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SUBJECT: Submits request for one-time Tech Specs change re ultimate
heat sink for Unit 2.Util requests that proposed one-time
change be reviewed & approved by 990601 to permit
implementation of change prior to hot weather this summer.

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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/99-0075

APR 12 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 ONE-TIME TECHNICAL
SPECIFICATIONS CHANGE - ULTIMATE HEAT SINK (UHS)**

Sir or Madam:

Carolina Power & Light (CP&L) Company requests a one-time 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 proposed change provides Required Actions and Completion Times for the Ultimate Heat Sink (UHS) that allow plant operation for up to 8 hours when the service water temperature exceeds the 95°F surveillance limit, require an hourly surveillance when service water temperature exceeds 95°F, and provide an upper UHS temperature limit of 99°F beyond which a plant shutdown is required. The proposed change is requested to be effective through September 30, 1999.

By letter dated March 26, 1999, CP&L requested a change to the TSs to permanently add a Required Action and Completion Time for the Ultimate Heat Sink (UHS) in the event that the service water temperature exceeds the current 95°F surveillance limit. Based on discussions with the NRC Staff, approval of the permanent change is not feasible by the requested June 1, 1999, date. Therefore, CP&L is requesting a one-time change until the permanent change can be approved.

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

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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 TS and Bases.

Attachment IV provides retyped pages for the 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.

CP&L requests that the proposed one-time change be reviewed and approved by June 1, 1999, to permit implementation of the change prior to hot weather this summer. CP&L is prepared to meet with the Staff at their earliest convenience to discuss the proposed change. The proposed change does not involve a significant hazards consideration.

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

Very truly yours,



R. L. Warden

Manager - Regulatory Affairs

DNB/dnb

Attachments

- I. Affidavit
 - II. Request For Technical Specifications Change, Ultimate Heat Sink (UHS)
 - 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, NRC, Region II
Mr. R. Subbaratnam, NRC
NRC Resident Inspector, HBRSEP
Attorney General (SC) (w/out Enclosures)

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/99-0075 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 12th day of April 1999

(Seal) Alfred Carson
Notary Public for South Carolina

My commission expires: March 22nd, 2005

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

REQUEST FOR ONE-TIME TECHNICAL SPECIFICATIONS CHANGE - ULTIMATE HEAT SINK (UHS)

Description of Current Condition

The Ultimate Heat Sink (UHS) provides a heat sink for the 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 second 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 UHS. HBRSEP, Unit No. 2 was licensed in accordance with the proposed draft General Design Criteria and was licensed 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 requires 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, as stated in the Bases to Limiting Condition For Operations (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 not be exceeded. These performance requirements are verified through periodic surveillances that ensure 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. If either of these surveillances is not satisfied while the plant is operating in MODES 1, 2, 3, and 4, the plant is required to be in MODE 3 within 6 hours and in MODE 5 within 36 hours. No time is allowed for SW temperature to exceed 95°F without initiating preparations to shut down the plant. The current requirement for SW inlet temperature to be $\leq 95^{\circ}\text{F}$ was incorporated into the Technical Specifications upon implementation of the Improved Technical Specifications in November 1997.

As a result of unusually hot, dry weather in 1998, it appeared that the UHS temperature could exceed 95°F, which would require derating or shutting down the plant. Prior to 1998, the containment average air temperature and the thermal discharge limits of National Pollutant Discharge Elimination System (NPDES) permit were more limiting to plant operation during hot weather than the SW temperature. As a result of the monthly averaging requirement for peak daily thermal discharge limit being removed from the NPDES permit in October 1997, and measures to improve containment air cooling being implemented during the refueling outage in the spring of 1998, the SW temperature, which was formerly masked by other limitations, became more limiting during the hot, dry weather conditions in 1998.

In anticipation of the UHS temperature exceeding 95°F, CP&L requested a change to Technical Specification 3.7.8 by a letter dated June 26, 1998, that would allow plant operation above 95°F for up to 8 hours. The purpose of the change was to reduce the risk associated with plant shutdown transients. The Technical Specification change was supported by an engineering evaluation, which concluded that the components that rely on the SW System for cooling are able to operate at a SW temperature of up to 99°F. Also, a Probabilistic Safety Assessment (PSA) evaluation determined that allowing 8 hours for the UHS temperature to return to $\leq 95^\circ\text{F}$ would not impact the PSA model success criteria, and if the UHS temperature exceeded the 95°F for less than 8 hours, not having to shut down the plant decreases the core damage probability. The SW System mitigates the containment response for a Main Steamline Break (MSLB) inside containment and a Large Break Loss of Coolant Accident (LOCA) inside containment. These events were not reanalyzed at the higher SW temperature, but the probability is very low that a MSLB or LOCA would occur during the limited time when the UHS was above 95°F.

