

**Carolina Power & Light Company**

Robinson Nuclear Plant  
3581 West Entrance Road  
Hartsville SC 29550

Serial: RNP-RA/00-0128

**AUG 04 2000**

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 FOR ULTIMATE HEAT SINK (UHS)

Ladies and Gentlemen:

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, dated June 5, 2000. This supplement revises the proposed Required Actions and Completion Times for the Ultimate Heat Sink (UHS) in the event that the service water temperature exceeds the 97°F surveillance acceptance limit. This supplement provides information requested in the meeting between the NRC and CP&L conducted on July 13, 2000.

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

Attachment II provides additional information in support of the proposed change to the TS and Bases.

Attachment III provides a revised markup of the TS and Bases.

Attachment IV provides revised 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.

The supplement to the proposed change does not affect the basis for a conclusion that the proposed change does not involve a significant hazards consideration, nor does it affect the

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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)).

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

Sincerely,



B. L. Warden

Manager - Regulatory Affairs

ALG/alg

Attachments

- I. Affidavit
  - II. Additional Information in Support of the Request For Technical Specifications Change, Ultimate Heat Sink (UHS)
  - III. Revised Markup Of Current Technical Specifications And Bases Pages
  - IV. Revised 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, NRR  
NRC Resident Inspector, HBRSEP  
Attorney General (SC) (w/out Enclosures)

Affidavit

**State of South Carolina**

**County of Darlington**

J. W. Moyer, having been first duly sworn, did depose and say that the information contained in letter RNP-RA/00-0128 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.



Sworn to and subscribed before me

this 4<sup>th</sup> day of Aug 20 00

(Seal)   
Notary Public for South Carolina

My commission expires: Sept. 13, 2009

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

ADDITIONAL INFORMATION IN  
SUPPORT OF THE REQUEST FOR TECHNICAL  
SPECIFICATIONS CHANGE ULTIMATE HEAT SINK (UHS)

**Emergency Diesel Generator Load and Operating Parameters**

The General Design Criteria (GDC) in existence at the time HBRSEP, Unit No. 2 was licensed (July, 1970) for operation were contained in Proposed Appendix A to 10 CFR 50, General Design Criteria for Nuclear Power Plants, published in the Federal Register on July 11, 1967. Appendix A to 10 CFR 50, effective in 1971 and subsequently amended, is somewhat different from the proposed 1967 criteria. The Emergency Diesel Generators (EDGs) were designed to meet proposed GDC 39, which required the EDGs to be designed with adequate capacity to permit the functioning of Engineered Safety Features (ESFs) in the event of the maximum hypothetical accident with a loss of offsite power, or in the event of a loss of outside electrical power<sup>1</sup>. Updated Final Safety Analysis Report (UFSAR) Table 8.3.1-3 provides the design data for the EDGs, and states the rated continuous load capacity at 2500 kW with a 2 hour overload capacity of 2750 kW in any 24 hour period. The limiting accident load for the EDGs is the Small Break Loss-of-Coolant Accident (SBLOCA) which results in a 30 minute peak load for EDG "A" of 2542 kW, and for EDG "B" 2583 kW. The loading of both EDGs for the remaining periods is less than the continuous duty rating for the EDGs. The EDG loads are not affected by operation with Service Water (SW) System temperature between 97°F and 99°F.

The EDG heat exchangers were analyzed to determine the allowable SW temperature for continuous duty. A summary is provided in Table 1. As can be seen in the Table, the continuous duty temperatures do not reach alarm or trip setpoint levels. The case for which the submittal is based is for a EDG load of 103.4%, 0% heat exchanger tube plugging, and a SW temperature of 99°F. In this case, there is temperature margin to the continuous duty temperature limit, even though the EDGs would not operate in excess of the continuous duty rating for more than 30 minutes during design basis accidents. Therefore, the proposed required action to verify that the required cooling capacity is maintained can be met when there are no tubes plugged in the EDG heat exchangers.

**Margins at a Service Water Temperature of 99°F**

A table of parameters needing evaluation for SW temperature > 97°F but ≤ 99°F was provided to the NRC in the original submittal dated June 5, 2000. The table indicates that the Component Cooling Water (CCW) System and the Containment Fan Motor Coolers (CFMCs) were evaluated

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<sup>1</sup> Final Facility Description and Safety Analysis Report, H. B. Robinson Steam Electric Plant, Unit No. 2, pages 8.1-2 and 8.1-3.

as acceptable up to 99°F, and that the remaining safety-related and nonsafety-related analyses were evaluated for 100°F.

The evaluations of systems and equipment were performed at design values chosen to ensure that the systems and equipment could perform their required functions with a SW temperature of either 99°F or 100°F. In the design values, additional margin is retained allowing for tube fouling, limiting (minimum) flow rates, heat exchanger tube plugging, conservatism in heat load assumptions, and operating conditions. Additionally, the evaluations used the limiting SW temperature as a continuous duty value without regard for the natural variation of SW temperature normally expected from insolation and other environmental effects of Lake Robinson over a 24 hour period. The continuous duty value also does not account for the variations that occur during a design basis accident. Planned or automatic shutdown of the reactor results in a reduction of about two orders of magnitude in the heat input into the lake but does not affect the heat losses from the lake due to thermal radiation, water evaporation, and thermal conduction to the earth and atmosphere. The reduction in heat load to the lake resulting from shutdown of Unit No. 2 is roughly equivalent to the evaporative heat loss induced by summer insolation. Based upon the discussion above and the low likelihood of an event or accident in the short period of time required to shut down the plant, this proposed change is acceptable.

#### **Parameters Reviewed to Assure Required Cooling Capacity**

Documented design evaluations of systems and equipment operating at SW temperatures between 97°F and 99°F have been completed. These evaluations assume a percentage of tube plugging for the affected heat exchangers. The corrective maintenance procedure for maintenance of heat exchangers requires that engineering be involved in tube plugging, specifies the tube plugging limit and requires evaluation by the engineer of any new plugging needs against the plugging limits.

In the event that the 97 °F SW temperature is exceeded, a procedure checklist would be reviewed to verify that parameters existing in the design bases are maintained. The checklist would be structured as follows.

1. The checklist would require a records check of design documents such as design basis documents and/or calculations to assure that the current revision of the documents agrees with the procedure checklist. This action assures that the latest design information is reflected in the Control Room's procedure.
2. The checklist would require a review of records of inoperable equipment to assure that inoperable systems and equipment would not inhibit the UHS function during operation between 97°F and 99°F.
3. The checklist would require a review of TSs Conditions and Required Actions in effect, and Technical Requirements Manual (TRM) Conditions and Required Compensatory Measures in effect, to assure that inoperable systems and equipment



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Attachment III to Serial: RNP-RA/00-0128  
5 Pages

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

REQUEST FOR TECHNICAL  
SPECIFICATIONS CHANGE ULTIMATE HEAT SINK (UHS)

REVISED MARKUP OF CURRENT TECHNICAL SPECIFICATIONS  
AND BASES PAGES

3.7 PLANT SYSTEMS

3.7.8 Ultimate Heat Sink (UHS)

LCO 3.7.8 The UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4 .

Required Action and associated Completion Time not met.  
  
OR  
  
UHS inoperable for reasons other than Condition A.  
  
B

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. <del>UHS inoperable.</del>	A.1 Be in MODE 3.	6 hours
	AND A.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.8.1 Verify water level of UHS is $\geq$ 218 ft mean sea level.	24 hours
SR 3.7.8.2 Verify service water temperature is $\leq$ 97°F.	24 hours

A. Service water temperature not within limit.	A.1 Verify required cooling capacity maintained.	1 hour
	AND A.2 Verify service water temperature is $\leq$ 99°F	AND Once per 12 hours thereafter  Once per hour

BASES

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APPLICABLE SAFETY ANALYSES (continued)      The UHS satisfies Criterion 3 of the NRC Policy Statement.

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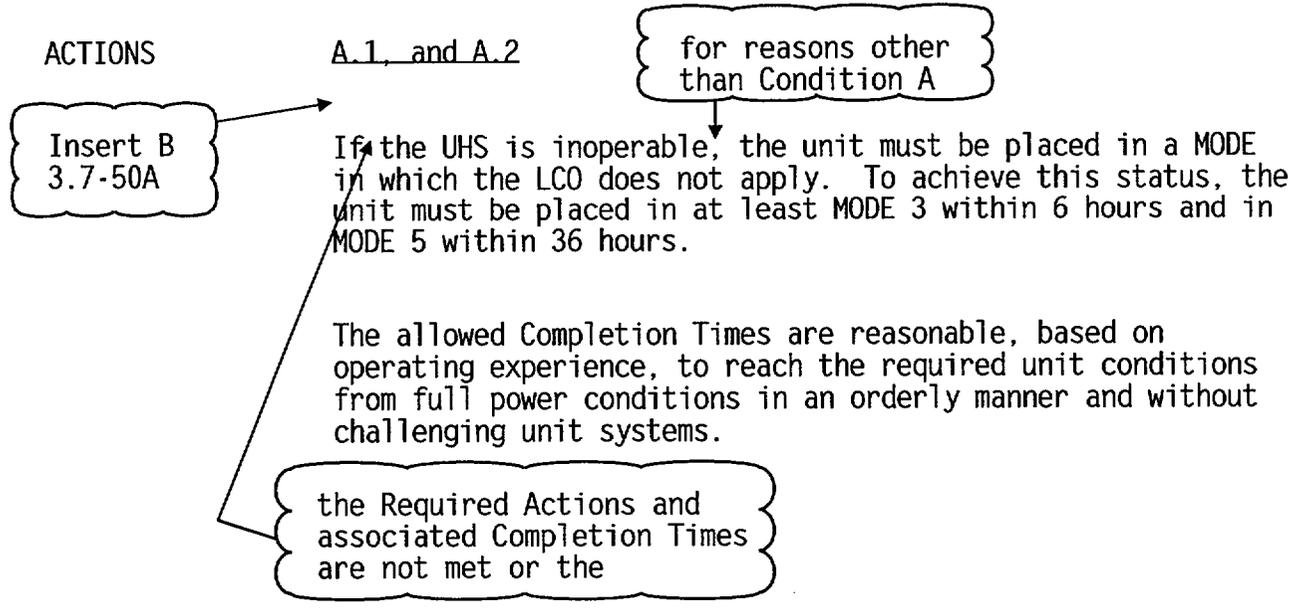
LCO      The UHS is required to be OPERABLE and is considered OPERABLE if it contains a sufficient volume of water at or below the maximum temperature that would allow the SWS to operate for at least 22 days following the design basis LOCA without the loss of NPSH, and without exceeding the maximum design temperature of the equipment served by the SWS. To meet this condition, the UHS temperature should not exceed 97°F and the level should not fall below 218 ft MSL during normal unit operation.

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APPLICABILITY      In MODES 1, 2, 3, and 4, the UHS is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

In MODE 5 or 6, the OPERABILITY requirements of the UHS are determined by the systems it supports.

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## INSERT B 3.7-50A

With the SW temperature  $> 97^{\circ}\text{F}$  but  $\leq 99^{\circ}\text{F}$ , the required cooling capacity of the SW System must be verified by evaluating the existing operational condition of the systems and components served by the SW System and verifying that each is capable of performing its safety related function. The required cooling capacity must also be re-verified once per 12 hours. In addition, the SW temperature must be verified  $\leq 99^{\circ}\text{F}$  once per 1 hour. The temperature verification ensures the SW temperature remains below the maximum water temperature allowed for the safety related components to perform their safety function.

The Completion Time of Required Action A.1 was developed considering that some activities required to complete the evaluation of required cooling capacity could be completed prior to the Condition being entered.

The Completion Time of Required Action A.2 is based on shift schedules for convenience and is considered acceptable since temperature monitoring capability is available to detect an increase in SW temperature throughout the period of Condition A.

B.1, and B.2

BASES (continued)

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SURVEILLANCE  
REQUIREMENTS

SR 3.7.8.1

This SR verifies that adequate long term (22 day) cooling can be maintained. The specified level also ensures that sufficient NPSH is available to operate the SWS pumps. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES. This SR verifies that the UHS water level is  $\geq 218$  ft MSL.

SR 3.7.8.2

This SR verifies that the SWS is available to cool the CCW System to at least its maximum design temperature with the maximum accident or normal design heat loads for 30 days following a Design Basis Accident. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES. This SR verifies that the service water temperature is  $\leq 97^{\circ}\text{F}$ .

