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FEB 13 2002

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TSC-2001-09

U. S. Nuclear Regulatory Commission
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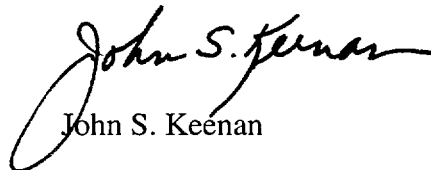
BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING
REQUEST FOR LICENSE AMENDMENTS - EXTENDED POWER UPRATE
(NRC TAC NOS. MB2700 AND MB2701)

Ladies and Gentlemen:

On August 9, 2001 (Serial: BSEP 01-0086), Carolina Power & Light (CP&L) Company requested a revision to the Operating Licenses (OLs) and the Technical Specifications for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. The proposed license amendments increase the maximum power level authorized by Section 2.C.(1) of OLs DPR-71 and DPR-62 from 2558 megawatts thermal (MWt) to 2923 MWt. Subsequently, on January 29, 2002, the NRC provided an electronic version of a Request for Additional Information (RAI) concerning the containment pressure and temperature analyses performed in support of the BSEP extended power uprate. The response to this RAI is enclosed.

Please refer any questions regarding this submittal to Mr. Leonard R. Beller,
Manager - Regulatory Affairs, at (910) 457-2073.

Sincerely,



John S. Keenan

MAT/mat

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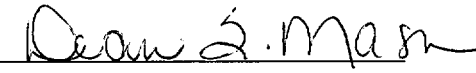
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Enclosure:

Response to Request for Additional Information (RAI) 14

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

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ENCLOSURE

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Response to Request for Additional Information (RAI) 14

Background

On August 9, 2001 (Serial: BSEP 01-0086), Carolina Power & Light (CP&L) Company requested a revision to the Operating Licenses (OLs) and the Technical Specifications for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. The proposed license amendments increase the maximum power level authorized by Section 2.C.(1) of OLs DPR-71 and DPR-62 from 2558 megawatts thermal (MWt) to 2923 MWt. Subsequently, on January 29, 2002, the NRC provided an electronic version of a Request for Additional Information (RAI) concerning the containment pressure and temperature analyses performed in support of the BSEP extended power uprate (EPU). The original RAI included ten questions. As a result of dialogue regarding these questions, the scope of the RAI was reduced to five questions. The responses to the questions follow.

NRC Question 14-1

Please provide the peak pressure and temperature curves for the EPU analyses. (PUSAR Table 4-1 provides the peak values for DBA-LOCA.).

Response to Question 14-1

The design basis Loss-of-Coolant Accident (LOCA) containment responses are plotted in Figures 1 through 4. Figures 1 and 2 provide the short-term responses, which determine peak drywell pressure and temperature. Figures 3 and 4 provide the long-term responses, which determine the peak wetwell airspace and suppression pool temperatures; as well as the wetwell secondary peak pressure.

