



John S. Keenan
Vice President
Brunswick Nuclear Plant

MAR 07 2002

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TSC-2001-09

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

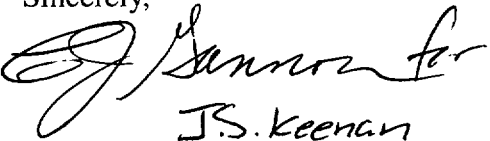
BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING
REQUEST FOR LICENSE AMENDMENTS - EXTENDED POWER UPRATE
(NRC TAC NOS. MB2700 AND MB2701)

Ladies and Gentlemen:

On August 9, 2001 (i.e., 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 24, 2002 (i.e., Serial: BSEP 01-0164), CP&L responded to a Request for Additional Information (RAI) associated with the Civil & Engineering Mechanics Section's review of the extended power uprate amendment request. On February 21 and February 22, 2002, the NRC provided an electronic version of a follow-up RAI concerning Feedwater system and Core Spray system nozzles. The response to this follow-up RAI is enclosed.

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

Sincerely,



J.S. Keenan

John S. Keenan

MAT/mat

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Southport, NC 28461

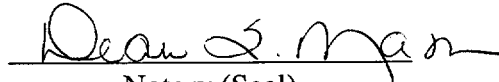
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A047

Enclosure:

Response to Request for Additional Information (RAI) 24

C. J. Gannon, 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: August 29, 2004

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

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
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Response to Request for Additional Information (RAI) 24

Background

On August 9, 2001 (i.e., 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 24, 2002 (i.e., Serial: BSEP 01-0164), CP&L responded to a RAI associated with the Civil & Engineering Mechanics Section's review of the extended power uprate (EPU) amendment request. On February 21 and February 22, 2002, the NRC provided an electronic version of a follow-up RAI concerning Feedwater system and Core Spray system nozzles. The response to this follow-up RAI follows.

NRC Question 24-1

In your response #11-2 (dated 1/24/02), you indicated that the feedwater nozzles at BSEP Unit 1 had modifications due to operation condition changes as a result of EPU. Specify the required modifications for the BSEP feedwater nozzles. Also, provide the stress allowable for the feedwater nozzles and other limiting RV components listed in Table 3-3 of the amendment submittal.

Response to NRC Question 24-1

The response to NRC Question 11-2 stated:

The only components that had modifications and also had operating conditions change as a result of EPU are the feedwater nozzles in BSEP Unit 1. The other reactor pressure vessel (RPV) components had no increase in operating conditions due to EPU and were not reanalyzed. For BSEP Unit 1, the feedwater nozzles had safe end replacements and the American Society of Mechanical Engineers (ASME) Code edition used in this analysis is the 1971 Edition including the Addenda through Summer 1973.

As a clarification, there are no RPV components which require modification due to EPU operating conditions. The BSEP Unit 1 feedwater nozzles had safe end replacements prior to initial startup of the unit. This modification, as well as the EPU stress analysis, were evaluated in accordance with the ASME Code 1971 Edition, including the Addenda through Summer 1973, (i.e., the Code of record for BSEP).

The allowable stress for the RPV components listed in Table 3-3 of the PUSAR (i.e., Enclosure 3 of CP&L's EPU amendment request (i.e., Serial: BSEP 01-0086)) are as follows:

Component	Allowable Stress
Core Spray Nozzle – Safe End	52.47
Main Closure Studs	80.1
Recirculation Inlet Nozzle	52.47
Refueling Bellows Support	65.1
Feedwater Nozzle (Unit 1/Unit 2)	69.9/54.3

NRC Question 24-2

Based on the allowable stresses, the calculated stress of 52.3 ksi in the core spray nozzle safe end for both the current operating and EPU conditions is almost equal to (about 0.998) the allowable stress of 52.4 ksi. Also, the CUF of the core spray nozzle safe end at BSEP 1 is about 0.06 for 27 years of operation before EPU. With additional 13 years operation at the EPU condition (while there is no increase in stress), the CUF increase six times to 0.37, the calculation is therefore needed to illustrate the changes. As such, provide the calculation of the stress and CUF for the core spray nozzle safe end at both the current rated and EPU conditions.

Response to NRC Question 24-2

No calculations were performed for the stress on the core spray nozzle safe end for the EPU condition. Since this is a constant pressure power uprate, the operating conditions that affect the core spray nozzle safe end have not changed due to the EPU. The stress on the core spray nozzle safe end that is reported in Table 3-3 of the PUSAR is consistent with the existing approved licensing basis.

The fatigue for the core spray nozzle safe end reported in the initial 5% Power Uprate Safety Analysis Report (NEDC-32466P, September 1995) is 0.96. The usage factor was recalculated, not because of any change in operating conditions for EPU, but because plant specific data is available from a fatigue monitoring program, which shows that the actual fatigue usage is much lower than that reported in the 1995 Power Uprate Safety Analysis Report. The data from the fatigue monitoring program shows that the fatigue usage after 27 years is 0.06. The fatigue usage for 40 years was conservatively calculated as a combination of 27 years, based on the

monitoring system data, plus 13 years based on the fatigue reported in the 1995 Power Uprate Safety Analysis Report, as shown below for Unit 1:

$$U = 0.062 + 0.96 * (13/40) = 0.062 + 0.312 = 0.374$$