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REFERENCES

1. UFSAR, Section 9.2.4.
  2. UFSAR Section 2.4.6.1.
  3. UFSAR Section 2.1.1.2.
  4. NUREG-75/024, "Final Environmental Statement Related to the Operation of H. B. Robinson Nuclear Steam -Electric Plant Unit 2," U. S. Nuclear Regulatory Commission, Washington DC 20555, April 1975, page 3-7.
  5. USGS Historical Daily Values for Station Number 02130900, Black Creek Near McBee, South Carolina, Years 1960-1993.
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United States Nuclear Regulatory Commission  
Attachment IV to Serial: RNP-RA/00-0128  
5 Pages

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

REQUEST FOR TECHNICAL  
SPECIFICATIONS CHANGE ULTIMATE HEAT SINK (UHS)

REVISED RETYPED TECHNICAL SPECIFICATIONS AND BASES

3.7 PLANT SYSTEMS

3.7.8 Ultimate Heat Sink (UHS)

LCO 3.7.8 The UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Service water temperature not within limit.	A.1 Verify required cooling capacity maintained.  AND A.2 Verify service water temperature is $\leq 99^{\circ}\text{F}$ .	1 hour  AND Once per 12 hours thereafter  Once per hour
B. Required Action and associated Completion Time not met.  OR  UHS inoperable for reasons other than Condition A.	B.1 Be in MODE 3.  AND B.2 Be in MODE 5.	6 hours  36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.8.1 Verify water level of UHS is $\geq 218$ ft mean sea level.	24 hours

Surveillance Requirements (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.8.2     Verify service water temperature is $\leq$ 97°F.	24 hours

BASES

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APPLICABLE  
SAFETY ANALYSES  
(continued)

The UHS satisfies Criterion 3 of the NRC Policy Statement.

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LCO

The UHS is required to be OPERABLE and is considered OPERABLE if it contains a sufficient volume of water at or below the maximum temperature that would allow the SWS to operate for at least 22 days following the design basis LOCA without the loss of NPSH, and without exceeding the maximum design temperature of the equipment served by the SWS. To meet this condition, the UHS temperature should not exceed 97°F and the level should not fall below 218 ft MSL during normal unit operation.

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APPLICABILITY

In MODES 1, 2, 3, and 4, the UHS is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

In MODE 5 or 6, the OPERABILITY requirements of the UHS are determined by the systems it supports.

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ACTIONS

A.1, and A.2

With the SW temperature > 97°F but ≤ 99°F, the required cooling capacity of the SW System must be verified by evaluating the existing operational condition of the systems and components served by the SW System and verifying that each is capable of performing its safety related function. The required cooling capacity must also be re-verified once per 12 hours. In addition, the SW temperature must be verified ≤ 99°F once per hour. The temperature verification ensures the SW temperature remains below the maximum water temperature allowed for the safety related components to perform their safety function.

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BASES

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ACTIONS

A.1. and A.2 (continued)

The Completion Time of Required Action A.1 was developed considering that some activities required to complete the evaluation of required cooling capacity could be completed prior to the Condition being entered.

The Completion Time of Required Action A.2 is based on shift schedules for convenience and is considered acceptable since temperature monitoring capability is available to detect an increase in SW temperature throughout the period of Condition A.

B.1. and B.2

If the Required Actions and associated Completion Times are not met or the UHS is inoperable for reasons other than Condition A, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

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SURVEILLANCE  
REQUIREMENTS

SR 3.7.8.1

This SR verifies that adequate long term (22 day) cooling can be maintained. The specified level also ensures that sufficient NPSH is available to operate the SWS pumps. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES. This SR verifies that the UHS water level is  $\geq 218$  ft MSL.

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BASES

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SURVEILLANCE  
REQUIREMENTS

SR 3.7.8.2

This SR verifies that the SWS is available to cool the CCW System to at least its maximum design temperature with the maximum accident or normal design heat loads for 30 days following a Design Basis Accident. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES. This SR verifies that the service water temperature is  $\leq 97^{\circ}\text{F}$ .

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REFERENCES

1. UFSAR, Section 9.2.4.
  2. UFSAR Section 2.4.6.1.
  3. UFSAR Section 2.1.1.2.
  4. NUREG-75/024, "Final Environmental Statement Related to the Operation of H. B. Robinson Nuclear Steam-Electric Plant Unit 2," U. S. Nuclear Regulatory Commission, Washington DC 20555, April 1975, page 3-7.
  5. USGS Historical Daily Values for Station Number 02130900, Black Creek Near McBee, South Carolina, Years 1960-1993.
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