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C. S. Hinnant  
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**JUL 08 1997**

SERIAL: BSEP 97-0218  
10 CFR 50.90  
TSC 97TSB06

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-325 AND 50-324  
LICENSE NOS. DPR-71 AND DPR-62  
REQUEST FOR LICENSE AMENDMENTS  
REVISION OF SUPPRESSION CHAMBER POOL WATER VOLUME

Gentlemen:

In accordance with 10 CFR 50.90 and 10 CFR 2.101, Carolina Power & Light (CP&L) Company is requesting a revision to the Technical Specifications for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2. These proposed amendments, relocate the revised equivalent minimum and maximum suppression chamber pool water volumes, while retaining the level band now contained in Technical Specification 3.6.2.1.a.1. The equivalent suppression chamber pool water volumes which are currently in the corresponding Bases, are also being revised.

CP&L is providing, in accordance with 10 CFR 50.91(b), Mr. Mel Fry of the State of North Carolina with a copy of the proposed license amendments.

In order to allow time for implementation of the plant modifications, procedure revisions, and orderly incorporation into copies of the Technical Specifications, CP&L requests that the proposed amendment, once approved by the NRC, be issued with an effective date of prior to startup from each unit's next refueling outage.

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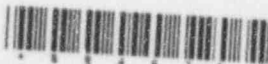
Please refer any questions regarding this submittal to Mr. Keith Jury, Manager - Regulatory Affairs, at (910) 457-2783.

Sincerely,

C. S. Hinnant

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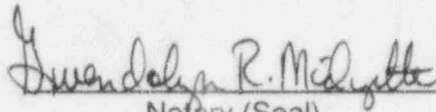


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Enclosures:

1. Basis for Change Request
2. 10 CFR 50.92 Evaluation
3. Environmental Considerations
4. Page Change Instructions
5. Marked-up Technical Specification Pages - Unit 1
6. Marked-up Technical Specification Pages - Unit 2
7. Typed Technical Specification Pages - Unit 1
8. Typed Technical Specification Pages - Unit 2
9. Mark-up for Revision to Previously Submitted ITS Conversion - Unit 1
10. Mark-up for Revision to Previously Submitted ITS Conversion - Unit 2

C. S. Hinnant, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, and agents of Carolina Power & Light Company.

  
Notary (Seal)

My commission expires:

August 12, 2001

pc (with enclosures):

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The Honorable J. A. Sanford  
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Mr. Mel Fry  
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North Carolina Department of Environment, Health, and Natural Resources  
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## ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
NRC DOCKET NOS. 50-325 AND 50-324  
OPERATING LICENSE NOS. DPR-71 AND DPR-62  
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REVISION OF SUPPRESSION CHAMBER POOL WATER VOLUME

### BASIS FOR CHANGES

#### PROPOSED CHANGE:

##### Current Requirement

Technical Specification (TS) 3.6.2.1.a.1 requires the suppression chamber pool water volume to be between 87,600 ft<sup>3</sup> and 89,600 ft<sup>3</sup>, equivalent to a level between -31 inches and -27 inches.

##### Proposed Change

The proposed change to TS 3.6.2.1.a.1 removes the suppression chamber pool water volume band while retaining the equivalent level band. The equivalent suppression chamber pool water volume values in Bases 3/4.6.2, Depressurization and Cooling Systems, are being revised to reflect a new calculated equivalent volume of between 86,450 ft<sup>3</sup> and 89,750 ft<sup>3</sup>.

##### Basis For Proposed Change

Modifications to the Residual Heat Removal (RHR) and Core Spray (CS) systems' suction strainers, are to be made per NRC Bulletin 96-03, "Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling-Water Reactors." The modifications are to be installed during both units' next refueling outage. The calculation of the suppression chamber pool water volume at the low and high suppression chamber pool water levels is being revised based on the introduction of submerged structural steel components related to RHR and CS systems' suction strainer installation. The revised calculation specifically considers the displacement of water due to the introduction of larger strainers and associated structural steel components. This analysis establishes that a suppression chamber pool water level of -27" corresponds to a water volume of 89,750 ft<sup>3</sup>, and a level of -31" corresponds to a volume of 86,450 ft<sup>3</sup>.