Figure 1 - BSEP Design Basis LOCA Short-term Containment Pressure Response

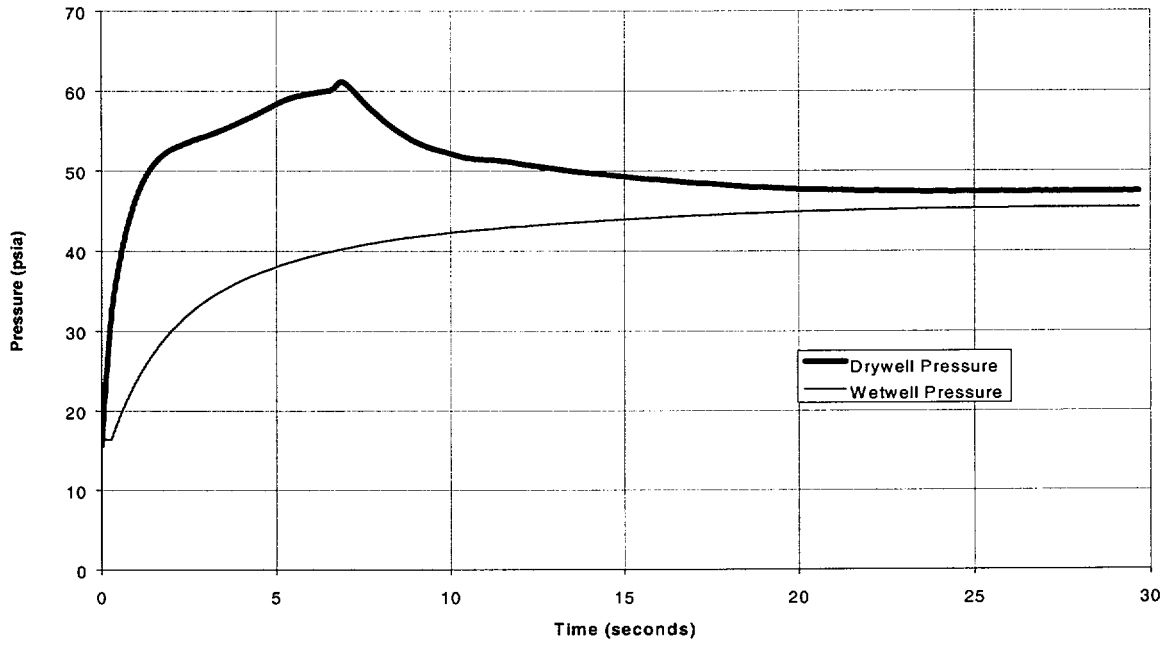


Figure 2 - BSEP Design Basis LOCA Short-term Containment Temperature Response

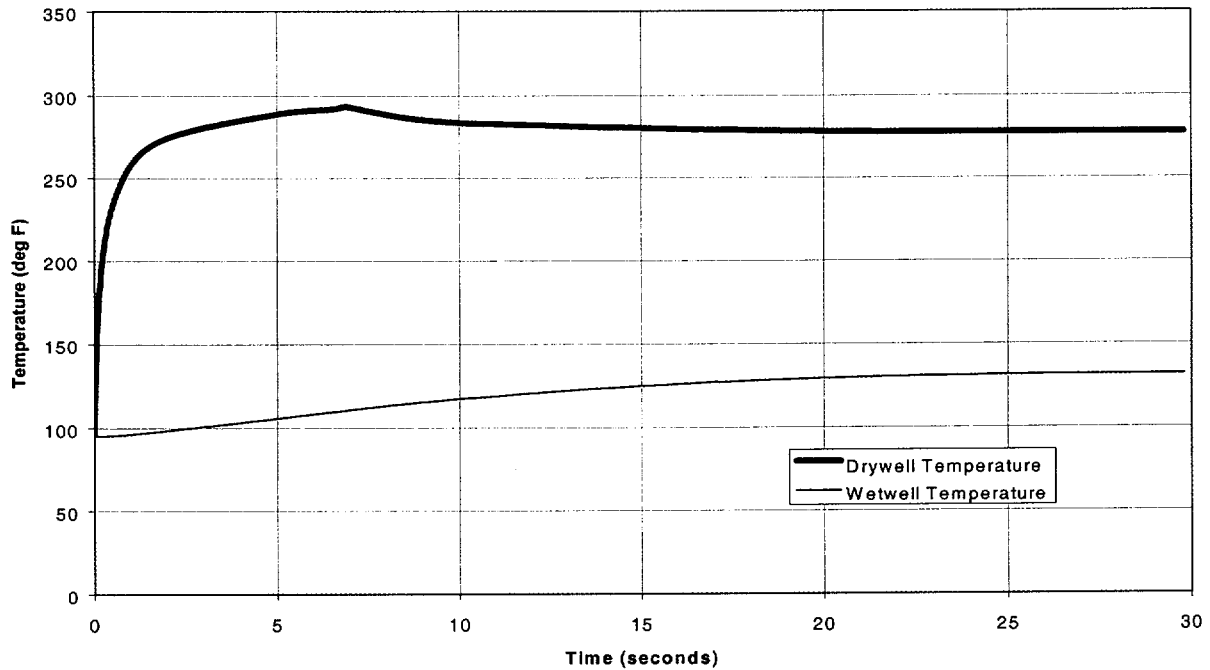


Figure 3 - BSEP Design Basis LOCA Long-term Containment Pressure Response

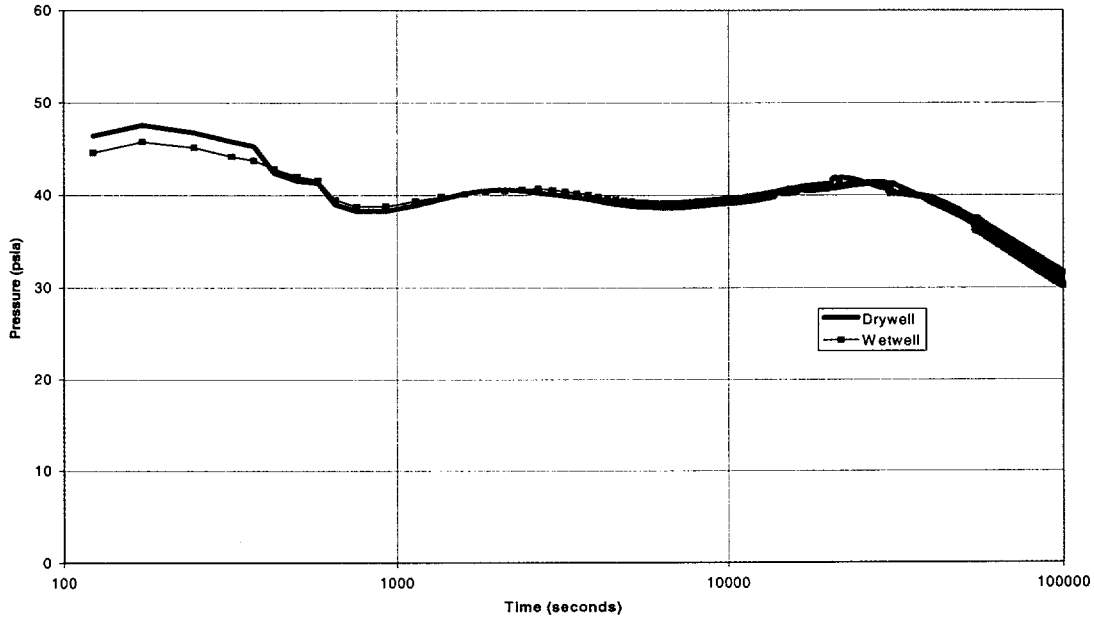
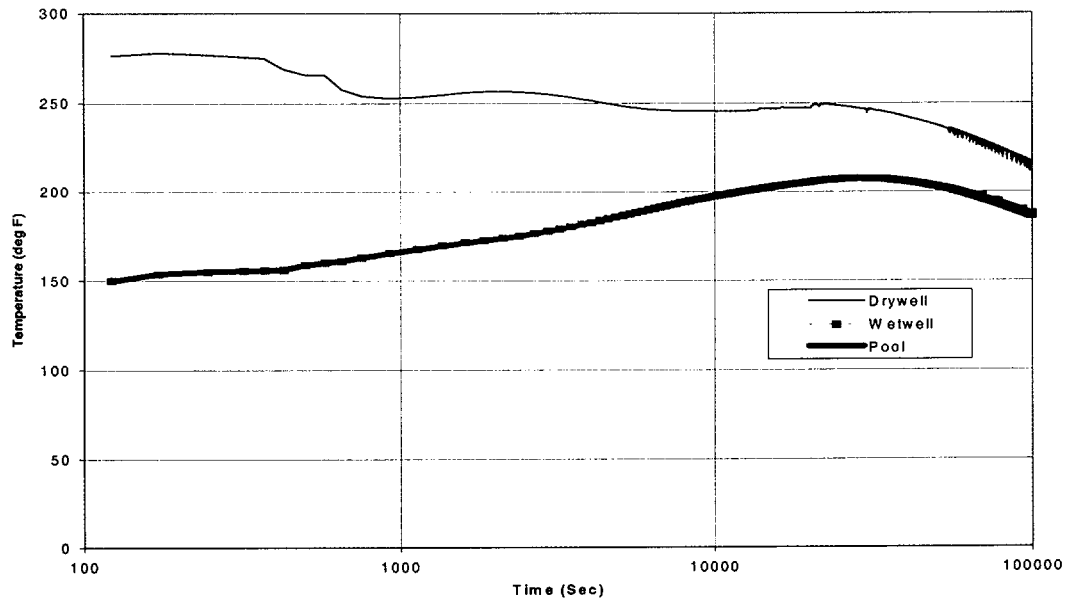


