amendment consists of changes to the Technical Specifications in response to your application dated July 8, 1986, as supplemented by letter dated October 6, 1986.

This amendment reformats Section 5.6.1 entitled "Fuel Storage - Criticality." Section 5.6.1.a now addresses spent fuel storage and Section 5.6.1.b now addresses new fuel storage. In addition, the maximum U-235 enrichment that can be stored in the spent fuel pool and new fuel storage racks is increased from 3.7 weight percent to 4.0 weight percent.

A copy of the related Safety Evaluation is also enclosed. The notice of issuance will be included in the Commission's next bi-weekly Federal Register notice.

Sincerely,

Original signed by

E. G. Tourigny, Project Manager
PWR Project Directorate #8
Division of PWR Licensing-B

Enclosures:
1. Amendment No. 75 to DPR-67
2. Safety Evaluation

cc w/enclosures:
See next page

| | | | |
|---|---|---|---|
| PBD#8 | PBD#8 | OGC No legal objection | PBD#8 |
| PMKreutzer | ETourigny | | AThadani |
| 11/19/86 | 11/12/86 | 11/24/86 | 11/20/86 |

Mr. C. O. Woody
Florida Power & Light Company

St. Lucie Plant

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FLORIDA POWER & LIGHT COMPANY

DOCKET NO. 50-335

ST. LUCIE PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 75
License No. DPR-67

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Florida Power & Light Company, (the licensee) dated July 8, 1986, as supplemented by letter dated October 6, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, Facility Operating License No. DPR-67 is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and by amending paragraph 2.C.(2) to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 75 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Ashok C. Thadani, Director
PWR Project Directorate #8
Division of PWR Licensing-B

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 1, 1986

ATTACHMENT TO LICENSE AMENDMENT NO. 75

TO FACILITY OPERATING LICENSE NO. DPR-67

DOCKET NO. 50-335

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

| Remove Pages | Insert Pages |
|---|---|
| 5-5 | 5-5 |
| 5-6 | 5-6 |

CONTROL ELEMENT ASSEMBLIES

5.3.2 The reactor core shall contain 73 full length and no part length control element assemblies. The control element assemblies shall be designed and maintained in accordance with the original design provisions contained in Section 4.2.3.2 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements.

## 5.4 REACTOR COOLANT SYSTEM

DESIGN PRESSURE AND TEMPERATURE

5.4.1 The reactor coolant system is designed and shall be maintained:

a. In accordance with the code requirements specified in Section 5.2 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

b. For a pressure of 2485 psig, and

c. For a temperature of 650°F, except for the pressurizer which is 700°F.

VOLUME

5.4.2 The total water and steam volume of the reactor coolant system is 11,100 $\pm$ 180 cubic feet at a nominal $T_{avg}$ of 567°F.

## 5.5 EMERGENCY CORE COOLING SYSTEMS

5.5.1 The emergency core cooling systems are designed and shall be maintained in accordance with the original design provisions contained in Section 6.3 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements.

## 5.6 FUEL STORAGE

CRITICALITY

5.6.1.a The spent fuel storage racks are designed and shall be maintained with:

1. A $k_{eff}$ equivalent to less than or equal to 0.95 with the storage pool filled with unborated water, which includes the conservative assumptions as described in Section 9.1 of the FSAR.

CRITICALITY (Continued)

2. A center-to-center distance of not less than 12.53 inches between fuel assemblies placed in the storage racks.

3. A boron concentration greater than or equal to 1720 ppm. In addition, fuel in the storage pool shall be a U-235 enrichment of less than or equal to 4.0 weight percent.

b. The new fuel storage racks are designed for dry storage of unirradiated fuel assemblies having a U-235 enrichment less than or equal to 4.0 weight percent, while maintaining a $k_{eff}$ of less than or equal to 0.98 under the most reactive condition.

DRAINAGE

5.6.2 The fuel pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 56 feet.

CAPACITY

5.6.3 The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than 728 fuel assemblies.

## 5.7 SEISMIC CLASSIFICATION

5.7.1 Those structures, systems and components identified as seismic Class I in Section 3.2.1 of the FSAR shall be designed and maintained to the original design provisions contained in Section 3.7 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements.