Prior to the Technical Specification change being approved, unusually hot and dry weather conditions prompted CP&L to request a Notice of Enforcement Discretion (NOED) by a letter dated June 27, 1998 until the Technical Specification change could be approved. The request proposed a similar change to Technical Specification 3.7.8 with an upper temperature limit of 99°F, and as a long term resolution for this condition, committed to perform an engineering analysis to justify an increase in the allowed SW temperature. The request for a NOED was accepted by the Nuclear Regulatory Commission (NRC) on July 1, 1998.

Based on a request from the NRC Staff, CP&L subsequently submitted a supplement to the requested change to Technical Specification 3.7.8 by a letter dated July 22, 1998, that limited the effective period of the change until September 30, 1998. The provisions of License Amendment No. 179, which were effective through September 30, 1998, were issued by letter dated July 29, 1998.

Since the summer of 1998, CP&L has evaluated in greater detail the components cooled by the SW System to ensure that the components can perform their intended function(s) at a higher SW temperature. The capability of the Containment Air Recirculation Fan Coolers to remove heat from the containment following a MSLB inside containment or a LOCA inside containment could not be evaluated in detail without reanalyzing these events at the higher SW temperature. Therefore, CP&L is reanalyzing the containment response to a MSLB inside containment and a

Large Break LOCA inside containment. As committed in previous correspondence, CP&L will submit a proposed change to the Technical Specifications, which justifies plant operation at a higher SW temperature for an unlimited period of time, when these analyses are completed.

However, CP&L is requesting a Technical Specification change to add a Required Action Completion Time to LCO 3.7.8, which can be approved independent of the request for a higher SW temperature. The addition of a Required Action Completion Time is considered a plant specific change to Technical Specifications because the HBRSEP Unit No. 2 UHS cooling capacity is less than that normally provided for plants with a UHS that complies with the final General Design Criteria and Regulatory Guide 1.27.

Description of the Proposed Change

The current Technical Specifications contain three Conditions. Conditions A and B apply to a previous one-time amendment. Conditions A and B were in effect until September 30, 1998. Condition C came into effect after September 30, 1998.

The proposed change places Conditions A and B in effect until September 30, 1999, and Condition C in effect after September 30, 1999.

Condition A is the plant condition in which service water exceeds 95°F. For Condition A, 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. Required Action A.2 verifies that service water temperature is $\leq 99^{\circ}\text{F}$ once within 1 hour and once per hour thereafter.

Condition B is the plant condition in which the Required Action and Completion Time of Condition A are not met, or service water temperature exceeds 99°F, or UHS is inoperable for reasons other than Condition A. For Condition B, Required Action B.1 is to have the plant in Mode 3 within 6 hours and Required Action B.2 is to have the plant in Mode 5 within 36 hours.

The two existing notes to the ACTIONS for the applicability of Conditions A, B, and C are revised to specify the expiration date for Conditions A and B and to restore the existing requirements of Condition C after 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 which affect the efficiency of evaporative cooling, natural convection, and diurnal radiant heat losses. Condenser cooling water and SW System water 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. Hence, a plant shutdown in the event that the service water temperature limit is exceeded will not have an immediate effect 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 existing Specification introduces the possibility of additional plant shutdown transients. During the period of time the plant is shutting down (service water temperature exceeds 95°F) and raising power (service water temperature restored to 95°F or less), there is a higher likelihood of a reactor trip than during steady-state operation. This represents one component of risk of core damage because mitigating systems are challenged on any trip or shutdown. Even without a reactor trip, the shutdown to hot standby challenges the mitigating systems. The risk may be reduced by the adding a Required Action Completion Time such that shutting down the plant is not required for transient lake temperature fluctuations that are above 95°F for a short period of time. The proposed change to Technical Specifications does not allow continuous operation above the maximum design temperature of the SW System used in system operating calculations and safety analyses. 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 initiation of a plant a shutdown. The service water temperature is not expected to increase significantly beyond 95°F 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. If the LCO is not restored within the Completion Time, proposed Condition B of LCO 3.7.8 would be entered and a plant shutdown would be required.