Figure 4 - BSEP Design Basis LOCA Long-term Containment Temperature Response



NRC Question 14-2

Please provide the peak temperature values for steam line breaks and wetwell pressure for NPSH evaluation.

Response to Question 14-2

For the EPU evaluation, four steam line break sizes were analyzed: 0.01 ft², 0.1 ft², 0.3 ft², and 0.75 ft². Figure 5 shows the drywell and suppression pool temperature responses to the 0.75 ft² steam line break, which resulted in the highest peak drywell temperature of 338.1°F among the four break sizes. The wetwell pressure response is plotted in Figure 6.

Figure 5 - BSEP 0.75 ft² Steam Line Break Containment Temperature Response

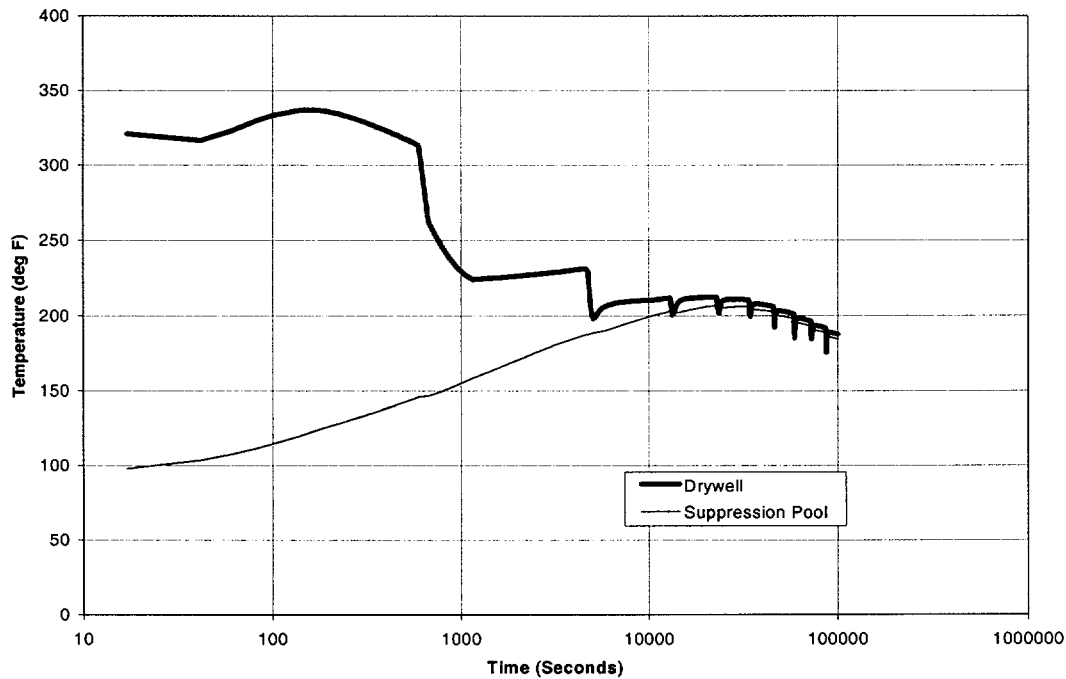
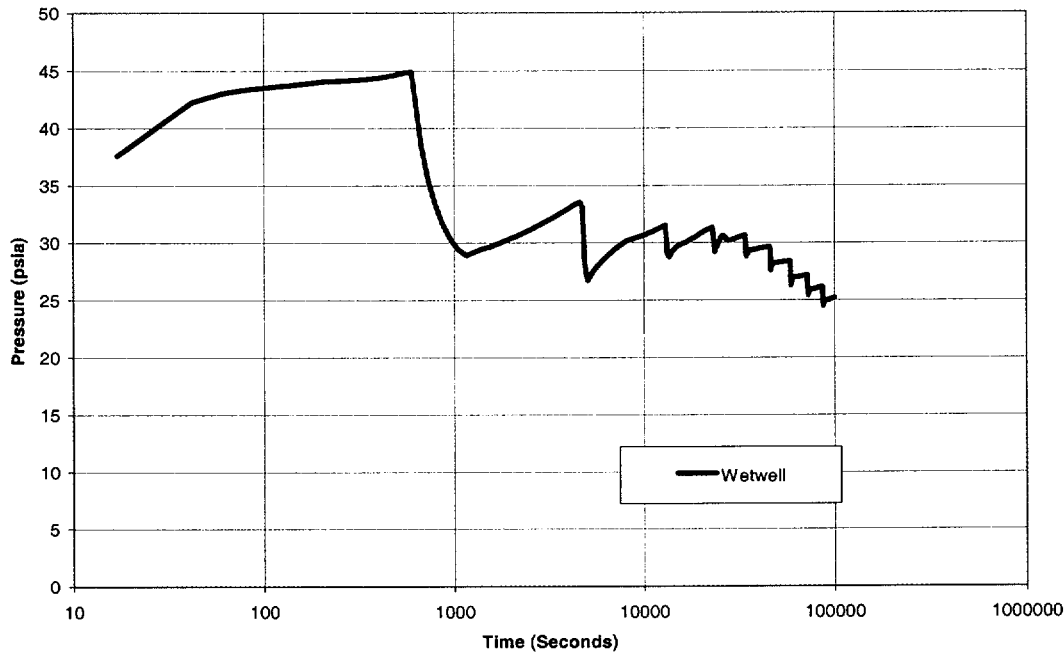


