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required action & limits effective period of changed info to  
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**Carolina Power & Light Company**

Robinson Nuclear Plant  
3581 West Entrance Road  
Hartsville SC 29550

RNP File No: 13510HA

Serial: RNP-RA/98-0139

JUL 22 1998

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

SUPPLEMENT 1 TO REQUEST FOR TECHNICAL  
SPECIFICATIONS CHANGE ULTIMATE HEAT SINK

Sir or Madam:

Carolina Power & Light (CP&L) Company provides Supplement 1 to its request for 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. The requested change, to provide a Required Action and Completion Time for the Ultimate Heat Sink (UHS) in the event that service water temperature exceeds the design limit, was originally submitted to the NRC by letter dated June 26, 1998. This supplement adds an additional Required Action and limits the effective period of the changed information to no later than September 30, 1998.

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

Attachment II provides a revised description of the current condition, a revised description of the proposed change, a revised safety assessment, and a revised basis for a conclusion that the proposed change does not involve a significant hazards consideration. Revisions to the information provided by letter dated June 26, 1998, are indicated by a vertical line in the right margin of the page. The 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)), was provided to the NRC by letter dated June 26, 1998, and is not revised or included in this supplement.

Attachment III provides a revised markup of the proposed revised TS.

Attachment IV provides revised 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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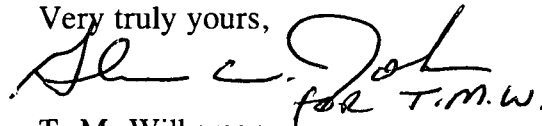
By letter dated June 26, 1998, CP&L requested that this proposed change be reviewed and approved on an exigent basis to permit implementation of the change this summer. The exigent circumstances arise from the need to avoid transients associated with plant derating or shutdown until the long term resolution of this condition is implemented. As service water temperatures approach the required limit, the potential exists for repetitive entry into a shutdown transient as diurnal Lake Robinson temperature variations occur. The long term resolution is to perform an engineering analysis to justify an increase in the allowed temperature for the UHS. As stated in CP&L letter dated June 26, 1998, a license amendment request for an increase in the service water temperature limits will be submitted to the NRC by mid-December 1998.

The current UHS requirements for service water temperature were adopted into the TSs upon implementation of the Improved Technical Specifications (ITS) in November 1997. Prior to this summer, the containment average air temperature and the National Pollutant Discharge Elimination System (NPDES) permit were most limiting to operations during hot weather conditions. During Refueling Outage 18 in the Spring of 1998, measures to improve cooling in the containment were implemented. Additionally in October 1997, the NPDES permit was changed to remove a monthly averaging requirement for the peak daily thermal discharge temperature limit. The effect of the NPDES permit change was to remove a need to derate the HBRSEP Units during hot weather periods towards the end of a calendar month.

Consequently, neither the containment average air temperature or the NPDES permit are limiting to operations, and the effect of hot weather conditions on service water temperature, which was formerly masked by the other limitations, has become limiting during hot weather conditions. Lake Robinson has experienced unusually warm and dry weather conditions during the month of June 1998 which resulted in the service water temperature approaching the 95°F limit. Therefore, the condition, in which the need for a change to the TS to allow 8 hours to restore service water temperature to within its limit, could not have been foreseen sufficiently in advance to avoid exigent action on the proposed change.

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

Very truly yours,

A handwritten signature in dark ink, appearing to read 'T.M.W.', with a stylized flourish above it.

T. M. Wilkerson  
Manager - Regulatory Affairs

ALG/alg

Attachments

- I. Affidavit
- II. Supplement 1 to Request For Technical Specifications Change, Ultimate Heat Sink
- III. Revised Markup Of Technical Specifications And Bases Pages
- IV. Revised Retyped Technical Specifications And Bases

United States Nuclear Regulatory Commission

Serial: RNP-RA/98-139

Page 3 of 3

c: Mr. Max K. Batavia, Chief, Bureau of Radiological Health (SC)  
Mr. L. A. Reyes, USNRC, Region II  
Mr. J. W. Shea, USNRC  
USNRC Resident Inspector, HBRSEP  
Attorney General (SC) (w/out attachments)

