



Carolina Power & Light Company
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JUL 23 1997

SERIAL: BSEP 97-0325

U. S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

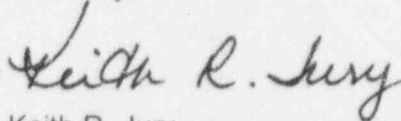
BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-324/LICENSE NO. DPR-62
ASME BOILER AND PRESSURE VESSEL CODE, SECTION XI
IN-SERVICE INSPECTION PROGRAM RELIEF REQUEST
SERVICE WATER PIPING NON-CODE REPAIR

Gentlemen:

The purpose of this letter is to request relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, in accordance with 10 CFR 50.55a(g)(6)(i), and NRC Generic Letter 90-05, "Guidance For Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping," for the Brunswick Steam Electric Plant, Unit No. 2. The request for relief applies to a through-wall leak identified on the Service Water system nuclear header (line number 2-SW-103-30-157). The detailed request for relief is provided in Enclosure 1. A list of regulatory commitments contained in this letter is provided in Enclosure 2.

Please refer any questions regarding this submittal to Mr. Mark Turkal, Supervisor - Licensing at (910) 457-3066.

Sincerely,



Keith R. Jury
Manager - Regulatory Affairs
Brunswick Steam Electric Plant

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WRM/wrm

Enclosures

1. Relief Request
2. List of Regulatory Commitments

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PDR APOCK 05000324
P PDR



pc (with enclosures):

U. S. Nuclear Regulatory Commission, Region II
ATTN.: Mr. Luis A. Reyes, Regional Administrator
Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, GA 30303

U. S. Nuclear Regulatory Commission
ATTN: Mr. C. A. Patterson, NRC Senior Resident Inspector
8470 River Road
Southport, NC 28461

U. S. Nuclear Regulatory Commission
ATTN.: Mr. David C. Trimble, Jr. (Mail Stop OWFN 14H22)
11555 Rockville Pike
Rockville, MD 20852-2738

The Honorable J. A. Sanford
Chairman - North Carolina Utilities Commission
P.O. Box 29510
Raleigh, NC 27626-0510

Division of Boiler and Pressure Vessel
North Carolina Department of Labor
ATTN: Mr. Jack Given, Assistant Director of Boiler & Pressure Vessels
4 West Edenton Street
Raleigh, NC 27601-1092

ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-324
OPERATING LICENSE NO. DPR-62
ASME BOILER AND PRESSURE VESSEL CODE, SECTION XI
IN-SERVICE INSPECTION PROGRAM RELIEF REQUEST
SERVICE WATER PIPING NON-CODE REPAIR

| | |
|-------------------------------------|--|
| Unit: | 2 |
| Component: | Service Water System Nuclear Header (Line Number 2-SW-103-30-157) |
| System: | Service Water |
| Class: | 3 |
| Impractical Code Requirement: | The American Society of Mechanical Engineers (ASME) Code, Section XI, 1980 Edition through the 1981 Addenda, paragraph IWA-4000 states: "Repairs shall be performed in accordance with the Owner's Design Specification and Construction Code of the component or system." |
| Proposed Alternative: | Perform a temporary, non-code repair on the Brunswick Steam Electric Plant (BSEP), Unit No. 2 Service Water System nuclear header piping, in accordance with NRC Generic Letter 90-05, until the next scheduled outage exceeding thirty days (but no later than the next scheduled refueling outage). |
| Basis For The Proposed Alternative: | <p>On June 27, 1997, a through-wall leak was identified on the BSEP Unit No. 2 Service Water system nuclear header (line number 2-SW-103-30-157). The leak rate has been characterized as 20 drops per minute.</p> <p>Line number 2-SW-103-30-157 is part of a moderate energy system and is classified as ASME Class 3. Completion of a code repair of the flaw would require isolation of the Service Water System nuclear header and shut down of the unit; therefore, code repair of the flaw during plant operation is impractical.</p> |

In accordance with the guidance of NRC Generic Letter 90-05, the 30-inch pipe has been examined by the ultrasonic examination (UT) method. The defect has been characterized as a localized "pin-hole" type leak. Static wall thickness measurements have been taken on the pipe base metal and the weld metal. A total of nine rows were inspected around the entire pipe circumference. Subsequently, a dynamic ultrasonic scan of the entire weld circumference was also performed.

For Code Class 3 piping, NRC Generic Letter 90-05 identifies two flaw evaluation approaches that should be considered — the "through-wall flaw" approach and the "wall thinning" approach. Generic Letter 90-05 states that a temporary non-code repair may be proposed if a flaw is found acceptable by the "through-wall flaw" approach. CP&L has performed an evaluation of the flaw area using the "through-wall flaw" approach.

As described in Generic Letter 90-05, the "through-wall flaw" approach evaluates the flaw stability using a linear elastic fracture mechanics methodology. The maximum length of the portion of the flaw that extends beyond " t_{min} ", independent of orientation with respect to the pipe, is the through-wall flaw length " $2a$." Generic Letter 90-05 states that if the length " $2a$ " exceeds either 3 inches or 15 percent of the length of the pipe circumference, the flaw is not acceptable using this approach.

CP&L has determined the " $2a$ " for the flaw to be approximately 0.75 inches, which meets the acceptance criteria for the "through-wall flaw" approach. Based on the results of the "through-wall flaw" evaluation, CP&L has concluded that non-code repair of the flaw area is acceptable until Refuel Outage 12 for BSEP Unit No. 2, which is currently scheduled to begin on September 13, 1997.

In addition to the evaluation, augmented inspections using the UT method of five (5) susceptible and accessible locations were performed. The results of these examinations were

evaluated and found to be acceptable as no other flaws were identified.

As stipulated by Generic Letter 90-05, until the code repair is completed, the integrity of the flawed area will be assessed at least every 3 months using a non-destructive examination technique. In addition, as stipulated by the Generic Letter, a qualitative assessment of leakage through the flawed area will be performed at least every week to determine any degradation of structural integrity until the code repair is completed.

In conclusion, the overall degradation of the affected portion of the Service Water system has been assessed and evaluated as acceptable.

ENCLOSURE 2

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
NRC DOCKET NO. 50-324
OPERATING LICENSE NO. DPR-62
ASME BOILER AND PRESSURE VESSEL CODE, SECTION XI
IN-SERVICE INSPECTION PROGRAM RELIEF REQUEST
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LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by Carolina Power & Light (CP&L) Company in this document. Any other actions discussed in the submittal represent intended or planned actions by CP&L. They are described for the NRC's information and are not regulatory commitments. Please notify the Manager - Regulatory Affairs at the Brunswick Steam Electric Plant of any questions regarding this document or any associated regulatory commitments.

| Commitment | Committed date or outage |
|---|---|
| 1. Assess the integrity of the flawed area located on line number 2-SW-103-30-157 immediately downstream of the 30-inch elbow where the pipe exits the southeast pipe chase, in accordance with Generic Letter 90-05, using a non-destructive examination technique. | At least every 3 months until completion of a code repair. |
| 2. Perform a qualitative assessment of leakage through the flawed area located on line number 2-SW-103-30-157 immediately downstream of the 30-inch elbow where the pipe exits the southeast pipe chase, in accordance with Generic Letter 90-05, to determine any degradation of structural integrity. | At least every week until completion of a code repair. |
| 3. Perform a repair in accordance with the ASME Code, Section XI of the flawed area of line number 2-SW-103-30-157 immediately downstream of the 30-inch elbow where the pipe exits the southeast pipe chase. | Next scheduled outage exceeding 30 days duration or B213R1. |