UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 20, 2008

Mr. Benjamin Waldrep, Vice President
Brunswick Steam Electric Plant
Carolina Power & Light Company
Post Office Box 10429
Southport, North Carolina 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 - RELIEF REQUEST CIP-01 FOR THE FOURTH 10-YEAR INSERVICE INSPECTION INTERVAL (TAC NOS. MD8120 AND MD8121)

Dear Mr. Waldrep:

By letter dated February 6, 2008, as supplemented by letters dated July 14, September 8, and September 28, 2008, Carolina Power & Light Company (the licensee) submitted Relief Request CIP-01 (RR CIP-01) related to the fourth 10-year inservice inspection (ISI) interval for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. In RR CIP-01, the licensee proposed an alternative to paragraph IWE-5221, "Leakage Test," of the American Society of Mechanical Engineers (ASME) Code, Section XI, 2001 Edition with the 2003 Addenda, that requires a pneumatic leakage test in accordance with the provisions of Title 10 of *Code of Federal Regulations* (CFR) Part 50, Appendix J, Paragraph IV.A, "Containment modification," following repair/replacement activities performed on the pressure retaining boundary of Class MC or Class CC components. The fourth 10-year ISI interval began on May 11, 2008 and is scheduled to be completed by May 10, 2018.

The Nuclear Regulatory Commission (NRC) staff has evaluated RR CIP-01 and concluded that the licensee's proposed alternative is acceptable because it provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the implementation of RR CIP-01 is authorized for the BSEP, Units 1 and 2 fourth 10-year ISI interval.

The bases for the NRC staff's conclusion are contained in the enclosed Safety Evaluation. If you have any questions regarding this issue, please contact Farideh Saba at (301) 415-1447 or farideh.saba@nrc.gov.

Sincerely,

Thomas H. Boyce, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-325 and 50-324

Enclosure: Safety Evaluation

cc w/encl: See next page

cc:

Sandra Spencer, Mayor
City of Southport
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOURTH 10-YEAR INSERVICE INSPECTION INTERVAL

RELIEF REQUEST CIP-01

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2

DOCKET NUMBERS 50-325 AND 50-324

1.0 INTRODUCTION

By letter dated February 6, 2008, as supplemented by letters dated July 14, September 8, and September 28, 2008, Carolina Power & Light Company (the licensee) submitted Relief Request CIP-01 (RR CIP-01) related to the fourth 10-year inservice inspection (ISI) interval for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. The fourth 10-year ISI interval began on May 11, 2008 and is scheduled to be completed by May 10, 2018.

Specifically, RR CIP-01 requests an alternative to paragraph IWE-5221, "Leakage Test," of American Society of Mechanical Engineers (ASME), Section XI, 2001 Edition with the 2003 Addenda. Paragraph IWE-5221 requires a pneumatic leakage test in accordance with the prescriptive testing provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix J, Paragraph IV.A "Containment modification," following repair/replacement activities performed on the pressure retaining boundary of Class MC or Class CC components. BSEP, Units 1 and 2 Technical Specifications require the use of the performance-based test provisions of 10 CFR Part 50, Appendix J, Option B. In Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak Test Program," the Nuclear Regulatory Commission (NRC) staff has determined, with certain exceptions, that Nuclear Energy Institute (NEI) 94-01, "Industry Guidelines of Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," provides acceptable methods for complying with the provisions of Option B in Appendix J of 10 CFR 50.

The licensee requested to use the provisions of Section 9.2.4, "Containment Repairs and Modifications," of NEI 94-01 to perform leak rate testing of those Class MC components that are affected by containment repair, replacement or modification activities.

The NRC staff's review addresses the ability of the licensee to maintain an acceptable level of quality and safety to ensure integrity of the containment when leak rate testing of components affected by the containment repair/replacement activities is performed in accordance with the provisions of NEI 94-01.

2.0 REGULATORY EVALUATION

Section 50.55a(g) of 10 CFR requires that ISI of ASME Code Class 1, 2, and 3 components be performed in accordance with Section XI, "Rules for Inservice Inspection of Nuclear Power Plant

Components," of the ASME Code and applicable addenda, except where specific written relief has been granted by the NRC pursuant to 10 CFR 50.55a(g)(6)(i). According to 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph 50.55a(g) may be used, when authorized by the NRC, if: (i) an applicant demonstrates that the proposed alternatives would provide an acceptable level of quality and safety, or (ii) the specified requirement would result in hardship or unusual difficulty 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 set forth in the ASME Code, Section XI to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that ISI of components and system pressure tests conducted during the first 10-year interval and subsequent intervals 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), 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The ISI code of record for the fourth 10-year inspection interval for BSEP, Units 1 and 2 is the 2001 Edition through the 2003 Addenda of the ASME Code, Section XI.

Paragraph IWE-5221 of ASME, Section XI, 2001 Edition with the 2003 Addenda requires that repair/replacement activities performed on the pressure retaining boundary of Class MC or Class CC components be subjected to a pneumatic leakage test in accordance with the provisions of 10 CFR 50, Appendix J, paragraph IV.A, which states that: "Any major modification, replacement of a component which is part of the primary reactor containment boundary, or resealing a seal-welded door, performed after the preoperational leakage rate test shall be followed by either a Type A, Type B, or Type C test, as applicable for the area affected by the modification."