The 8 hour Completion Time is consistent with existing Required Actions of similar safety significance. A comparable Completion Time to restore a design basis parameter is contained in LCO 3.5.4, "Refueling Water Storage Tank (RWST). The RWST, like the UHS, is a large water mass whose temperature is dependent on the ambient weather conditions. If 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 temperature to within limits. In this condition, neither the Emergency Core Cooling System (ECCS) nor the Containment Spray System may be able to perform their functions in accordance with design requirements. The 8 hour Completion Time was developed based upon the time needed to restore the RWST to within limits and upon the fact that the contents of the RWST are still available for injection. The condition where the RWST temperature is higher than the allowed temperature is similar to a high UHS temperature because the operator cannot take reasonable actions to restore the RWST temperature to within limits as there are no plant systems designed to cool the RWST.

The containment analyses for MSLB inside containment and a Large Break LOCA inside containment assume a service water temperature of 95°F. The SW System removes heat from

the containment via the Containment Air Recirculation System Fan Coolers to mitigate the pressure and temperature excursion inside containment during these events. Therefore, it is appropriate to limit the amount of time that service water temperature is above 95°F. Since the probability is very low that a design basis accident would occur during the short period of time that service water is above 95°F and the expected temperature increase above the 95°F limit as a result of hot weather conditions is small, plant operation for a short period of time with the service water temperature above 95°F has low risk significance.

An evaluation of the effects of service water temperature in excess of 95°F was performed in 1998 to support the requested a change to Technical Specification 3.7.8. The SW System temperature is an operating 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 operate with service water temperatures above 95°F.

Since the summer of 1998, CP&L has further evaluated the capability of components cooled by the SW System to perform their intended function. Some components, such as the Emergency Diesel Generators (EDGs), Steam Driven Auxiliary Feedwater Pump, and Component Cooling Water System (including Spent Fuel Pool Cooling), were specifically reevaluated because of the complex effect of operation at a higher SW temperature. In addition, the ability to achieve cold shutdown following a fire and a Station Blackout were evaluated at a higher SW temperature. These calculations and evaluations show that components are fully capable of performing their intended safety function up to a service water temperature of 99°F.

The MSLB inside containment and a Large Break LOCA inside containment are being reanalyzed to confirm that the Containment Air Recirculation System Fan Coolers adequately mitigate containment pressure and temperature. Preliminary results from the containment analyses indicate that a 1°F increase in service water temperature has a minimal effect on peak containment pressure (~0.1 psig) and peak containment temperature (~0.04°F). Therefore, when service water temperature exceeds 95°F, the containment pressure and temperature resulting from a MSLB inside containment or a LOCA inside containment are not expected to increase significantly and the effect on equipment environmental qualification and containment leakage is negligible.

In addition, the Probabilistic Safety Assessment (PSA) model was used to evaluate the increased risk from plant operation when the Containment Air Recirculation System Fan Coolers may not be fully capable of performing their intended safety function. The other components cooled by the SW System need not be considered in the PSA evaluation as deterministic calculations and evaluations confirm their capabilities. The total core damage frequency at HBRSEP, Unit No. 2 is 4.92E-05 per year. The large early release frequency is 8.0E-06 per year. With the assumption that the Containment Air Recirculation System Fan Coolers are completely inoperable for the entire year, the core damage frequency is unaffected and the large early release frequency is only

increased by 0.3% or $2\text{E-}08$ per year. This change is less than the acceptance criteria of $5.0\text{E-}08$ per year for large early release fraction used in Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk Informed Decisionmaking: Technical Specifications." The assumption of complete inoperability year-round is extremely conservative because the Containment Air Recirculation System Fan Coolers' performance should only be marginally affected when service water temperature exceeds 95°F by a small amount, and the service water temperature is only expected to exceed 95°F for a very small fraction of the entire year. If calculated on a "per use" basis, a single entry into the Required Action Completion Time for a duration of eight (8) hours in a year results in an increase of the large early release frequency of $2\text{E-}11$ per year. Therefore, the PSA model shows that the increase in risk of plant operation when service water temperature exceeds 95°F is insignificant.

An upper limit of 99°F is proposed for service water temperature during plant operation because the components cooled by the CCW System have not been evaluated for operation above this temperature, the capability of multiple components may be degraded when the service water temperature is over 99°F , and the cumulative effect of the multiple degradations is difficult to predict.

