CP&L

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FEB 2 1998

SERIAL: BSEP 97-0533
TSC 96TSB01

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
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
DRYWELL AIR TEMPERATURE LICENSE AMENDMENT REQUESTS
(TAC NOS. M99367 AND M99368)

Gentlemen:

By letter dated June 12, 1997 (Serial: BSEP 96-0337), Carolina Power & Light (CP&L) Company submitted license amendment requests for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2. This submittal proposed changes to Technical Specification 3.6.1.6 to require monitoring drywell average air temperature rather than primary containment average air temperature and to require that the drywell average air temperature be maintained less than or equal to 150°F during plant operation. As a result of a telephone conference with the NRC on December 11, 1997, CP&L is providing additional information regarding the small-break loss-of-coolant accident (LOCA) analysis discussion contained within the June 12, 1997, letter.

The license amendment request noted that the drywell atmosphere's initial temperature has minimal impact on the final drywell atmospheric temperature following a small-break LOCA. The justification for this statement is based upon a sensitivity study performed by General Electric (GE) specifically for BSEP in which the initial drywell temperature was varied for a large-break LOCA scenario. For this scenario, the first case evaluated an initial drywell atmosphere temperature of 135°F, while the second case used the same inputs, but with an initial drywell atmosphere temperature of 150°F. For the first case, the resultant drywell atmosphere peak temperature was 287.7°F. For the second case, the drywell atmosphere temperature peaked at 286.7°F, or a drop of 1°F in peak temperature for an increase of 15°F in initial average drywell temperature. The reason for the drop in peak temperature is that at 150°F, the drywell atmosphere has a lower density; therefore, the total mass of the fixed-volume 150°F drywell atmosphere is less than the same volume at 135°F. Thus, at the higher temperature, there is a lower mass of non-condensable gases transferred to the torus before steam condensation from the piping line break begins to occur. As a result, steam condensation would begin sooner, and the resultant maximum temperature reached by the drywell atmosphere is slightly lower. The same

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phenomenon would occur for small-break LOCAs, although the difference in peak drywell temperature caused by the higher initial temperature would be expected to be smaller. As such, the June 12, 1997, license amendment request indicates that a higher initial drywell atmosphere temperature had a minimal impact upon the resultant peak drywell atmosphere temperature.

That submittal also noted that the small-break LOCA analysis had not been re-performed for power uprate conditions (i.e., 105 percent power). This analysis was not re-performed since the design and licensing basis cited in the Updated Final Safety Analysis Report is based upon a small-break LOCA scenario that assumes a low pressure/low power condition. This condition results in a higher peak drywell atmosphere temperature than if the scenario had assumed a full power condition. Specifically, this scenario conservatively assumes that a reactor pressure of 500 psi is consistently maintained until high drywell pressure causes a reactor scram. This lower pressure allows more mass and energy to be released into the drywell before the high drywell pressure scram/isolation setpoint is reached. A higher reactor pressure condition would cause a higher break flow rate, but would result in the drywell high pressure scram/isolation signal occurring more quickly, with a smaller total mass and energy release. Therefore, a low power small-break LOCA results in the worst-case peak drywell temperature and bounds power uprate conditions.

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

WRM/wrm

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.

Dean S. Mason
Notary (Seal)

My commission expires: August 21, 1999

cc: U. S. Nuclear Regulatory Commission, Region II
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