CP&L

Carolina Power & Light Company
P.O. Box 10429
Southport, NC 28461-0429

C.S. Hinnant
Vice President
Brunswick Nuclear Plant

DEC 18 1997

SERIAL: BSEP 97-0506
TSC 96TSB03

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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
SUPPLEMENT TO REQUEST FOR LICENSE AMENDMENTS
ENHANCED OPTION I-A STABILITY TECHNICAL SPECIFICATIONS
(TAC NOS. M97516 AND M97517)

Gentlemen:

On November 1, 1996 (Serial: BSEP 96-0406), Carolina Power & Light (CP&L) Company requested a revision to the Technical Specifications for the Brunswick Steam Electric Plant, Unit Nos. 1 and 2. The proposed license amendments allow full implementation of the Boiling Water Reactor Owners' Group (BWROG) Enhanced Option I-A reactor stability long-term solution. The proposed Technical Specifications are in Improved Standard Technical Specification format and are consistent with the guidance provided in Supplement 4 to NEDO-32339-A, "Reactor Stability Long-Term Solution: Enhanced Option I-A Generic Technical Specifications." The NRC Safety Evaluation for NEDO-32339-A, Supplement 4 is dated September 20, 1996.

This supplement revises the proposed amendments to incorporate changes discussed in an errata to NEDO-32339-A, Supplement 4, which was submitted to the NRC on October 20, 1997. These changes incorporate a limitation on the time allowed to make a modification in the Average Power Range Monitor Flow Biased Simulated Thermal Power - High Allowable Value when operating with reduced feedwater temperatures. Specifically, this supplement expands a note in Limiting Condition for Operation (LCO) 3.3.1.1, Table 3.3.1.1-1, "Reactor Protection System Instrumentation," to allow 12 hours to adjust the Allowable Value, specified in the Core Operating Limits Report (COLR), after a sufficient reduction in feedwater temperature.

CP&L has reviewed the changes proposed in this supplement and determined that the significant hazards analysis, published in the *Federal Register* on February 26, 1997 (62 FR 8793), remains valid. The November 1, 1996, request did not specify a time limitation associated with adjusting the Average Power Range Monitor Flow Biased Simulated Thermal Power - High Allowable

Value after a feedwater temperature reduction. This supplement establishes a 12 hour period to perform the Allowable Value modification which provides a reasonable time limitation for switching from the Normal Trip Reference Set to the Alternate Trip Reference Set when a sufficient feedwater temperature reduction has occurred. As such, this supplement imposes explicit restrictions beyond those addressed in the significant hazards analysis. Therefore, the conclusions of the existing significant hazards analysis remain valid.

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

Sincerely,

C S Hinnant

C. S. Hinnant

MAT/mat

Enclosures:

1. Basis for Change Request
2. Marked-up Improved Technical Specification Pages - Unit 1
3. Marked-up Improved Technical Specification Pages - Unit 2
4. Typed Improved Technical Specification Pages - Unit 1
5. Typed Improved Technical Specification Pages - 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.

Gwendolyn R McDuffie
Notary (Seal)

My commission expires: August 18, 2001

cc (with enclosures):

U. S. Nuclear Regulatory Commission, Region II
ATTN: Mr. Luis A. Reyes, Regional Administrator
Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, GA 30303

U. S. Nuclear Regulatory Commission
ATTN: Mr. Charles A. Patterson, NRC Senior Resident Inspector
8470 River Road
Southport, NC 28461-8869

U. S. Nuclear Regulatory Commission
ATTN: Mr. David C. Trimble, Jr. (Mail Stop OWFN 14H22)
11555 Rockville Pike
Rockville, MD 20852-2738

The Honorable Jo A. Sanford
Chairman - North Carolina Utilities Commission
PO Box 29510
Raleigh, NC 27626-0510

Mr. Mel Fry
Director - Division of Radiation Protection
North Carolina Department of Environment, Health, and Natural Resources
3825 Barrett Drive
Raleigh, NC 27609-7221

ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62
SUPPLEMENT TO REQUEST FOR LICENSE AMENDMENTS
ENHANCED OPTION I-A STABILITY TECHNICAL SPECIFICATIONS

BASIS FOR CHANGE REQUEST

Proposed Change

On November 1, 1996 (Serial: BSEP 96-0406), Carolina Power & Light (CP&L) Company requested a revision to the Technical Specifications for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2. The proposed license amendments allow full implementation of the Boiling Water Reactor Owners' Group (BWROG) Enhanced Option I-A reactor stability long-term solution. The proposed Technical Specifications are in Improved Standard Technical Specification format and are consistent with the guidance provided in Supplement 4 to NEDO-32339-A, "Reactor Stability Long-Term Solution: Enhanced Option I-A Generic Technical Specifications." The NRC Safety Evaluation for NEDO-32339-A, Supplement 4 is dated September 20, 1996.

