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SUBJECT: Application for amend to license DPR-23, revising completion time for UHS in event that SW temp exceeds 95 F as prescribed withing LCO 3.7.8.

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**Carolina Power & Light Company**

Robinson Nuclear Plant
3581 West Entrance Road
Hartsville SC 29550

Serial: RNP-RA/99-0148

JUL 30 1999

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

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

REQUEST FOR TECHNICAL SPECIFICATION CHANGE
TECHNICAL SPECIFICATION 3.7.8 - ULTIMATE HEAT SINK

Sir or Madam:

Carolina Power & Light (CP&L) Company requests a change to the Technical Specifications (TSs) for the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2 in accordance with 10 CFR 50.90 on an exigent basis in accordance with 10 CFR 50.91. The requested change is to provide a revised Completion Time for the Ultimate Heat Sink (UHS) in the event that Service Water (SW) temperature exceeds 95 °F as prescribed within Limiting Condition for Operation (LCO) 3.7.8.

Attachment I provides an affidavit as required by 10 CFR 50.30(b).

Attachment II provides a description of the current condition, a description of the proposed change, a safety assessment, a basis for a conclusion that the proposed change does not involve a significant hazards consideration and an environmental impact consideration which demonstrates that the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)((9) and (10)).

Attachment III provides a markup of the proposed revised TS.

Attachment IV provides retyped pages for the proposed TS and Bases.

In accordance with 10 CFR 50.91(b), CP&L is providing the State of South Carolina with a copy of this letter with attachments.

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A severe and sustained period of high temperatures is causing record energy demand in the Carolinas. As a result, System Reliability Alert Levels 1 and 2, have been invoked on a number of occasions during the period from July 21 through July 30, 1999. Reliability Alert Level 1 is implemented when projected load and reserve requirements will utilize available capacity. Reliability Alert Level 2 is implemented when projected load and reserve requirements are marginally greater than the available capacity. In addition, administrative controls have been implemented during this same period to restrict maintenance and operational activities that have a risk of adversely affecting plant reliability.

CP&L requests that this proposed change be reviewed and approved on an exigent basis to permit implementation during this summer. The severe and sustained period of hot weather described above, combined with the thermal and hydrological characteristics of the UHS, have resulted in a situation where the existing 8 hour Completion Time may not be of sufficient duration to allow UHS temperature to return below 95°F. Additionally, an extended period of this severely hot weather may further result in several long temperature excursions above 95°F and could result in unwarranted plant power reductions and shutdowns during a time of record energy demand.

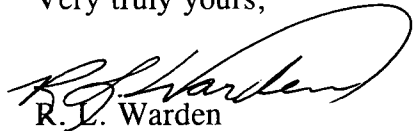
Long term resolution of this situation has been addressed by previous submittals to include UHS Required Actions and Completion Times in the event that SW exceeds the design limit, and to increase the UHS LCO temperature value from 95°F to 97°F. Specifically, on June 26, 1998, a Technical Specification change request was submitted that would establish permanent Required Actions and Completion Times in the event that SW temperature exceeds 95°F. The June 26, 1998 submittal is being reviewed by the NRC Staff in conjunction with an industry Technical Specification Task Force item. Also, on May 27, 1999, a Technical Specification change request was submitted to increase the maximum allowable UHS temperature from 95°F to 97°F.

Due to the nature and complexity of this May 27, 1999 submittal, NRC approval of this proposed Amendment was requested by June 30, 2000.

The proposed change does not involve a significant hazards consideration.

If you have any questions concerning this matter, please contact Mr. Harold Chernoff.

Very truly yours,



R. L. Warden

Manager - Regulatory Affairs

United States Nuclear Regulatory Commission

Serial: RNP-RA/99-0148

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Attachments

- I. Affidavit
 - II. Request For Technical Specifications Change
 - III. Markup Of Current Technical Specifications And Bases Pages
 - IV. Retyped Technical Specifications And Bases
- c: Mr. Max K. Batavia, Chief, Bureau of Radiological Health (SC)
Mr. L. A. Reyes, USNRC, Region II
Mr. R. Subbaratnam, USNRC, NRR
USNRC Resident Inspector, HBRSEP
Attorney General (SC) (w/out Enclosures)

Affidavit

**State of South Carolina
County of Darlington**

Mr. D. E. Young, having been first duly sworn, did depose and say that the information contained in letter RNP-RA/99-0148 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.

