CP&L
A Progress Energy Company

John S. Keenan
Vice President
Brunswick Nuclear Plant

10 CFR 50.90

DEC 17 2001

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

P.O. Box 10429
Southport, NC 28461

T > 910.457.2496
F > 910.457.2803

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.

Dean L. Mash
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
P.O. Box 29510
Raleigh, NC 27626-0510

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

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)

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:

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

Where: φ - 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 φ 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 β 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.