This supplement revises the proposed amendments to incorporate changes discussed in an errata to NEDO-32339-A, Supplement 4, which was submitted to the NRC on October 20, 1997. These changes incorporate a limitation on the time allowed to make a modification in the Average Power Range Monitor Flow Biased Simulated Thermal Power - High Allowable Value when operating with reduced feedwater temperatures. Specifically, this supplement expands a note in Limiting Condition for Operation (LCO) 3.3.1.1, Table 3.3.1.1-1, "Reactor Protection System Instrumentation," to allow 12 hours to adjust the Allowable Value, specified in the Core Operating Limits Report (COLR), after a sufficient reduction in feedwater temperature.

Discussion

LCO 3.3.1.1, Table 3.3.1.1-1, Item 2.b (i.e., Average Power Range Monitor Flow Biased Simulated Thermal Power High) includes Note b which requires the Allowable Value to be set as specified in the COLR. Since, the area of the core power and flow operating domain susceptible to neutronic/thermal hydraulic instability can be affected by reactor parameters such as reactor inlet feedwater temperature, the Average Power Range Monitor Flow Biased Simulated Thermal Power - High Allowable Value will be based on two independent trip reference sets. Set 1 (i.e., Normal Trip Reference Set) provides protection against neutronic/thermal hydraulic instability during expected reactor operations. Set 2 (i.e., Alternate Trip Reference Set) provides protection against neutronic/thermal hydraulic instability during reactor operating conditions requiring added stability protection and is conservative with respect to Set 1. Feedwater temperature

values requiring transition between flow control trip reference card sets are specified in the COLR. In the event of a feedwater temperature reduction, Allowable Value modification (from the Normal Trip Reference Set to the Alternate Trip Reference Set) is required to preserve the margin associated with the potential for the onset of neutronic/thermal hydraulic instability which existed prior to the feedwater temperature reduction.

This supplement revises Note b of LCO 3.3.1.1, Table 3.3.1.1-1 to read:

> Allowable Values specified in the COLR. Allowable Value modification required by the COLR due to reductions in feedwater temperature may be delayed for up to 12 hours.

The 12 hour period provides time to adjust and check the adjustment of each flow control trip reference card. At the end of the 12 hour period, the Allowable Value modifications must be complete for all of the required channels or the applicable Condition(s) must be entered and the Required Actions taken. The 12 hour time period is acceptable based on the low probability of a neutronic/hydraulic instability event and the continued protection provided by the flow control trip reference card. In addition, when the feedwater temperature reduction results in operation in either the Restricted Region or Monitored Region, the requirements for the Period Based Detection system (i.e., LCO 3.3.1.3, Period Based Detection System (PBDS)) provide added protection against neutronic/thermal hydraulic instability during the 12 hour time period. Stability controls (i.e., Fraction of Core Boiling Boundary (FCBB) ≤ 1) provide a large margin to the onset of neutronic/thermal hydraulic instability and major parameters that affect stability have relatively small impacts on stability performance with FCBB ≤ 1. Furthermore, unless FCBB is ≤ 1, operation in the Restricted Region during the 12 hour period prior to selecting Set 2 is forbidden.

In summary, the proposed supplement includes a requirement to adjust the Average Power Range Monitor Flow Biased Simulated Thermal Power - High Allowable Value, as specified in the Core COLR, within 12 hours after a sufficient reduction in feedwater temperature. This adjustment preserves the margin associated with the potential for the onset of neutronic/thermal hydraulic instability which existed prior to the feedwater temperature reduction. The 12 hour period is acceptable based on: (1) the low probability of a neutronic/hydraulic instability event; (2) the continued protection provided by the flow control trip reference card; (3) the added protection against neutronic/thermal hydraulic instability provided by the PBDS when operating in the Restricted Region or the Monitored Region; and (4) LCO 3.2.3, "Fraction of Core Boiling Boundary (FCBB)" which requires immediate initiation of action to exit the Restricted Region if entered due to an unexpected loss of feedwater heating and the FCBB is > 1.

A revision to the Bases for LCO 3.3.1.1, Table 3.3.1.1-1, Item 2.b, reflecting this change, is also included. The Bases pages provided are only those directly affected by the supplement. Bases pages which have been re-paginated as a result of this supplement will be included in a future revision to the pending license amendment request for the conversion of the BSEP, Unit Nos. 1 and 2 Technical Specifications to the Improved Technical Specifications, submitted on November 1, 1996 (Serial: BSEP 96-0414), as supplemented on October 13, 1997 (Serial: BSEP 97-0443.