Affidavit

**State of South Carolina**

**County of Darlington**

D. E. Young, having been first duly sworn, did depose and say that the information contained in letter RNP-RA/98-0139 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 22<sup>nd</sup> day of July 1998

(Seal) Albert H. Carson  
Notary Public

My commission expires: March 22<sup>nd</sup> 2005

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

SUPPLEMENT 1 TO REQUEST FOR TECHNICAL SPECIFICATIONS CHANGE  
ULTIMATE HEAT SINK

Description of Current Condition

The Ultimate Heat Sink (UHS) provides a heat sink for removing heat from plant equipment during a transient or accident, as well as during normal operation. This is done by utilizing the Service Water System (SWS) and the Component Cooling Water (CCW) System.

The UHS has been defined as the Lake Robinson Impoundment, including necessary retaining structures, and the canals or conduits connecting the sources with, but not including, the cooling water system intake structures as discussed in the Updated Final Safety Analysis Report (UFSAR), Section 9.2.4. 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 are that a 22 day supply of water be available, and that the design basis temperatures of safety related equipment not be exceeded.

The UHS is required to be OPERABLE and is considered OPERABLE if the maximum temperature does not exceed the maximum design temperature of the equipment served by the SWS. To meet this condition, the UHS temperature should not exceed 95°F.

If the maximum temperature exceeds 95°F, the plant is required to be in MODE 3 within 6 hours and subsequently to MODE 5 within 36 hours. No time is allowed for service water temperature to exceed 95°F without initiating preparations to shut down the plant.

Description of the proposed change

A new Condition is proposed to be added to Limiting Condition For Operations (LCO) 3.7.8, "Ultimate Heat Sink," for the plant condition in which service water temperature exceeds 95°F. Required Action A.1 is to restore service water temperature to less than or equal to 95°F with a Completion Time of 8 hours. The 8 hour Completion Time is acceptable considering the low probability of a Design Basis Accident occurring during this period and is consistent with the existing Completion Time for conditions of similar safety significance. Required Action A.2 is to verify that service water temperature is  $\leq 99^{\circ}\text{F}$  once within 1 hour and once per hour thereafter. Additionally, two notes to the ACTIONS and Condition C are added to ensure a specific expiration time for this proposed change and to restore the existing requirements after September 30, 1998.

### **Safety Assessment**

The UHS temperature is a function of insolation, operation of H. B. Robinson Steam Electric Plant (HBRSEP), Units No. 1 (fossil) and 2 (nuclear), hydrology of Lake Robinson watershed, and meteorological conditions 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 HBRSEP, Unit No. 1 and 2 produced heat input during the summer. Condenser cooling water and SWS discharged from the plant is returned to greater Lake Robinson via a 4.2 mile long 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 of HBRSEP, the nominal transit time of water through the discharge canal is approximately 3.5 hours (Reference 1). Hence, the effect of a plant shutdown in the event that the service water temperature limit is exceeded will not immediately be effective on the temperature of service water entering the plant. However, in the summer months during periods of hot weather, a diurnal effect of alternating insolation of the lake water during the day and increased radiant and evaporative heat loss during the night results in a variation of lake water temperature around a 24 hour cycle.

The 8 hour Completion Time is consistent with existing Required Actions of similar safety significance. Comparable Completion Times to restore design basis parameters are contained in LCOs 3.5.4, "Refueling Water Storage Tank (RWST), and 3.6.5, "Containment Air Temperature." If the RWST boron concentration is less than required, or the RWST temperature is outside of the required limits for operability of the RWST, Required Action 3.5.4 A.1 allows 8 hours to restore RWST boron concentration or RWST temperature to within limits. In this condition, neither the Emergency Core Cooling System (ECCS) nor the Containment Spray System can perform their functions in accordance with design. The 8 hour Completion Time was developed based upon the time needed to restore the RWST to within temperature or boron limits and upon the fact that the contents of the RWST are still available for injection. Similarly, if containment average air temperature is not within the limit, Required Action 3.6.5 A.1 requires that containment average air temperature be restored to within the limit within 8 hours. The 8 hour Completion Time was developed based upon the low sensitivity of containment analysis to the initial temperature assumed in the analysis and to provide sufficient time to correct minor problems.