3.0 TECHNICAL EVALUATION

3.1 ASME Code Components Affected

Class MC Components in pressure suppression system (drywell, suppression chamber, and vent system)

3.2 Applicable Code Edition and Addenda

BSEP, Units 1 and 2 current code of record for the fourth 10-year ISI interval is the ASME Code, Section XI, 2001 Edition with the 2003 Addenda.

3.3 Applicable ASME Code Requirement

ASME Code, Section XI, paragraph IWE-5221 requires repair/replacement performed on the pressure retaining boundary of Class MC or Class CC components to be subjected to a pneumatic leakage test in accordance with the provisions of 10 CFR 50, Appendix J, paragraph IV.A.

3.4 Licensee Proposed Alternative and Basis for Use

In RR CIP-01, as an alternative to ASME Code, Section XI, paragraph IWE-5221 referencing 10 CFR 50, Appendix J, paragraph IV.A, the licensee requested to use the provisions of NEI 94-01 to perform leak rate testing of those Class MC components that are affected by containment repair, replacement or modification activities. This alternative is proposed for the fourth 10-year ISI interval.

The licensee, in letter dated February 6, 2008, stated that (1) BSEP, Units 1 and 2 Technical Specifications (TSs) requires leakage rate testing of the primary containment be performed in accordance with the performance-based provisions of 10 CFR Part 50, Appendix J, Option B and in accordance with the guidelines contained in RG 1.163 and (2) the proposed alternative in RR CIP-01 to use NEI 94-01, which is endorsed in RG 1.163, for leak rate testing of containment repair, replacement or modification activities is consistent with the plant's TSs. As such, this alternative provides an acceptable level of quality and safety, and does not adversely impact the health and safety of the public.

3.5 Staff Evaluation

The reactor containment leakage test program requires the licensee to perform an Integrated Leak Rate Test, also termed as a Type A test; and Local Leak Rate Test, also termed as Type B and Type C tests. The Type A test measures the overall leakage rate of the primary reactor containment. Type B tests are primarily intended to detect leakage paths and measure leakage rates for primary reactor containment penetrations. Type C tests are intended to measure containment isolation valve leakage rates.

During the review, the NRC staff identified areas in which additional information was necessary to complete the evaluation of the applicant's proposed alternative. By letters dated July 14, September 8, and September 28, 2008, the applicant provided the response to the staff's request for additional information (RAI). The following describes the staff's RAI, the corresponding applicant responses, and the staff evaluation.

The NRC staff noted that BSEP, Units 1 and 2 TS 5.5.12 requires leakage rate testing of the primary containment be performed as required by the performance-based provisions of 10 CFR Part 50, Appendix J, Option B, as modified by approved exemptions, and in accordance with the guidelines contained in RG 1.163. As stated in RG 1.163, NEI 94-01 provides acceptable methods for complying with the provisions of Option B in Appendix J to 10 CFR 50. Section 9.2.4 of NEI 94-01 specifies repairs and modifications that affect the containment leakage integrity be subjected to leakage rate testing (Type A or local leak rate testing), prior to returning the containment to operation. RG 1.163 does not take any exception to Section 9.2.4 of NEI 94-01. However, RG 1.163 takes exception to NEI 94-01, Section 10.2.3.3, "Repairs or Adjustments," regarding Type C tests. In response to staff's RAI, the applicant confirmed, in letter dated July 14, 2008, that the proposed alternative in RR CIP-01 will not affect the performance of any Type C testing or any activity (i.e., repair or adjustment) associated with a Type C test.

The applicant also clarified, in letter dated September 8, 2008, that the leak rate testing of the components affected by the repair or modification will be completed prior to returning the

containment to service. Only as allowed in Section 9.2.4 of NEI 94-01 and provided non-destructive examinations have been satisfactorily performed in accordance with the repair/replacement program, the leak rate testing of the following items, where the nominal diameter of the welds or penetrations does not exceed one inch, may be deferred until the next scheduled leakage test: (1) welds of attachments to the surface of steel pressure-retaining boundary, (2) repair cavities, the depth that does not penetrate required designed steel wall by more than 10 percent, or (3) welds attaching to steel pressure-retaining boundary penetrations. This is consistent with the specific guidance and provisions of RG 1.163 and NEI 94-01 and, therefore, acceptable.

Based on the above, the NRC staff has determined that the licensee's proposed alternative described in RR CIP-01 will provide an acceptable level of quality and safety.

4.0 CONCLUSIONS

Based on the review of the information provided in the licensee's submittal and supplemental letters, the NRC staff has concluded that the licensee's proposed alternative to the requirements of paragraph IWE-5221 of ASME Code, Section XI, 2001 Edition with the 2003 Addenda is acceptable because it provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the implementation of RR CIP-01 is authorized for the BSEP, Units 1 and 2 fourth 10-year ISI interval.

Principal Contributors: Farhad Farzam
Hans Ashar

Date: November 20, 2008

November 20, 2008

Mr. Benjamin Waldrep, Vice President
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Sincerely,
/RA/
Thomas H. Boyce, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
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Docket Nos. 50-325 and 50-324

Enclosure: Safety Evaluation

cc w/encl: See next page

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