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SERIAL: BSEP 97-0069

U.S. Nuclear Regulatory Commission  
ATTENTION: 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  
RESOLUTION OF CONTROL ROOM ISSUES

Gentlemen:

As a result of the additional reviews conducted after submittal of our power uprate license amendment request, several questions concerning our Control Room Emergency Ventilation System (CREVS) were identified.

As a result of our own review and additional independent reviews by the NRC, five major issues have been identified. These issues and associated commitments for resolution are:

1. A question was raised as to whether existing charcoal adsorber testing adequately bounded the relative humidity which could be experienced by Brunswick's CREVS. This question was addressed by recent testing of the CREVS charcoal to a more appropriate testing standard. This issue has been described previously in our January 22, 1997 letter to the NRC. CP&L commits to submit a license amendment request to require testing in accordance with ASTM D3803-1989 (re-approved 1995) "Standard Test Method for Nuclear Grade Carbon." This will verify credit for 90% iodine removal efficiency at higher humidity levels can be assumed and will serve to ensure no additional CREVS humidity control is needed.
2. A detailed review of vendor calculations used to support Brunswick's existing control room dose calculations led to the discovery of an incorrect assumption used in the analysis. This analysis was not a part of the power uprate analysis, but was identified as a result of a question identified during the power uprate re-review. A potential for higher doses to control room personnel in the event of a Rod Drop Accident was determined to exist during the period of time during startups when mechanical vacuum pumps are in service. A review of Brunswick's operating history combined with the existence of an automatic trip originating from the offgas stack monitor provides assurance that doses would have been maintained within GDC 19 limits. CP&L concludes the plant has been maintained within the existing design bases. However, the existing vacuum pump trip and isolation function is not safety related and is not required to be tested by existing Technical Specifications. This issue was described in our December 23, 1996 letter to the NRC.

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The information provided as part of our license amendment request, dated September 30, 1994, submitted to eliminate the main steam line radiation monitor (MSLRM) trips contained statements based on the erroneous analysis. This error was previously identified to the NRC in our December 23, 1996 letter. In view of the existence of the stack monitor trip and the operating history of the Brunswick units, this error did not have a significant implication for public health and safety.

As a result of this issue, CP&L is committing to upgrade the mechanical vacuum pump trip function to implement a vacuum pump trip from the MSLRM and to submit an appropriate license amendment request to add this trip function to the Technical Specifications. This modification will provide additional redundancy for the automatic trip of the mechanical vacuum pumps. The upgrade of the trip function will be implemented prior to startup from the next cold shutdown outage on each unit. The license amendment request, which includes appropriate surveillance requirements and limiting conditions for operation, will be submitted by February 28, 1997.

3. Although power uprate conditions do not change the pertinent initial conditions and assumptions used in the NRC's analysis described in a Safety Evaluation (SE) transmitted by letter dated February 16, 1989, a recent review of Main Steam Line Break (MSLB) Control Room Dose calculations performed by the NRC raised questions concerning assumptions and methodologies used in Brunswick's most recent calculation of dose. While these questions are being resolved, CP&L has implemented an administrative limit on reactor coolant dose equivalent iodine that is below the current Technical Specification value. Calculational methods and assumptions were reviewed with representatives of the NRC during a telephone conference call on February 11, 1997. The MSLB accident doses are being recalculated using guidance in pertinent NRC Regulatory Guides (RGs) and documents referenced by these RGs. Input assumptions and methodologies were tentatively agreed to in the February 11, 1997 phone call. Enclosure 1 includes a summary of the methodology and assumptions discussed. Preliminary results indicate the recalculated doses, specifically dose to the thyroid, will be below GDC 19 limits. Should final, verified calculations indicate doses are greater than GDC 19 limits, the maximum peak I-131 limit in Technical Specifications will be lowered from its present value of 4 microcuries per gram.

Primary coolant dose equivalent I-131 will be maintained administratively at less than 0.1 microcuries per gram until final approval of calculational results showing control room doses will be maintained less than GDC 19 limits or until approval by the NRC of an appropriate license amendment request limiting I-131 peak activity.

