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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 76

TO FACILITY OPERATING LICENSE NO. DPR-67

FLORIDA POWER & LIGHT COMPANY

ST. LUCIE PLANT, UNIT NO. 1

DOCKET NO. 50-335

INTRODUCTION

By letter dated October 17, 1986, the Florida Power and Light Company (the licensee) made application to amend the Technical Specifications (TS's) of the St. Lucie Unit 1 plant. The proposed amendment changes the nominal active fuel length for fuel assemblies specified in T.S. 5.3.1 to permit the loading of fuel with an active length of between 134.1 and 136.7 inches. This change to the active fuel length will permit the licensee to use a fuel rod design that is more resistant to fretting type failures than the present design. The staff has reviewed the proposed amendment and prepared the following evaluation.

EVALUATION

The fuel used in St. Lucie Unit 1 in Cycles 1 through 7 has a nominal active length of 136.7 inches. The proposed change would permit the use of a slightly shorter active fuel length of 134.1 inches. This slightly shorter active fuel length would allow the use of a longer solid Zircaloy end cap. The overall fuel rod length, however, would remain the same. The longer Zircaloy end cap and its extension above the lower grid spring contact point would offer increased protection against fuel clad defects caused by fretting at the lower end of the fuel rod.

T.S. 5.3.1 appears in the Design Features section of the TS's and concerns fuel assemblies. The purpose of this TS is to provide the nominal design characteristics of fuel assemblies. The licensee has quantified the effect of the proposed change in the active fuel length on the core physics parameters by performing calculations with two three-dimensional models that were specifically constructed for the evaluation. One of the models used fuel of the current, longer active fuel length while the other model used fuel with both the short and standard sized active fuel rods. Differences in the calculations were then attributed to the effect of the different active fuel lengths in the two models. The following effects on the reactor core physics parameters were noted: (1) there is a small increase in the core

average linear heat generation rate; (2) the total peaking factor increased by less than 1%; (3) the axial peaking factor increased by less than 1%; (4) the relative assembly power was unaffected by the proposed change; and (5) the integrated radial peaking factor and radial planar peaking factors were negligibly affected. Thus, the proposed change does not significantly affect the reactor core physics parameters and, consequently, the safety analysis including 10 CFR Part 50, Appendix K requirements. The effects of the fuel length change on core power peaking and power distributions are small enough that they can be accommodated within existing design margins. In addition, the licensee plans to account for the changes to the power distributions in the cycle specific physics inputs to the safety analysis.

Since the shorter active fuel length will have an insignificant effect on the reactor core physics parameters and since the safety analysis for each reload cycle will include the effects on reactor physics inputs, the staff concludes that the proposed change to T.S. 5.3.1 for St. Lucie Unit 1 is acceptable.

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.

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 22, 1986

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