In summary, a plant specific change to the Technical Specifications is proposed to accommodate UHS cooling capacity that is less than that normally provided for plants with a UHS that complies with the final General Design Criteria and Regulatory Guide 1.27. The proposed change adds a Required Action Completion Time of 8 hours when service water temperature exceeds 95°F to prevent increased risk by requiring a plant shutdown. The amount of time that the plant will be operating above 95°F is expected to be short and will be limited in duration to 8 hours by proposed Condition A. The operation of safety related components is unaffected or only minimally affected at service water temperatures up to 99°F . In addition, plant operation above 95°F does not affect the core damage frequency and the increase in the large early release frequency is insignificant. Therefore, plant operation when the service water temperature is greater than 95°F has low risk significance.

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 allows plant operation for a short period of time when the service water temperature exceeds 95°F, requires an hourly surveillance when service water temperature exceeds 95°F, provides an upper UHS temperature limit beyond which a plant shutdown is required, and specifies an expiration date beyond which the current requirements are restored. If the service water temperature is restored within the allowed time, a plant shutdown is not required. This minimizes plant transients, which reduces the probability of a reactor trip and the resulting challenges to mitigating systems. A service water temperature of up to 99°F does not increase the failure rate of systems, structures or components because the systems, structures, and components are designed for higher temperatures than at which they operate.

The Service Water (SW) System temperature is not assumed to be an initiating condition of any accident evaluated in the safety analysis report. Therefore, the allowance of a limited time for service water temperature to be in excess of 95°F does not involve an increase in the probability of an accident previously evaluated in the safety analysis report (SAR). The SW System supports operability of safety related systems used to mitigate the consequences of an accident. The service water temperature is not expected to increase significantly beyond 95°F 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. The capability of components to perform their safety related function is not affected up to a service water temperature of 99°F with the exception of the Containment Air Recirculation Fan Coolers. The heat removal capacity of the Containment Air Recirculation Fan Coolers is not expected to be significantly reduced by a small increase in service water temperature. If heat removal is not significantly reduced, containment pressure and leakage will not be significantly increased, and the doses from containment leakage will not be significantly increased. 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. A service water temperature of up to 99°F does not introduce new failure mechanisms of systems, structures or components not already considered in the SAR because the systems, structures, and components are designed for higher temperatures than at which they operate. 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 SW System and delay by 8 hours the requirement to shutdown the plant when the service water system design limit is exceeded. There are design margins associated with systems, structures and components that are cooled by the service water system that are affected. The capability of components to perform their safety related function is not affected up to a service water temperature 99°F with the exception of the Containment Air Recirculation Fan Coolers. The Containment Air Recirculation Fan Coolers remove heat from containment to mitigate containment pressure and temperature following a MSLB inside containment or a Large Break LOCA inside containment. An increase in service water temperature in excess of the design limit due to hot weather conditions 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 effect on the Containment Air Recirculation Fan Coolers' heat removal capacity and the resulting containment pressure and temperature is expected to be small. Therefore, there is no significant reduction in margin of safety associated with this change.

Environmental Impact Consideration

10 CFR 51.22(c)(9) provides criteria for identification of licensing and regulatory actions for categorical exclusion for performing an environmental assessment. A proposed change for 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 changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22 (c)(9).

Proposed Change

This change involves an allowance to continue operation for a period of 8 hours with the Ultimate Heat Sink at a temperature greater than the temperature limits provided in Technical Specifications LCO 3.7.8, "Ultimate Heat Sink (UHS)," requires an hourly surveillance when the service water temperature exceeds 95°F, provides an upper UHS temperature limit beyond which a plant shutdown is required, and specifies an expiration date beyond which the current requirements are restored.

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 provides an allowed out of service time for the UHS due to exceeding its temperature limits and provides an upper UHS temperature limit beyond which plant shutdown is required. 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 because the temperature of the plant cooling water effluent is dominated by the significantly larger discharge from Circulating Water System. The plant effluent discharge temperature limits are not being changed and the discharge temperature will not exceed the limits specified in National Pollutant Discharge Elimination Permit SC 0002925. 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 allows plant operation

to continue for a period of 8 hours when service water exceeds the design basis limit and specifies an upper service water temperature limit for plant operation. The proposed change does not involve changing programs, requirements or routine operations in radiological controlled areas. Therefore the proposed change does not affect individual or cumulative occupational radiation exposure.