Dale E Young

Sworn to and subscribed before me

this 30th day of July 1999

(Seal) Albert L. Garrou
Notary Public for South Carolina

My commission expires: March 22nd 2005

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL SPECIFICATION CHANGE
TECHNICAL SPECIFICATIONS 3.7.8 - ULTIMATE HEAT SINK

Description of Current Condition

The Ultimate Heat Sink (UHS) provides the heat sink for operating and decay heat produced by various plant components during normal operation, transients, and accidents. The Service Water (SW) system and the Component Cooling Water (CCW) system are used to transfer heat from plant components to the UHS. The SW system draws water directly from the UHS to provide cooling water to several plant components. Also, the SW system cools the CCW system, which in turn, cools other plant components. The CCW system serves as an intermediate barrier to prevent leakage of potentially radioactive fluid directly to the SW system and environment from plant components containing reactor coolant.

The UHS for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2 is Lake Robinson, as noted in Updated Final Safety Analysis Report (UFSAR), Section 9.2.4, "Ultimate Heat Sink." Lake Robinson was developed for use initially for condenser cooling of HBRSEP, Unit No. 1, a fossil plant. When HBRSEP, Unit No. 2, a nuclear plant, was licensed on July 31, 1970, the unit was designed to use Lake Robinson both for condenser cooling and as the UHS. HBRSEP, Unit No.2 was licensed in accordance with the proposed draft General Design Criteria, prior to the promulgation of 10 CFR 50, Appendix A. Therefore, the UHS was not designed to satisfy the requirements of the final General Design Criteria. Additionally, the UHS was not designed to satisfy Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Power Plants," Position C.1, which stipulates a 30 day cooling supply. The UHS for HBRSEP, Unit No. 2 is capable of providing cooling water for at least 22 days following a Design Basis Accident (DBA), as stated in the Bases to Limiting Condition For Operation (LCO) 3.7.8, "Ultimate Heat Sink."

The two principal safety functions of the UHS are the dissipation of residual heat after reactor shutdown, and dissipation of residual heat after an accident. The basic performance requirements for the UHS are that a 22 day supply of water be available, and that the design basis temperatures of safety-related equipment are not be exceeded. These performance requirements are verified through periodic surveillances which assure that lake water level is ≥ 218 feet mean sea level and SW inlet temperature is $\leq 95^{\circ}\text{F}$ while the plant is operating in MODES 1, 2, 3, and 4.

Currently, the Completion Time for Required Action A.1 of LCO 3.7.8, "Ultimate Heat Sink," provides 8 hours to restore the UHS temperature to less than or equal to 95°F . If this cannot be accomplished, the plant is required to be in MODE 3 within 6 hours, and subsequently to MODE 5 within 36 hours.

Description of the proposed change

A revised Completion Time of 72 hours is proposed for Required Action A.1 of LCO 3.7.8, "Ultimate Heat Sink." The Required Action is to restore SW temperature to less than or equal to 95°F within 72 hours. The 72 hour Completion Time is acceptable considering the low probability of a DBA occurring during this period, and is consistent with the existing Completion Times for conditions of similar and greater safety significance. The provisions of Required Action A.1 of LCO 3.7.8 are in effect only through September 30, 1999, as stipulated in a preceding note within TS Section 3.7.8. Therefore, the proposed Completion Time of 72 hours will not remain in effect beyond September 30, 1999.