Figure 6: BSEP 0.75 ft² Steam Line Break Wetwell Pressure Response



NRC Question 14-3

Section 4.1.2.2 of PUSAR for Safety Relief Valve (SRV) Discharge Loads indicates that SRV re-actuation used the maximum reflood height. Please indicate how this is achieved.

Response to Question 14-3

BSEP Units 1 and 2 do not have a low-low set logic for the SRV system; SRVs are closed and re-opened with the same setpoints as first actuations. Upon opening of the SRV, the water in the SRV discharge line is expelled into the pool, due to steam discharge from the reactor vessel. After the SRV is closed, condensation of steam in the discharge line causes the line pressure to drop below the pool pressure and below the drywell pressure. As a result, water from the pool re-floods the discharge line. At the same time, the discharge line vacuum breaker located in the drywell opens, and the gas from the drywell flows into the line. Such phenomenological behavior determines the water level in the line (i.e., reflood height). For BSEP, the reflood height was calculated for the time period between closure and re-opening of the SRV, and the maximum reflood height was used when the SRV discharge loads were defined. The maximum reflood height, calculated as such, remains unchanged at EPU conditions, because factors affecting the reflood height, such as the vacuum breaker capacity, the line geometry, and SRV setpoints, are unchanged.

NRC Question 14-4

For Post-LOCA Combustible Gas Control in Section 4.7, please provide the hydrogen and oxygen concentration curves following a LOCA,

Response to Question 14-4

Figures 7 and 8 provide the requested curves.

