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SUBJECT: Application for amend to license DPR-23, request for license amendment increased fuel enrichment.

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10 CFR 50.90

Carolina Power & Light Company  
Robinson Nuclear Plant  
PO Box 790  
Hartsville SC 29551

Robinson File No: 13510HA  
Serial: RNP/94-1470

**JUL 28 1994**

United States Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, DC 20555

**H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2**  
**DOCKET NO. 50-261/LICENSE NO. DPR-23**  
**REQUEST FOR LICENSE AMENDMENT - INCREASED FUEL ENRICHMENT**

Gentlemen:

In accordance with 10 CFR 50.90, Carolina Power & Light (CP&L) Company requests a revision to the Technical Specifications (TS) for the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. The proposed amendment will increase the allowable fuel enrichment from  $4.2 + 0.05$  weight percent of U-235 to  $4.95 + 0.05$  weight percent of U-235.

Enclosure 1 provides an affidavit as required by 10 CFR 50.30(b).

Enclosure 2 provides a detailed description of the proposed changes and the basis for the changes.

Enclosure 3 details, in accordance with 10 CFR 50.91(a), CP&L's analysis to support a conclusion that the proposed changes do not involve a significant hazards consideration.

Enclosure 4 discusses the environmental considerations related to this amendment request.

Enclosure 5 provides page change instructions for incorporating the proposed revisions.

Enclosure 6 provides the proposed TS pages.

Enclosure 7 provides a supporting report, EMF-94-113, "H. B. Robinson New and Spent Fuel Criticality Analyses."

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Highway 151 and SC 23 Hartsville SC

ADD 1

In accordance with 10 CFR 50.91(b), CP&L is providing the State of South Carolina with a copy of the proposed license amendment.

In order to support the schedule for receipt of new fuel for cycle 17, CP&L requests approval of this request prior to January 30, 1995.

Please refer any questions regarding this submittal to Mr. K. R. Jury at (803) 383-1363.

Yours very truly,



R. M. Krich  
Manager - Regulatory Affairs

JSK:sgk

c: Mr. Max K. Batavia, Chief, Bureau of Radiological Health (SC)  
Mr. S. D. Ebnetter, Regional Administrator, USNRC, Region II  
Ms. B. L. Mozafari, USNRC Project Manager, HBRSEP  
Mr. W. T. Orders, USNRC Senior Resident Inspector, HBRSEP  
Attorney General (SC)

Enclosures:

1. Affidavit
2. Basis for Change Request
3. 10 CFR 50.92 Evaluation
4. Environmental Considerations
5. Page Change Instructions
6. Technical Specification Pages
7. EMF-94-113

Affidavit

C. S. Hinnant, having been first duly sworn, did depose and say that the information contained in letter RNP/94-1470 is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, contractors, and agents of Carolina Power & Light Company.

C S Hinnant

Sandra W. Rhodes

Notary (Seal)

My commission expires: 3-27-99

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BASIS FOR CHANGE REQUEST

Background

The proposed license change is required to support delivery of reload batch enrichments anticipated for Cycle 17 and beyond. These reloads will require the use of fuel enrichments exceeding the current TS limit of  $4.20 + 0.05$  weight percent (w/o)  $U_{235}$  (nominal 4.20). This proposed TS change, with supporting Criticality Analysis and Significant Hazards Evaluation, conclude that storage of fuel with enrichments less than or equal to  $4.95 + 0.05 U_{235}$  (nominal 4.95) in the New Fuel Storage Vault, and in the Spent Fuel Storage Pool's Low and High Density Racks is acceptable with respect to acceptance criteria on maximum Keff as delineated in the Technical Specifications.

Proposed Change

This amendment request revises TS sections 5.3.1.3, 5.4.2.1, 5.4.2.2, and the section 5 references to allow the use of fuel enriched to  $4.95 + 0.05$  weight percent U-235.

Basis

EMF-94-113, "H. B. Robinson New and Spent Fuel Criticality Analyses" documents analyses performed by Siemens Power Corporation which indicate the maximum Keff for the New Fuel Storage Racks can be maintained less than 0.95 for  $4.95 + 0.05$  w/o  $U_{235}$  fuel if the vault is flooded with unborated water, and in an optimum moderation event, Keff can be maintained less than 0.98. It also documents analyses which indicate the maximum Keff for the Spent Fuel Pool's Low and High Density Racks can be maintained less than 0.95 for  $4.95 + 0.05$  w/o  $U_{235}$  fuel if the spent fuel pit is flooded with unborated water.

Additional issues are: changes in Spent Fuel Pool heat load due to the eventual long term storage of more highly enriched fuel, and changes that the fuel's fission product inventory might have on UFSAR Chapter 15 radiological consequences.

Addressing heat load first, although decay heat is not explicitly a function of enrichment, increased enrichment does generally lead to higher burnups of which decay heat is a weak function. However, the proposed amendment does not increase the maximum assembly burnup specified in Chapters 4 and 15 of the Updated Final Safety Analysis Report (UFSAR), therefore there will be no effect on the Spent Fuel Pool heat load.

