



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION P" THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO REQUEST FOR RELIEF FROM THE
AMERICAN SOCIETY OF MECHANICAL ENGINEERS, SECTION XI,
HYDROSTATIC PRESSURE TESTING REQUIREMENTS
CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1
DOCKET NO. 50-325

I. INTRODUCTION

Technical Specification 4.0.5 for Brunswick Steam Electric Plant, Unit 1 (BSEP-1), states that the inservice inspection and testing of the American Society of Mechanical Engineers Code, (ASME Code), Section XI, Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda, as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Pursuant to 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (g) may be used if (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the second ten-year interval comply with the requirements in the latest Edition and Addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) on the date twelve months prior to the start of the 120-month inspection interval, subject to the limitations and modifications listed therein. The applicable Edition of Section XI of the

ASME Code for BSEP-1, second 10-year inservice inspection (ISI) interval is the 1980 Edition with Addenda through Winter 1981. The components (including supports) may meet the requirements set forth in subsequent Editions and Addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(a)(3), the staff may authorize the use of alternatives if the applicant demonstrates that (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality or safety.

By letter dated February 26, 1992, the licensee, Carolina Power & Light Company (CP&L), submitted a request for relief for the second 10-year ISI interval. The staff has evaluated the subject request for relief in the following sections.

II. EVALUATION

Request for Relief From Hydrostatic Test Requirements Following Weld Repairs to a Pressure Retaining Component

ASME Code Requirements: The ASME Code, 1980 Edition through Winter 1981 Addenda, Section XI, Subarticle IWA-4400(a) requires that after repairs by welding on the pressure retaining boundary, a system pressure test shall be performed in accordance with Article IWA-5000. Paragraphs IWA-5214(a) and IWA-5214(b) require that the pressure test requirements comply with IWD-5223 for Class 3 components. Paragraph IWD-5223(f) requires that for safety or relief valve piping which discharges into the containment pressure suppression pool, a pneumatic test (at a pressure of 90% of the pipe submergence head of water) that demonstrates leakage integrity shall be performed in lieu of system hydrostatic test.

Licensee's ASME Code Relief Request: Relief is requested from performing a pneumatic test at a pressure of 90% of the pipe submergence head of water.

Licensee's Basis for Requesting Relief: A plant modification to replace the existing main feedwater containment isolation check valves is being performed to correct the continuing local leak rate test failures being experienced

with the valves. To support the modification, a portion of the discharge piping for the F013H main steam safety/relief valve is being temporarily removed and, subsequently, re-installed.

The affected discharge piping is located in the drywell portion of the primary containment, the centerline of the tee-quencher for the relief valve discharge piping is 7.25 feet below the high water level in the containment suppression pool. Accordingly, the ASME Code test pressure corresponding to 90% of the pipe submergence head of water is 2.8 psi. The performance of the subject pneumatic testing would be a hardship because it will require disassembly of the F013H safety/relief valve in order to pressurize the piping. The system design pressure is 450 psig and design temperature is 560 degrees F. The test pressure required by the ASME Code is significantly lower than the design pressure and the operating pressure. The licensee has stated that it believes the subject pressure test under the ASME Code does not provide assurance of the integrity of the piping, and will result in personnel radiation exposure associated with the performance of the test; approximately 0.3 person-rem of personnel radiation savings can be realized by not performing the pneumatic test in accordance with the ASME Code.

Licensee's Proposed Alternative Examination: The licensee has stated that, as an alternate examination, the field welds will be examined to the most stringent optional requirement of the ASME Code, Section III, Class 3 (i.e., using RT examination). Based on the alternate testing, it is highly improbable that a weld that passes a volumetric examination will leak at a test pressure of 2.8 psi (a test pressure of 90% of the pipe submergence head water).

III. DISCUSSION/CONCLUSION

The ASME Code requirements to pneumatically test at a pressure of 90% of the pipe submergence head of water (i.e., 2.8 psi) will result in a hardship without a compensating increase in the level of quality and safety. In order for the licensee to perform the Code required examinations, the F013H main steam safety relief valve would have to be disassembled and reassembled. The disassembling and reassembling of the subject valve would be a hardship and could inadvertently damage the valve. The ASME Code examination would also result in a hardship because personnel would be subjected to approximately 0.3 person-rem of radiation exposure. The test pressure required by the ASME Code is significantly lower than the design pressure (450 psig at 560 degrees F) and operating pressure typically experienced by the piping; thus, the ASME Code requirements may not provide the assurance of the integrity of the piping or a compensating increase in the level of quality and safety.

The staff concluded that compliance with the ASME Code requirements would result in hardship without a compensating increase in the level of quality and safety given that the test pressure may not be sufficient to provide assurance of piping integrity. The licensee's proposed alternative to examine the subject welds to the more stringent optional requirement of the ASME Code, Section III, Class 3 (i.e., using Radiograph Examination) is a viable alternative to the ASME Code and will provide adequate assurance of structural integrity of safety/relief valve F013H piping. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the staff authorizes the licensee's proposed alternative.

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Date: