



John S. Keenan  
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DEC 17 2001

10 CFR 50.90

SERIAL: BSEP 01-0161  
TSC-2001-04

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION - REQUEST FOR  
LICENSE AMENDMENTS TO ADOPT ALTERNATIVE RADIOLOGICAL SOURCE  
TERM (NRC TAC NOS. MB2570 AND MB2571)

Ladies and Gentlemen:

On August 1, 2001 (Serial: BSEP 01-0063), Carolina Power & Light (CP&L) Company submitted a license amendment application to allow a full-scope implementation of an Alternative Radiological Source Term (AST) for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. Subsequently, on November 28, 2001, the NRC provided an electronic version of a request for additional information (RAI) concerning the method used for calculating HCl generation and the resulting impact on suppression pool pH. The response to this RAI is enclosed

Please refer any questions regarding this submittal to Mr. David C. DiCello, Manager - Regulatory Affairs, at (910) 457-2235.

Sincerely,



John S. Keenan

WRM/wrm

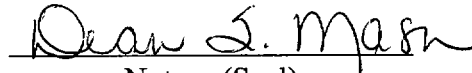
Enclosure: Response to Request For Additional Information (RAI) AST 2

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A001

John S. Keenan, 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: 8-29-04

cc (with enclosure):

U. S. Nuclear Regulatory Commission, Region II  
ATTN: Dr. Bruce S. Mallett, Regional Administrator  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, GA 30303-8931

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

U. S. Nuclear Regulatory Commission  
ATTN: Mr. Allen G. Hansen (Mail Stop OWFN 8G9)  
11555 Rockville Pike  
Rockville, MD 20852-2738

Ms. Jo A. Sanford  
Chair - North Carolina Utilities Commission  
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Mr. Mel Fry  
Director - Division of Radiation Protection  
North Carolina Department of Environment and Natural Resources  
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Response to Request For Additional Information (RAI) AST 2

**Background**

On August 1, 2001 (Serial: BSEP 01-0063), Carolina Power & Light (CP&L) Company submitted a license amendment application to allow a full-scope implementation of an Alternative Radiological Source Term (AST) for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. Subsequently, on November 28, 2001, the NRC provided an electronic version of a RAI concerning the method used for calculating HCl generation and the resulting impact on suppression pool pH. The response to this RAI follows.

**NRC Question**

In the submittal generation of HCl from the cable jacketing by radiation energy was calculated by the method from NUREG-1081. In this method the rate of generation of HCl is proportional to the total radiation energy absorbed by the cable insulation. This energy is equal to:

$$\text{Absorbed Energy} = \phi * S * A$$

Where:  $\phi$  - surface radiative energy flux

S - exposed surface of cable insulation

A - absorption fraction of incident energy

However, in the submittal instead of using surface flux, an average  $\phi$  was used (equation 6.3f in the submittal). This flux was determined by averaging its decreasing values inside the cable insulation as more and more energy is absorbed by the insulation material. Consequently, its value for  $\beta$  radiation was only 11.2% of the surface flux. This of course is reflected in the amount of generated HCl. Please, justify the use of the average radiation flux in your analysis.

**CP&L Response**

CP&L is revising the suppression pool post-loss of coolant accident (LOCA) pH calculation (i.e., BNP-RAD-003, Suppression Pool Post-LOCA pH Calculation With Alternate Source Term) to use the methodology of NUREG/CR-5950, "Iodine Evolution and pH Control," Appendix B, for determining the post-LOCA primary containment HCl production rate. A design-verified review indicates that the quantity of HCl generated over the 30-day transient increases from 2548 to 3518 moles of HCl. This results in a 30-day suppression pool pH of 7.93 versus the previously calculated value of 8.11. Thus, the existing conclusion remains valid; i.e., that the BSEP suppression pool would be maintained well above a pH of 7.0 throughout the 30-day duration following a postulated LOCA.