Radiological consequences are documented in Chapter 15 of the UFSAR. In these evaluations, the key parameter determining fission product inventory (and hence radiological consequences) is maximum allowable burnup. Since the proposed TS change does not increase the maximum allowable burnup, the only issue is the effect of increased enrichment on fission product inventory. Because fission product inventory is a strong function of burnup and an inconsequential function of enrichment, the referenced Chapter 15 radiological consequences evaluations remain bounding.

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BASIS FOR CHANGE REQUEST (Cont'd)

In all cases, the radiological consequences are insignificant relative to 10 CFR 100 limits.

Conclusions

Accordingly, the proposed changes have no impact upon plant operation, safety, or accident consequences. No safety related equipment, safety functions, or plant operations will be altered as a result of the proposed change. The proposed change is acceptable for implementation at the Robinson Plant.

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10 CFR 50.92 EVALUATION

The NRC has provided standards in 10 CFR 50.92(c) for determining whether a significant hazards consideration exists. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. Carolina Power & Light Company has reviewed this proposed license amendment request and concluded that its adoption would not involve a significant hazards determination. The bases for this conclusion are as follows:

Proposed Change

This amendment request revises Technical Specifications sections 5.3.1.3, 5.4.2.1, 5.4.2.2, and the section 5 references to allow the use of fuel enriched to  $4.95 \pm 0.05$  weight percent U-235.

Basis

1. The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated. Increasing the allowable  $U_{235}$  enrichment will have no influence on the probability of an accident previously evaluated. No changes will be made to any safety related equipment, systems, or setpoints used in determining the probability of an evaluated accident. Neither will the proposed amendment allow operation of the facility or safety equipment outside applicable limitations or restrictions. Plant design bases will not be altered. With respect to the Fuel Handling Accident, the manner in which the fuel is handled will not be altered. The heat load on the Spent Fuel Pool will not be increased and the cooling and circulation systems and equipment will be unaltered. Therefore, there will be no significant increase in the probability of an accident previously evaluated.

The proposed change does not increase maximum allowable burnup or fission product inventory. Since fission product inventory is an inconsequential function of enrichment, radiological consequences evaluated in the Updated Final Safety Analysis Report (UFSAR) will not increase. The proposed change will not alter the function of safety related equipment designed to mitigate the consequences of an accident previously evaluated or allow operation of the facility outside applicable limitations or restrictions. Accordingly the proposed change will not involve a significant increase in the consequences of an accident previously evaluated.

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10 CFR 50.92 EVALUATION

Basis (Cont'd)

2. The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed increase in allowable enrichment will not result in any design, operation, or function changes to any safety related equipment designed to prevent and/or mitigate accidents, to any setpoints or systems, or to any portion of the plant design basis. Operation of the facility will remain within all required limitations and restrictions. With respect to the Fuel Handling Accident, the manner in which the fuel is handled will not be altered. The heat load on the Spent Fuel Pool will not be increased and the cooling and circulation systems and equipment will be unaltered. Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.
3. The proposed amendment does not involve a significant reduction in the margin of safety. NRC acceptance criteria and thus the acceptable margin of safety to criticality for the Spent Fuel Pool and New Fuel Storage Vault criticality are defined in Section 5.0 of the Technical Specifications. For the Spent Fuel Pool the criteria specify that Keff must be maintained less than 0.95 when the pit is flooded with unborated water. For the New Fuel Storage Vault, the Keff must remain less than 0.95 if the vault is flooded with unborated water, and must remain below 0.98 in an optimum moderation event. Analyses performed in support of the proposed change demonstrate that these acceptance criteria will continue to be met. With respect to radiological consequences, the margin of safety is defined by 10 CFR 100 limits which will not be challenged. The analyses conclude that fission product inventory and thus radiological consequences reported in Chapter 15 of the UFSAR will not change. Accordingly the proposed license amendment will not involve a significant reduction in the margin of safety.

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ENVIRONMENTAL CONSIDERATIONS

In the Notice of Environmental Assessment and Finding of No Significant Impact for extended burnup fuel use in Commercial LWRs, Federal Register (53 FR 6040), dated February 29, 1988, the NRC concluded that the environmental impacts summarized in Table S-4 of 10 CFR 51.52 for the burnup of level of 33 GWD/MT are conservative and bound the corresponding impacts for burnup levels to 60 GWD/MT and  $U_{235}$  enrichments up to 5.0 weight percent of  $U_{235}$ . The NRC further concluded that there are no significant adverse radiological or non-radiological impacts associated with the use of extended fuel burnup and/or increased enrichment. A Finding of No Significant Impact was issued and the NRC determined that an environmental impact statement need not be prepared for actions within the scope of their conclusions.

The proposed license amendment which will raise the maximum allowable enrichment to  $4.95 \pm 0.05$  weight percent (w/o)  $U_{235}$  (4.95 nominal) with maximum burnups remaining below 60 GWD/MT is bounded by the conclusions of the Environmental Assessment and Finding of No Significant Impact. Therefore, CP&L concludes that a separate environmental assessment need not be prepared for the proposed amendment.

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PAGE CHANGE INSTRUCTIONS

<u>Removed Page</u>	<u>Inserted Page</u>
5.3-1	5.3-1
5.4-1	5.4-1
5.4-2	5.4-2