The existing Specification introduces the possibility of additional plant shutdown transients. The risk associated with these transients could be reduced by the addition of a Required Action Completion Time to restore the LCO. The proposed change to Technical Specifications does not allow continuous operation above the maximum design temperature of the SWS. If service water temperature exceeds the 95°F limit, 8 hours would be allowed to restore the service water temperature to below 95°F before 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. An increase in service water temperature in excess of the design limit is expected to be small due to the limited time allowed by the proposed change in conjunction with the slow rate of temperature increase experienced

from thermal changes in Lake Robinson. 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.

An evaluation of the effects of service water temperature in excess of 95°F has been performed. The SWS temperature is an input to the containment analysis contained in UFSAR Section 6.2. The SWS temperature is also a design assumption for the Spent Fuel Pool Cooling System, Auxiliary Feedwater System, Component Cooling Water 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 components rely upon service water temperature to maintain the components within operating temperature limits, the evaluation found that the components could withstand service water temperatures above the 95°F limit and up to 99°F.

The limiting aspect identified in this evaluation was operation of the Steam Driven Auxiliary Feedwater Pump in the self cooling mode with a water source in excess of 99°F. This results in bearing temperatures in excess of the manufacturer's recommended limits. Therefore, Required Action A.2 ensures that service water temperature is monitored closely when temperatures are above 95°F.

The containment analyses use the service water temperature of 95°F as a limiting input parameter. Therefore, it is appropriate to limit the amount of time that service water temperature may be above the 95°F. Since the probability that a Design Basis Accident would occur during this period of time is low, and the expected temperature increase above the limit is small this proposed change is of low risk significance.

Lake Robinson was developed for use initially for condenser cooling for HBRSEP, Unit No. 1. When HBRSEP, Unit No. 2 was licensed on July 31, 1970, the unit was designed to use Lake Robinson both for condenser cooling and UHS. HBRSEP, Unit No. 2 was licensed in accordance with proposed draft General Design Criteria and prior to the promulgation of 10 CFR 50, Appendix A, and therefore, the UHS was not designed to satisfy the requirements of the final General Design Criteria. Additionally, the UHS does not meet the Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Power Plants," position for 30 day cooling capacity as is stated in the Bases to LCO 3.7.8. Because the UHS cooling capacity is less than that normally provided for plants utilizing standard technical specifications, the proposed addition of a Required Action Completion Time to LCO 3.7.8 is appropriate for plant specific consideration in the Technical Specifications.

#### References:

1. NUREG-75/024, "Final Environmental Statement, H. R. Robinson Nuclear Steam Electric Plant Unit 2," U. S. Nuclear Regulatory Commission, April 1975.



### **No Significant Hazards Consideration Determination**

Carolina Power & Light (CP&L) Company has evaluated the proposed Technical Specification change and has concluded that it does not involve a significant hazards consideration. The 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 an allowed time for the plant condition resulting from service water temperature in excess of the design limit of 95°F and places an expiration date beyond which the current requirements are restored. The Service Water System (SWS) temperature is not assumed to be an initiating condition of any accident analysis evaluated in the safety analysis report. Therefore, the allowance of a limited time for service water 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 (SAR). The SWS supports operability of safety related systems used to mitigate the consequences of an accident. An increase in service water temperature in excess of the design limit is expected to be small due to the limited time allowed by the proposed change in conjunction with the generally slow rate of temperature increase experienced from thermal changes in Lake Robinson. 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 service water when near or slightly above the service water 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 service water temperature above the design basis limit for the service water system and delay the requirement to shutdown the plant when the service water system design limit is exceeded by 8 hours. There are design margins associated with systems, structures and components that are cooled by the service water system that are affected. The service water system temperature is an

input assumption for mitigating the effects of design basis accidents. However, an increase in service water temperature in excess of the design limit is expected to be small due to the limited time allowed by the proposed change in conjunction with the slow rate of temperature increase experienced from thermal changes in Lake Robinson. Therefore, there is no significant reduction in margin of safety associated with this change.

United States Nuclear Regulatory Commission  
Attachment III to Serial: RNP-RA/98-0139  
6 Pages

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

SUPPLEMENT 1 TO REQUEST FOR TECHNICAL SPECIFICATIONS CHANGE  
ULTIMATE HEAT SINK

REVISED MARKUP OF TECHNICAL SPECIFICATIONS  
AND BASES PAGES