Figure 7 - Uncontrolled Drywell Hydrogen and Oxygen Concentrations for EPU

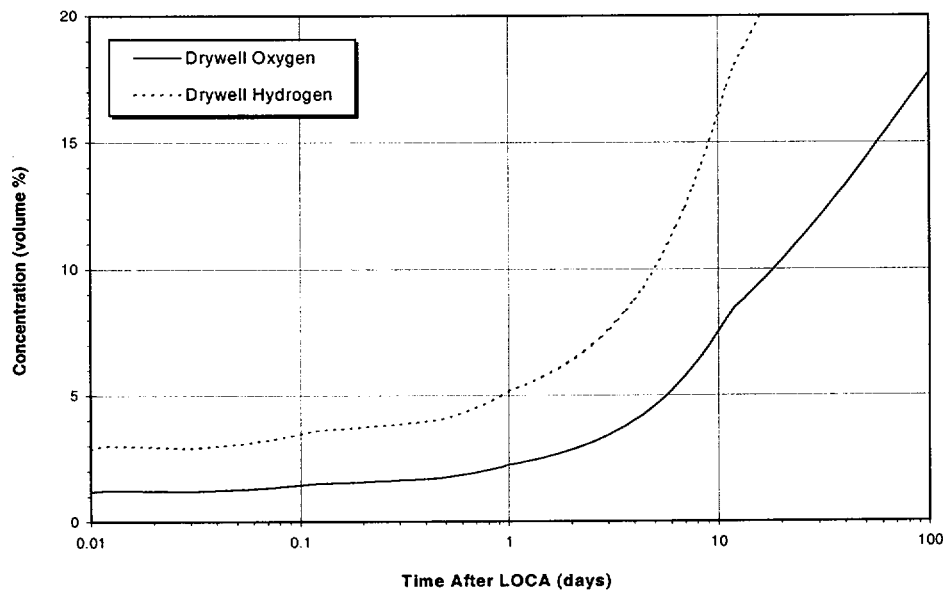
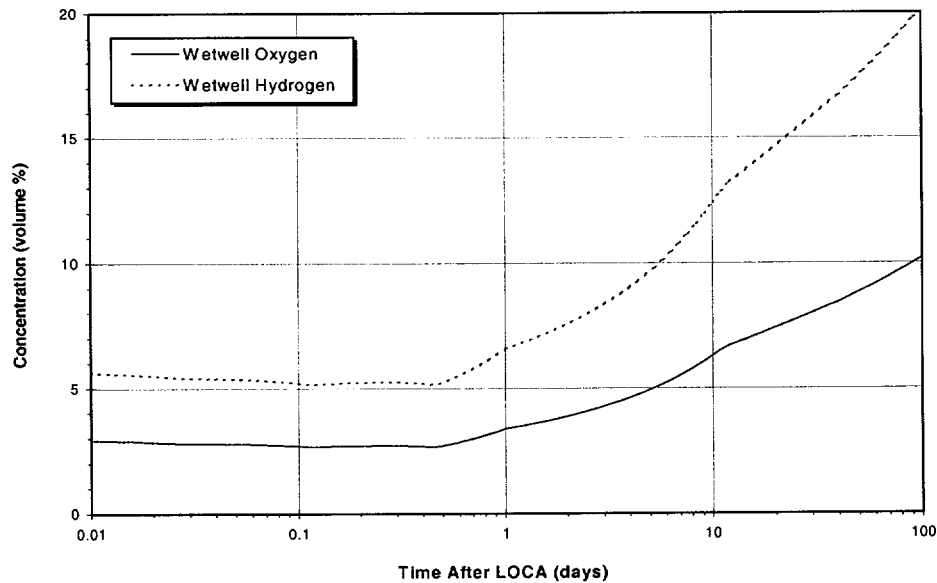


Figure 8 - Uncontrolled Wetwell Hydrogen and Oxygen Concentrations for EPU



NRC Question 14-5

For Post-LOCA Combustible Gas Control in Section 4.7, please provide a curve that shows the rate of Nitrogen injection into the containment that is required to keep the oxygen concentration below 5% by volume.

Response to Question 14-5

Figure 9 provides the required nitrogen volume to maintain oxygen below 5% by volume as a function of time after the LOCA. The maximum required nitrogen injection rate during this period is 26.2 scfm.

Figure 9 - Containment Atmospheric Dilution System Nitrogen Volume Requirement for EPU

