

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 81 TO FACILITY OPERATING LICENSE NO. DPR-23
CAROLINA POWER AND LIGHT COMPANY
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261

Introduction

By letter dated January 9, 1984, Carolina Power and Light Company (the licensee) submitted an Application for Amendment to their Operating License No. DPR-23 for H. B. Robinson Unit No. 2 (NBR2), which would change the maximum number of fuel assemblies that can be stored in the storage locations in the HBR2 Spent Fuel Pool (SFP). Specifically, the proposed HBR2, Technical Specification (TS) 5.4.4 states that the HBR2 SFP design provides storage space for 544 fuel assemblies; consequently, it replaces the existing HBR2 TS 5.4.4 which states that the SFP design provides storage space for 534 fuel assemblies. In their submittal, the licensee noted that License Amendment No. 69, issued June 8, 1982, and subsequent TS changes, approved an increase in the spent fuel storage capacity at HBR2 to 544 spaces which included 10 unused spare spaces controlled administratively. The licensee proposes to utilize these unused spare spaces to accommodate 10 additional fuel assemblies. The licensee states that these 10 additional spare spaces can accommodate either ten ten-year old spent fuel assemblies (from normal annual refueling discharges) or ten eight-year old fuel assemblies in the event of a core discharge. The proposed revisions would include reference to neutron absorbent material between fuel assemblies to assure a $K_{eff} \leq 0.95$ and would allow use of ten spent fuel assembly storage locations which had previously been maintained as

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spares. The licensee justified the proposed change by stating that their analysis have shown that the storage to 10 additional fuel assemblies in the above manner will have negligible impact on their previously calculated heat loads for the storage of 534 fuel assemblies.

Criticality Evaluation

The analysis of the criticality of the H. B. Robinson Unit No. 2 spent fuel storage racks was reviewed and approved by the NRC by letter dated June 8, 1982 (License Amendment No. 69). In this analysis, credit was taken for neutron absorption by the stainless steel can and wrapper and by the Boraflex absorber and our evaluation assumed the presence of these absorbers. Therefore, the revision of Technical Specification 5.4.2 to include reliance on neutron absorbent material between assemblies to assure $k_{eff} \leq 0.95$ is acceptable.

The criticality analysis assumed an infinite lattice of fuel assemblies in the spent fuel pool. From a criticality standpoint, therefore, the utilization of the ten spent fuel assembly storage locations originally designated as unused spares for spent fuel assembly storage is acceptable provided the maximum enrichment of the assemblies is no greater than 3.9 weight percent U-235, the maximum value authorized for storage. Technical Specification 5.4.4 may, therefor, refer to the spent fuel storage pool as providing for storage of 544 fuel assemblies.

Heat Load Evaluation

The staff has examined the applicability of the findings stated in the Safety Evaluation Report (SER) dated June 8, 1982 (License Amendment No. 69)

regarding the second expansion of the storage capacity of the HBR2 SFP to the heat load conditions that will result if the proposed change is implemented. The evaluation findings referred to above deal with the increase of storage spaces from 276 to 544 in the HBR2 SFP, and the heat loads and temperatures of the SFP water associated with the storage of 534 fuel assemblies both for the normal refueling discharge case and the normal plus one full core discharge case.

Our analyses of the heat loads and the SFP water temperature indicates that for the normal discharge case, the heat load increases by approximately 1.2 percent with a resulting SFP water temperature increase of approximately 0.3 percent over the previously calculated values for the storage of 534 spent fuel assemblies when the 10 spare spaces are assumed to be filled with 10 additional one year old spent fuel assemblies. The one year decay assumption is more conservative than the licensee's statement that 10 year old assemblies will be placed in the spare locations following normal annual refuelings. Furthermore, for the normal discharge case, the heat load increases by approximately 14.4 percent and the pool water temperature increases by approximately 3.4 percent over the previously calculated values for the storage of 534 spent fuel assemblies when the 10 spare spaces are more conservatively assumed to be filled with 10 additional 118 hour old spent fuel assemblies. For both of the above cases, our calculations show that the pool water temperature remains below 140°F and therefore meets the guidelines stated in SRP Section 9.1.3 in this regard.

Our analyses of the heat loads and SFP water temperature for the case of normal plus full core assembly discharge indicates that the heat load increases by approximately 0.6 percent and the SFP water temperature increases by approximately

0.2 percent over the previously calculated values for the storage of 534 spent fuel assemblies when the 10 spare spaces are assumed to be filled with 10 additional one year old spent fuel assemblies. This assumption is more conservative than the licensee's statement that the spare locations would be filled with eight year old assemblies following a full core offload. The resulting pool water temperature meets the SRP Section 9.1.3 guidelines.

In addition, we have determined that the proposed change to HBR2 TS 5.4.4 does not alter our previous findings identified in the earlier SER regarding the adequacy of the load handling operations associated with the spent fuel assembly storage in the HBR2 SFP, and the ability of the makeup system to replenish the water lost in the unlikely event pool boiling should occur. These have been determined to be acceptable.

Based on our review of the licensee's submittal and our study of the earlier SER referred to above, we conclude that the licensee's proposed change to HBR2 TS 5.4.4 meets the guidelines of Standard Review Plan (SRP) Section 9.1.2 and 9.1.3, "Spent Fuel Storage" and "Spent Fuel Pool Cooling and Cleanup System" respectively, and is therefore, acceptable.

Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of

environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: May 28, 1984

Principal Contributors:

L. Kopp
T. Chandrasekaran