Safety Assessment

The UHS temperature is a function of insolation, operation of HBRSEP, Units No. 1 (fossil) and 2 (nuclear), hydrology of Lake Robinson watershed, and meteorological conditions, including shifts in wind direction and velocity, which affect the efficiency of evaporative cooling, natural convection, and diurnal radiant heat losses. Average heat input to Lake Robinson due to insolation is comparable to the heat input from HBRSEP, Unit Nos. 1 and 2 during summer operation. Condenser cooling water and SW discharged from the plant is returned to Lake Robinson via a 4.2 mile discharge canal which originates just east of the plant, parallels the west shore of the lake, and terminates in the lake near its upper end. During full power operation, the nominal transit time of water through the discharge canal is approximately 3.5 hours. Hence, the effect of a plant shutdown in the event that the SW temperature limit is exceeded will not immediately be effective on the temperature of SW entering the plant. However, in the summer months during periods of hot weather, a diurnal effect of alternating insolation of the lake during the day and increased radiant and evaporative heat loss during the night results in a cyclic variation of lake temperature.

In support of HBRSEP's May 27, 1999, request for a UHS TS change, an evaluation of the effects of SW temperature in excess of 95°F was performed. SW system temperature is an input to the containment analysis contained in UFSAR Section 6.2. It is also a design assumption for the Spent Fuel Pool Cooling System, Auxiliary Feedwater System, CCW System and its loads, the Emergency Diesel Generators, Containment Air Recirculation Cooling System, room coolers for certain safety-related areas, and non-safety-related systems. Where SW temperature is relied upon to maintain these components within operating limits, this evaluation found that the components could perform their safety-related functions with SW temperatures above the 95°F limit and up through 99°F. The current containment analyses use a SW temperature of 95°F as a limiting input parameter. Since there is a low probability that a DBA would occur during the proposed 72 hour Completion Time, and the magnitude of any temperature increase above 95°F is expected to be small, this proposed change is of low risk significance.

A detailed discussion of the affects of SW temperature in excess of 95°F on plant equipment is included in the May 27, 1999 submittal. The discussions in that submittal reflect a proposed maximum SW temperature of 97°F. The 97°F temperature limit was proposed as a permanent revision to the UHS design temperature and, as such, was adjusted downward from the currently analyzed 99°F limit to reserve margin for operational degradation, such as heat exchanger tube plugging and fouling.

The SW system success criteria as credited in the Probabilistic Safety Analysis (PSA) have been evaluated. The number of SW pumps required under various accident scenarios is dependent upon SW flow rates and is not impacted by the increased SW temperature. Although the increased temperature may decrease the efficiency of heat exchangers cooled by SW, these systems remain capable of performing their intended functions as credited in the PSA. In addition, each additional shutdown during a cycle results in an additional $3.7\text{E-}7$ to the annual core damage frequency, and an additional $6.3\text{E-}10$ to the annual large early release frequency. It has also been determined that a small increase in peak containment pressure would have a negligible affect on the probability of containment failure.

The proposed 72 hour Completion Time is consistent with existing Required Action Completion Times of similar or greater safety significance. Comparable Completion Times to restore design basis parameters are contained in LCOs 3.5.2, "Emergency Core Cooling System (ECCS) ECCS - Operating," 3.7.6, "Component Cooling Water (CCW) System," and 3.7.7, "Service Water System (SWS)." Each of these LCOs contain a condition that allows one train of the specified system to be out of service for a 72 hour period of time, provided one train remains in service and capable of performing its design function. In this condition, each system can perform its safety-related function, but cannot meet its design basis with respect to the single-failure criteria.

The proposed 72 hour Completion Time for LCO 3.7.8 was developed based upon the potential time needed for the UHS to return to a temperature less than or equal to 95°F given the current severe and sustained hot weather conditions, the ability of required equipment to perform its safety-related function, and the low sensitivity of containment analysis to the assumed initial SW temperature. As previously discussed, equipment required to mitigate a DBA is not adversely affected by SW temperatures as high as 99°F. It has also been determined that the impact on containment performance from this elevated temperature is negligible.