Suppression chamber pool water volumes are associated with the specified suppression chamber pool water levels. The change in the suppression chamber pool water volumes, which is less than 100 ft<sup>3</sup>, does not significantly impact the capability of the suppression chamber pool to perform its function as the heat sink for the reactor primary system energy for postulated plant accidents and transients. Evaluations of the impact of the proposed change to the suppression chamber pool volume limits for a postulated 1) Loss of Coolant Accident (LOCA), 2) Safety Relief Valve (SRV) blowdown (NUREG-0783, "Stuck Open Relief Valve Event") and 3) ATWS events, conclude that no adverse impact on containment parameters results from the proposed change to the maximum value of the suppression chamber pool volume. The



proposed change to the minimum value does potentially increase the suppression pool water temperature. However, the increase is not significant and the resulting temperature remains below acceptable limits. This proposed reduction of 0.1% suppression chamber pool water volume is considered negligible, and is well within the 5% tolerance allowed in the previous "Suppression Pool Volume Change Analysis", performed in December 1996. At the lower suppression chamber pool water level limit, a 0.1% water volume reduction increases pool temperature 0.07°F short term ( $\leq 600$  seconds) and 0.035 °F long term ( $> 600$  seconds). These analyses and their results are summarized in the following paragraphs.

Analysis indicates that the reduction in the minimum suppression chamber pool volume on the pool temperatures and pressures following the design basis Loss of Coolant Accident (LOCA) could result in a peak suppression chamber pool water temperature of 199.5°F. These results do not exceed the suppression chamber design feature limit of 200°F as specified in TS 5.2.2.b. The 0.1°F increase in the suppression chamber pool water temperature associated with the occurrence of an event coincident with the suppression chamber pool volume at the proposed minimum value, would also result in a slight reduction in the available Net Positive Suction Head (NPSH) for the RHR and CS pumps following a design basis LOCA. However, adequate NPSH is maintained throughout the postulated design basis LOCA.

The impact of the proposed TS suppression chamber pool water volume limit reduction on ATWS events is a small increase in the suppression pool water temperature to 167°F which remains well within the specified limit of 190°F for ATWS events. Reduced water volume also results in a slight increase in the peak bulk and local suppression chamber pool water temperatures for SRV blow down events; however, the resultant peak bulk and local temperatures of 187.1°F and 198.1°F, respectively, remain within design bases acceptable limits of 200°F and 203°F, respectively.

The supporting analyses also consider the potential impact of the proposed change to the suppression chamber pool water volume limits on the SRV line loads, SRV discharge line reflood height, wetwell pressurization, suppression chamber pool swell loads, vent thrust loads, and condensation oscillation and chugging loads. Although the volume is changing, SRV discharge line loads are not affected since the bounding suppression chamber pool water level band remains unchanged. Consequently, there is no impact on SRV discharge line loads. The decrease in suppression chamber pool water volume without changing the corresponding water level will have essentially no impact on the SRV discharge line reflood height. The small volume decrease would also result in an increase in the suppression chamber pool temperature; however, the impact on reflood height is negligible. Due to the decreased water volume at the high water level, less water is available to absorb the discharged energy; therefore, the suppression chamber pool heat up is increased, which results in a slightly increased pressurization of the wetwell. The dominant factor impacting suppression chamber pool swell is the drywell pressurization rate, which is unaffected since the water level is unchanged. Vent thrust loads and condensation oscillation (CO) and chugging loads are primarily impacted by drywell and wetwell pressure responses. Drywell pressure responses are unchanged, and, as noted above, wetwell pressure responses increase by a small amount. Therefore, these loads remain essentially unchanged. Based on these analyses, CP&L has concluded that the change in suppression chamber pool water volume limits has no significant adverse impact on these parameters.

The analyses also conclude the reduction in the minimum suppression chamber pool water

volume could slightly increase the peak suppression chamber pool temperature (<0.4°F) when an alternate shutdown path (i.e. Station Blackout (SBO) or Appendix R fire alternate safe shutdown) is established. This potential increase in peak suppression chamber pool temperature, however, has a negligible impact on the time required by BSEP TS to reach cold shutdown.

