June 18, 2001

Mr. James Scarola, Vice President
Shearon Harris Nuclear Power Plant
Carolina Power & Light Company
Post Office Box 165, Mail Code: Zone 1
New Hill, North Carolina 27562-0165

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING AMENDMENT REQUEST FOR STEAM GENERATOR REPLACEMENT/POWER UPRATE - SHEARON HARRIS NUCLEAR POWER PLANT (TAC NOS. MB0199 AND MB0782)

Dear Mr. Scarola:

By letters dated October 4, and December 14, 2000, you requested license amendments to revise the Shearon Harris Nuclear Power Plant Facility Operating License and Technical Specifications to support steam generator replacement and to allow operation at an uprated core power level of 2900 MWt.

During the course of our review of these requests, the NRC staff has determined that additional information is necessary to complete our review. The enclosed request for additional information was e-mailed to your licensing staff on May 22, 2001, and discussed during a conference call on June 6, 2001. A mutually agreeable target date of July 16, 2001, for your response was established. If circumstances result in the need to revise the target date, please call me at the earliest opportunity.

Sincerely,

/RA/

Richard J. Laufer, Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosure: As stated

cc w/encl: See next page

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Request for Additional Information
Request for License Amendment: Steam Generator Replacement/Power Uprate
Shearon Harris Nuclear Power Plant
Docket No. 50-400

1. With regard to the feedwater system, the steam generator replacement (SGR) and power uprate will require increases in flows and pressure from those required for the current steam generators at the current power level. On page 2.2-2 of Enclosure 7 to the October 4, 2000 letter, Carolina Power and Light Company (CP&L) stated that these changes, along with the piping changes in the supply to the new steam generators, require reanalyses of the system with respect to issues such as: waterhammer potential due to rapid closure of the main feedwater isolation valve, and system pressure transients due to postulated transients such as bubble collapse. However, CP&L has not provided/discussed the results of this reanalyses. Please provide detailed discussions to address the effects of the SGR/power uprate on these issues.

2. With regard to the adequacy of spent fuel pool (SFP) cooling during core offload, on page 2.9-2 of Enclosure 7 to the October 4, 2000 letter, CP&L stated that administrative controls are placed on the minimum cooling time (spent fuel assemblies (SFAs) "in-reactor" hold time) prior to transferring irradiated fuel from the core to the SFP in order to maintain the pool at less than or equal to 137°F[1] during core offload outages. Since the heat removal capability of the SFP cooling system is a function of the component cooling water system (CCWS) supply water temperature, and the decay heat load is a function of the SFAs "in-reactor" hold time prior to discharging SFAs from the reactor, please provide the following information:

   a. For the case of planned full core offload (referred to as normal full core offload shuffle in the Final Safety Analysis Report (FSAR)) with a worst-case single failure of the SFP cooling system, provide the calculated SFAs "in-reactor" hold time required for various CCWS supply water temperatures (i.e., 90°F, 95°F, 100°F, 105°F, 110°F, 115°F, 120°F, 125°F, etc.).

   b. Demonstrate that the worst-case single failure of a component/system has been identified.

   c. Briefly discuss the provisions established in administrative controls to require analyses be performed to determine/establish SFAs "in-reactor" hold time required prior to discharging SFAs from the reactor to ensure that the SFP water temperature limit of 140°F will not be exceeded.

3. On page 2.9-3 of Enclosure 7 to the October 4, 2000 letter, CP&L stated that each fuel pool heat exchanger has a design duty of 15.06 x 10^6 Btu/hr. Also, on page 2.6-3 of Enclosure 7, CP&L stated that based on the CCWS evaluation results, the CCW supply temperature peaks at 124.8°F. However, for the case of planned (SGR/Uprate) full core offload, the heat loads for SFP A/B and SFP C/D are 40.56 x 10^6 Btu/hr and 1 x 10^6 Btu/hr,

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[1] This SFP water temperature limit of 137°F will be increased to 140°F for SGR/Uprate operations.

respectively. It is not clear how the SFP water will be maintained to only reach a maximum equilibrium temperature of 140°F.

Please provide detailed discussions to demonstrate that, for the case of a planned full core offload with the CCWS supply water temperature at 124.8°F and a worst-case single failure of the SFP cooling system, that the SFP water will be maintained to only reach a maximum equilibrium temperature of 140°F. In addition, please provide a curve to show the calculated SFP water temperatures as a function of reactor shutdown time.

4. With regard to the SFP water temperature monitoring system, please provide the following information:

   a. The setpoint of the high water temperature alarm for the SFP.

   b. Information supporting a determination that there is sufficient time for operators to intervene in order to ensure that the SFP water temperature limit of 140°F will not be exceeded.

   c. Discuss what are the corrective actions (i.e., prohibit fuel handing, aligning other systems to provide SFP cooling, etc.) to be taken in the event of a high SFP water temperature alarm.

5. In the unlikely event that there is a complete loss of SFP cooling capability, the SFP water temperature will rise and eventually will reach boiling temperature. Provide the time to boil (from the pool high temperature alarm caused by loss-of-pool cooling to boiling) and the boil-off rate (based on the SGR/Uprate heat load of 42.46×10^6 Btu/hr from the unplanned full core off-load). Also, discuss sources and capacity of make-up water and the methods/systems (indicating system seismic design Category) used to provide the make-up water.

6. With regard to condensate inventory:

   On page 2.8.6 of Enclosure 7 to the October 4, 2000 letter, CP&L stated that the minimum required inventory to satisfy the cooldown operation is 116,178 gallons and the available inventory is 238,000 gallons in the condensate storage tank (CST).

   On page 2.17.3-2 (indicating Technical Specification (TS) Bases Change) of Enclosure 7 to the October 4, 2000 letter, CP&L stated that review of the station blackout (SBO) transient has determined that the total condensate required to cool down the reactor cooling system during the 4 coping period hours after SBO has increased to approximately 112,200 gallons. The usable volume of CST is 238,000 gallons.

   On page 25 (discussing Bases for proposed change) of Enclosure 1 to the October 4, 2000 letter, CP&L stated that the existing TS minimum CST volume is 270,000 gallons, providing a usable volume of 235,000 gallons.

   Please clarify the above differences.

a. With the existing TS minimum CST volume of 270,000 gallons, what is the available condensate inventory in the CST, 238,000 gallons or 235,000 gallons?

b. What is the minimum required condensate inventory to satisfy the cooldown operation for an SBO event, 116,178 gallons or 112,200 gallons?

7. For loss-of-coolant accident and main steamline break containment analyses, please indicate key input parameters that are different from the FSAR besides SGR/Power Uprate-related parameters and the effect on the peak containment pressure and temperature.