Summary

Recognizing recent weather conditions and their deleterious affect on UHS temperature, the existing 8 hour Completion Time introduces the possibility of unwarranted plant power changes. The risk associated with a plant shutdown transient could be reduced by adopting the proposed 72 hour Completion Time to restore the LCO. The proposed TS change does not

allow continuous operation above the maximum design temperature of the SW system. If SW temperature exceeds the 95°F limit, 72 hours would be allowed to restore temperature to below 95°F before a plant shutdown would be required. Additionally, the proposed Completion Time provides a reasonable likelihood for restoration of the LCO before requiring the plant to enter into a shutdown transient. If the LCO is not restored within the Completion Time, Condition B of LCO 3.7.8 would be entered and a plant shutdown would be required.

No Significant Hazards Consideration Determination

Carolina Power & Light (CP&L) Company has evaluated the proposed TS change and has concluded that it does not involve a significant hazards consideration. This conclusion is in accordance with the criteria set forth in 10 CFR 50.92. The bases for the conclusion that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change does not involve any physical alteration of plant systems, structures or components. The proposed change provides a revised allowed time for the plant condition where UHS temperature exceeds the design limit of 95°F. SW system temperature is not assumed to be an initiating condition of any accident analysis evaluated in the safety analysis report (SAR). Therefore, the revised limitation for SW temperature to be in excess of the design limit does not involve an increase in the probability of an accident previously evaluated in the safety analysis report. The SW system supports operability of safety-related systems used to mitigate the consequences of an accident. Plant equipment has been analyzed and determined able to perform its safety-related function through the allowed maximum SW temperature of 99°F. Performance of the containment has not been the subject of a specific re-analysis at the proposed temperatures with current licensing basis methodologies. However, based on engineering judgement, the affect on containment performance from the elevated SW temperature for the proposed period of time would not be significant. The magnitude of any increase in SW temperature in excess of the design limit is expected to be small based on historical data and experience for the UHS. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated in the SAR.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change does not involve any physical alteration of plant systems, structures or components. The temperature of the SW when near or slightly above the design temperature does not introduce new failure mechanisms for systems, structures

or components not already considered in the SAR. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created.

3. Does this change involve a significant reduction in a margin of safety?

The proposed change will allow a small increase in SW temperature above the design basis limit for a limited period of time. This will delay the requirement to shutdown the plant for an additional 64 hours beyond the currently 8 hours Completion Time. Design margins are affected which are associated with systems, structures and components which are cooled by the SW system, and system temperature is an input assumption for mitigating the effects of a DBA. However, allowing this additional time for SW temperature to exceed the design limit is expected to have a negligible effect on containment performance, and no adverse impact on other analyzed plant equipment. Therefore, there is no significant reduction in margin of safety associated with this proposed change.

Environmental Impact Consideration

10 CFR 51.22(c)(9) provides criteria for identification of licensing and regulatory actions which are eligible for a categorical exclusion or are otherwise not required to have an environmental review. A proposed change to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed change would not (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increases in the amounts of any effluents that may be released offsite; (3) result in an increase in individual or cumulative occupational radiation exposure. CP&L has reviewed this request against these criteria and determined that the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9).

Proposed Change

This change involves an increased allowance to continue operation for a period of 72 hours with UHS temperature greater than the temperature limits provided in current TS LCO 3.7.8, "Ultimate Heat Sink (UHS)."

Basis

The requested change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) for the following reasons.

1. As demonstrated in the No Significant Hazards Consideration Determination, the proposed change does not involve a significant hazards consideration.

2. The proposed change is limited to the provision of an allowed out-of-service time for the UHS due to exceeding its temperature limit. This change does not allow for an increase in plant power level, does not increase the production, nor alter the flow path or method of disposal of radioactive waste or byproducts. There will be a slight increase in the temperature of the plant cooling water effluent, but the effect is very small and the permitted plant effluent discharge temperature limit will not be exceeded. Therefore the proposed change does not result in a significant change in the types, or significant increase in the amounts, of any effluent that may be released offsite.
3. The proposed change does not involve a physical change to the facility design, configuration, maintenance, or testing. The proposed change is limited to allowing operation to continue for a period of 72 hours. Therefore the proposed change does not affect individual or cumulative occupational radiation exposure.