4. The currently configured Brunswick CREVS is capable of maintaining only a slight positive pressure. This requires incorporation of very high unfiltered air inleakage assumptions for associated control room dose analyses. In addition, this has contributed to problems with obtaining consistent positive pressure results in past surveillance tests. CP&L commits to evaluate the sealing and pressurization capabilities of the existing CREVS and to implement improvements to increase pressurization of the control room while in the smoke/radiation protection mode by the completion of the Unit

1 refueling outage 12, currently scheduled to begin in the second quarter of 1998. The objective of this initiative will be to achieve the ability to maintain a minimum of 1/8" W.G. positive pressure, if possible. Although not required for compliance, CP&L believes this effort will improve both analytical and performance margins and will provide further assurance that control room doses can be maintained within GDC 19 limits under all postulated conditions.

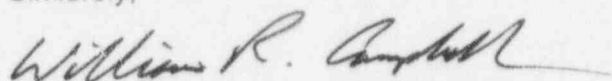
5. In June 1996, a comprehensive self assessment of the CREVS was performed which identified a number of concerns with regard to system material condition and capability. Although a number of these concerns have been addressed, several remain open. CP&L commits, as part of a comprehensive plan, to resolve all remaining open items by the completion of the Unit 1 refueling outage 12, currently scheduled to begin in the second quarter of 1998.

Carolina Power & Light believes that the thorough self assessment and review performed to prepare Unit 1 to continue power ascension to 100% rated power has had a significant benefit as evidenced by the identification of these issues associated with CREVS. Carolina Power & Light is committing significant resources to the resolution of these issues and to the upgrade of the CREVS to improve our existing performance margins.

Brunswick Unit 1 will continue to administratively restrict reactor thermal power to less than or equal to 95% rated thermal power until concurrence is obtained from the NRC that all questions directly associated with power uprate or related reviews have been satisfactorily addressed.

Please refer any questions regarding this submittal to Mr. Mark Turkal at (910) 457-3066.

Sincerely,



William R. Campbell

WRC/mat

Enclosures:

1. MSLB Accident - Calculational Methods and Assumptions
2. List of Regulatory Commitments

cc:

U. S. Nuclear Regulatory Commission  
ATTN.: Mr. Luis A. Reyes, Regional Administrator  
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U.S. Nuclear Regulatory Commission  
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The Honorable J. A. Sanford  
Chairman — North Carolina Utilities Commission  
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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  
RESOLUTION OF CONTROL ROOM ISSUES

MAIN STEAM LINE BREAK ACCIDENT - CALCULATIONAL METHODS AND ASSUMPTIONS  
USED TO DETERMINE THE RADIATION DOSE TO CONTROL ROOM OPERATORS

Initial Primary Coolant Dose Equivalent Iodine (I)-131	4.0 $\mu\text{Ci/gm}$
Main Steam Isolation Valve Closure Time	5.5 sec.
Credit for Absence of Iodine in Initial Steam Volume	Yes
Methodology	<ol style="list-style-type: none"><li>1. Regulatory Guide 1.78, "Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release," June 1974 (i.e., virtual source method)</li><li>2. Uniform cloud based on isenthalpic expansion of released steam / water mixture</li></ol>
Dose Calculation Methodology	ICRP-30

## ENCLOSURE 2

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
NRC DOCKET NOS. 50-325 AND 50-324  
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RESOLUTION OF CONTROL ROOM ISSUES

### LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by Carolina Power & Light Company in this document. Any other actions discussed in the submittal represent intended or planned actions by Carolina Power & Light Company. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Brunswick Nuclear Plant of any questions regarding this document or any associated regulatory commitments.

Commitment	Committed date or outage
1. CP&L commits to submit a license amendment request to require CREVS charcoal testing in accordance with ASTM D3803-1989 (re-approved 1995) "Standard Test Method for Nuclear Grade Carbon."	4/30/97
2. CP&L commits to upgrade the mechanical vacuum pump trip function to implement a vacuum pump trip from the MSLRM.	Prior to next startup
3. CP&L commits to submit a license amendment that includes a Limiting Condition for Operation (LCO) and appropriate Surveillance Requirements (SRs) for the MSLRM trip function.	2/28/97
4. CP&L commits to evaluate the sealing and pressurization capabilities of the existing CREVS and to implement improvements to increase pressurization of the control room while in the smoke/radiation protection mode	B112R1
5. CP&L commits, as part of a comprehensive plan, to resolve all remaining open items associated with the June 1996 CREVS self assessment.	B112R1