CP&L also reviewed the impact the proposed change to the suppression chamber pool water volume limits could have on the consequences of an Appendix R fire or SBO event. The Appendix R analyses were reviewed to determine the impact from this proposed suppression chamber pool volume limit change. These analyses indicate that the peak suppression chamber pool water temperature increases slightly as a result of the proposed change; however, the peak suppression chamber pool water temperature of 186.4°F remains below the suppression chamber design feature limit of 200°F as stated in TS 5.2.2.b.

The resulting peak temperature for the SBO event, using the assumptions and methodology consistent with the SBO Safety Evaluation (SE) for BSEP, is 199.3°F (previously calculated as 199.2°F to support the November 1, 1996, power uprate submittal). This value is below the 200°F acceptance criteria stated in the NRC SBO Safety Evaluation (Reference 1). A more in-depth discussion of the revised SBO analysis, including the assumptions used, is provided in a CP&L letter to the NRC dated December 23, 1996 (Reference 2).

Based on the results of these evaluations, CP&L has concluded that the proposed suppression chamber pool water volume limits preserve accident and event analyses within acceptable limits and have a negligible impact on the time required to reach cold shutdown conditions when utilizing the suppression chamber pool in the event the normal RHR shutdown cooling function is unavailable. The proposed change, therefore, does not significantly impact plant safety. The suppression chamber pool water level limits are retained in TS 3.6.2.1.a.1, since this is the information available to the operators regarding the suppression chamber pool water volume limits. These level limits are equivalent to the suppression chamber pool water volume limits; therefore, it is only the presentation of the equivalency that is being relocated to the Bases and the Updated Final Safety Analysis Report (UFSAR). As such, the relocated suppression chamber pool water volume limits are not required to be in the TS to provide adequate protection of the public health and safety.

#### Administrative Background

On January 15, 1997, CP&L submitted a request for license amendment (Serial: BSEP 96-0447) to revise the current suppression chamber pool water volume based on recently revised calculations. Calculations indicated that the TS 3.6.2.1.a.1 numbers given for operating range levels and the associated volumes were not equivalent. The calculations established that the -27" and -31" TS limits for the suppression chamber pool water level correspond to suppression chamber water volumes of 89,843 ft<sup>3</sup> and 86,545 ft<sup>3</sup>, respectively. The specific actions taken are reported in Licensee Event Report 1-96-15. CP&L has also included the corrected equivalent suppression chamber pool water volume values in the license amendment request for the proposed conversion of the BSEP TS to the BWR Improved Standard Technical Specifications (Reference CP&L letter BSEP 96-0414, dated November 1, 1996).

On November 1, 1996, the NRC issued Amendments, No. 183 to Facility Operating License No. DPR-71 for BSEP Unit 1 and No. 214 to Facility Operating License No. DPR-62 for BSEP Unit 2, to support the power uprates. While the Unit 1 amendment has been implemented, the Unit 2 amendment will not be implemented until the start-up from the next refueling outage (B213R1).

This amendment does not specifically involve the changes to the suppression chamber pool water volume, but does involve a change to page B 3/4 6-3.

CP&L has also submitted a license amendment request for the proposed conversion of the BSEP TS to the BWR Improved Standard Technical Specifications (Reference CP&L letter BSEP 96-0414, dated November 1, 1996). The pending modifications to the RHR and CS system suction strainers, per NRC Bulletin 96-03, "Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling-Water Reactors," will require revising the suppression chamber pool water volume numbers delineated in the Improved Standard Technical Specifications submittal, on implementation of this amendment request. Enclosures 9 and 10 provide marked-up pages to address the impact of this submittal on the November 1, 1996, proposed conversion of the BSEP TS to the BWR Improved Standard Technical Specifications.

References:

1. NRC Letter to CP&L, "Station Blackout Evaluation - Brunswick Steam Electric Plant, Units 1 and 2 (NRC TAC Nos. 68520 and 68521)," October 4, 1990.
2. CP&L Letter to NRC (BSEP 96-0449), Response to Request for Additional Information - Power Uprate License Amendment Request (NRC TAC Nos. M90644 / M90645), December 23, 1996.
3. CP&L Letter to NRC (BSEP 96-0414), License Amendment Request - Conversion to Improved Standard Technical Specifications, November 1, 1996.
4. CP&L Letter to NRC (BSEP 96-0447), License Amendment Request - Revision of Suppression Pool Water Volume, January 15, 1997.