## 5.8 METEOROLOGICAL TOWER LOCATION

5.8.1 The meteorological tower location shall be as shown on Figure 5.1-1.

## 5.9 COMPONENT CYCLE OR TRANSIENT LIMITS

5.9.1 The components identified in Table 5.9-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.9-1.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 75

TO FACILITY OPERATING LICENSE NO. DPR-67

FLORIDA POWER & LIGHT COMPANY

ST. LUCIE PLANT, UNIT NO. 1

DOCKET NO. 50-335

## 1.0 INTRODUCTION

By letter dated July 8, 1986, Florida Power & Light Company (FP&L) applied for an amendment to Facility Operating License No. DPR-67 of St. Lucie Unit 1 to increase the maximum fuel storage enrichment specified in Technical Specification 5.6.1. The revised limit would be changed from 3.7 weight percent to 4.0 weight percent of U-235. In support of this change, FP&L submitted Exxon Nuclear Company (ENC) report XN-NF-83-36, Revision 1, "St. Lucie Unit 1 New and Spent Fuel Storage Criticality Safety Evaluation for Natural Uranium Axial Blanket Fuel," dated Feburary 1986. This report summarizes the results of the criticality safety analyses performed for the handling and storage of new (unirradiated) and spent (irradiated) fuel at St. Lucie Unit 1, using ENC fuel with natural uranium axial blankets on both ends and a central fuel region enriched to 4.0 weight percent U-235.

## 2.0 EVALUATION

The St. Lucie Unit 1 spent fuel storage racks consist of square stainless steel cans having an inside dimension of 8.5 inches and a nominal wall thickness of 0.25 inches. The minimum distance between the centers of these cans is 12.53 inches. The new (unirradiated) fuel storage facility consists of a 10 x 10 fuel assembly array with the two middle rows removed and the cells spaced on 21-inch centers. The spent fuel is normally stored in pool water containing about 1720 ppm of soluble boron whereas the new fuel is normally stored in a dry (air) environment. Both of these normal storage arrangements result in extremely subcritical configurations. However, for conservatism, the spent fuel racks are calculated assuming no soluble boron in the water and the new fuel is assumed to be stored under various amounts of water moderation.

The KENO-IV Monte Carlo computer code was used to calculate the reactivities of the storage arrays. Neutron cross section data from the XSDRN 123 group library was generated for input to KENO-IV using the NITAWL and XSDRNPM codes. These models have been benchmarked by ENC against experimental data and have been found to adequately reproduce the critical values.

The spent fuel pool criticality calculations were based on no burnable poison or control rods in the fuel assemblies, unirradiated fuel with 4.0 weight percent U-235, and, as previously mentioned, no soluble boron in the water. In addition, a worst case calculation was made to ensure that the maximum $K_{eff}$ for fuel assemblies in the spent fuel racks will be less than the NRC acceptance criterion of 0.95. For this calculation, the most adverse combination of dimensional tolerances was assumed, resulting in a worst case $K_{eff}$ of 0.918 at the 95% confidence level.

The new fuel storage array was analyzed for varying degrees of moderation, also assuming no burnable poison or control rods and 4.0 weight percent U-235 in unirradiated fuel. For the case of full flooding, the array remains subcritical by more than 10% due to neutron isolation between assebmlies resulting from the large amount of water between them. This meets the NRC acceptance criterion of 0.95 for the fully flooded condition. Calculations assuming uniform moderation within and between fuel assemblies in the new fuel storage array were also performed for water volume fractions ranging from 15% to 2.5%. These calculations indicate a maximum reactivity occurs for a moderator void fraction between 0.90 and 0.95 with a value of about 0.925 at the 95% confidence level. This meets the NRC acceptance criterion of 0.98 for optimum moderation conditions.

It is possible to postulate events which could lead to an increase in storage rack reactivity such as the inadvertent drop of an assembly on top of the racks. However, for such events, credit may be taken for the approximately 1720 ppm of boron in the spent pool water or for the absence of water in the new fuel racks by application of the double contingency principle of ANSI 16.1-1975. This states that one is not required to assume two unlikely, independent, concurrent events to provide for protection against a criticality accident. The reduction in $K_{eff}$ caused by the boron or lack of water moderation more than offsets the reactivity addition caused by credible accidents.

Based on the above evaluation, the staff concludes that the spent fuel and new fuel storage racks at St. Lucie Unit 1 can accommodate any number of ENC 14 x 14 fuel assemblies of maximum enrichment no greater than 4.0 weight percent U-235.

## 3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously published a proposed finding that the amendment

involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR §51.22(c)(9). Pursuant to 10 CFR §51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 4.0 CONCLUSION

We have concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: December 1, 1986

Principal Contributor: L. Kopp