## ENCLOSURE 2

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
NRC DOCKET NOS. 50-325 AND 50-324  
OPERATING LICENSE NOS. DPR-71 AND DPR-62  
REQUEST FOR LICENSE AMENDMENTS  
REVISION OF SUPPRESSION CHAMBER POOL WATER VOLUME

### 10 CFR 50.92 EVALUATION

Standards are provided in 10 CFR 50.92 for determining whether a significant hazards consideration exists. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. Carolina Power & Light (CP&L) Company has reviewed these proposed license amendments and concluded that their adoption does not involve a significant hazards consideration. The basis for this determination follows.

1. The proposed license amendments do not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change revises the values of the minimum and maximum suppression chamber pool water volume limits. The water inventory of the suppression chamber pool is not a precursor of an accident and, therefore, cannot increase the probability of an accident previously evaluated. The pressure suppression chamber water pool mitigates the consequences of loss-of-coolant accidents (LOCAs) transients, and other events by providing a heat sink for reactor primary system energy releases. The proposed minimum and maximum pool water volume values will be consistent with the current suppression chamber pool water level limits. No changes to setpoints will be made as a result of the proposed change. The impact of the proposed change to the minimum and maximum suppression chamber pool volume limits on the suppression chamber pool temperatures and pressures following a design basis LOCA, an Safety/Relief Valve (SRV) blowdown event, an Anticipated Transient Without Scram (ATWS) event, an Appendix R fire event, and a station blackout event has been evaluated and does not cause accident parameters to exceed acceptable values. In addition, the impact the proposed change has on the time to reach cold shutdown when using the alternate Residual Heat Removal (RHR) shutdown cooling function is negligible.

The potential impact the proposed change to the suppression chamber pool water volume limits has on SRV line loads, SRV discharge line reflood height, wetwell pressurization, suppression chamber pool swell loads, vent thrust loads, and condensation oscillation and chugging loads was also reviewed. The change to the suppression chamber pool water volume limits has no significant adverse impact on any of these parameters.



As delineated above, the capability of the suppression chamber water pool to perform its mitigative functions is not affected by the proposed change. Therefore, the proposed change does not involve a significant increase in the consequences of an accident previously evaluated.

2. The proposed license amendments will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change revises the values of the minimum and maximum volume of the suppression chamber water pool. The proposed change will not alter any physical mechanism by which the suppression chamber water pool volume is maintained between the minimum and maximum values. The suppression chamber pool water level will continue to be maintained between -27 and -31 inches. The suppression chamber pool water level limits are retained in Technical Specification (TS) 3.6.2.1.a.1, since this is the information available to the operators regarding the suppression chamber pool water volume limits. These level limits are equivalent to the suppression chamber pool water volume limits; therefore, it is only the presentation of the equivalency that is being relocated to the Bases and the Updated Final Safety Analysis Report (UFSAR). As such, the relocated suppression chamber pool water volume limits are not required to be in the TS to provide adequate protection of the public health and safety. As a result of the proposed strainer changes, there are no physical changes to any other suppression chamber components or instrumentation. No new mode of operation is introduced as a result of the proposed change. Analyses have been performed which conclude that the proposed change will not affect the operability of the equipment designed to mitigate the consequences of an accident. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed license amendments do not involve a significant reduction in a margin of safety.

The proposed change revises the values of the minimum and maximum suppression chamber water pool volumes. The pressure suppression chamber water pool mitigates the consequences of several postulated accidents and transients by providing a heat sink for the primary coolant system. These accidents and events are the postulated design basis LOCA, an SRV blowdown event, an ATWS event, an Appendix R fire, and station blackout events. The consequences of the change in the suppression pool water volume limits have been evaluated for these events, and there is no significant reduction in the margin of safety.

The results of the analyses for the postulated accidents and events indicate the temperature of the suppression chamber pool water could increase slightly as a consequence of the decrease in the minimum suppression chamber pool water volume limit. However, the suppression chamber pool water and containment temperatures remain within acceptable values. The impact of the calculated increase in containment temperature on the available Net Positive Suction Head (NPSH) for the Residual Heat Removal (RHR) and Core Spray pumps has been evaluated for the postulated design basis LOCA and indicate adequate NPSH is maintained throughout the event.

The potential impact of the proposed change to the suppression chamber pool water volume limits on the SRV line loads, SRV discharge line reflood height, wetwell pressurization, suppression chamber pool swell loads, vent thrust loads, and condensation oscillation and chugging loads was evaluated with the conclusion that there are no adverse impacts on these parameters.

In addition, a small suppression chamber pool water temperature increase could result due to the reduction in minimum suppression pool volume limit in the event reactor shutdown is conducted through a path utilizing the suppression chamber pool. Such a shutdown path is an alternative to the normal RHR shutdown cooling function, and the small potential increase in temperature results in a negligible increase in the time required to reach cold shutdown conditions. Cold shutdown conditions can still be reached well within the Technical Specification requirements.

The proposed increase in the suppression pool water volume limit does not adversely impact containment parameters as a result of postulated accidents and events. The potential increase in temperature of the pressure suppression chamber pool water does not significantly decrease the ability to maintain containment parameters within acceptable limits. The potential increase in time to reach cold shutdown conditions utilizing the suppression pool as an alternative to the normal RHR shutdown cooling function is negligible. Therefore, the proposed change to revise the minimum and maximum suppression water pool volumes does not involve a significant reduction in a margin of safety.

The suppression chamber pool water level limits are retained in TS 3.6.2.1.a.1, since this is the information available to the operators regarding the suppression chamber pool water volume limits. These level limits are equivalent to the suppression chamber pool water volume limits and the equivalency is being relocated to the Bases and the UFSAR. As such, the relocated suppression chamber pool water volume limits are not required to be in the TS to provide adequate protection of the public health and safety.

## ENCLOSURE 3

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
NRC DOCKET NOS. 50-325 AND 50-374  
OPERATING LICENSE NOS. DPR-71 AND DPR-62  
REQUEST FOR LICENSE AMENDMENTS  
REVISION OF SUPPRESSION CHAMBER POOL WATER VOLUME

### ENVIRONMENTAL CONSIDERATIONS

10 CFR 51.22(c)(9) provides criterion for and identification of licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration, (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (3) result in an increase in individual or cumulative occupational radiation exposure. Carolina Power & Light (CP&L) Company has reviewed this request and concluded that these proposed license amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement of environmental assessment needs to be prepared in connection with the issuance of the amendment. The basis for this determination follows.

1. These license amendments do not involve a significant hazards consideration, as shown in Enclosure 2.
2. The proposed license amendments do not result in a significant change in the types or a significant increase in the amounts of any effluent that may be released offsite. The proposed license amendments do not introduce any new equipment nor does it require any existing equipment or systems to perform a different type of function than they are presently designed to perform. The proposed license amendments do not alter the function of existing equipment and will ensure that the consequences of any previously evaluated accident do not increase. Therefore, CP&L has concluded that there will not be a significant increase in the types or amounts of any effluent that may be released offsite and, as such, does not involve irreversible environmental consequences beyond those already associated with normal operation.
3. These license amendments do not result in an increase in individual or cumulative occupational radiation exposure. No normal operation or accident source terms are impacted by the proposed change. The proposed change does not significantly reduce shielding or result in any increases in personnel entries or stay times for activities conducted in radiation areas.

ENCLOSURE 4

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
NRC DOCKET NOS. 50-325 AND 50-324  
OPERATING LICENSE NOS. DPR-71 AND DPR-62  
REQUEST FOR LICENSE AMENDMENTS  
REVISION OF SUPPRESSION CHAMBER POOL WATER VOLUME

<u>PAGE CHANGE INSTRUCTIONS</u>	
<u>UNIT 1</u>	
Removed page	Inserted page
3/4 6-9	3/4 6-9
B 3/4 6-3	B 3/4 6-3

<u>PAGE CHANGE INSTRUCTIONS</u>	
<u>UNIT 2</u>	
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3/4 6-9	3/4 6-9
B 3/4 6-3	B 3/4 6-3



ENCLOSURE 5

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
NRC DOCKET NOS. 50-325 AND 50-324  
OPERATING LICENSE NOS. DPR-71 AND DPR-62  
REQUEST FOR LICENSE AMENDMENTS  
REVISION OF SUPPRESSION CHAMBER POOL WATER VOLUME

TYPED TECHNICAL SPECIFICATION PAGES - UNIT 1