

December 19, 2001

Mr. Ted C. Feigenbaum  
Executive Vice President and  
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North Atlantic Energy Service Corporation  
c/o Mr. James M. Peschel  
P.O. Box 300  
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SUBJECT: SEABROOK STATION, UNIT NO. 1 - INSERVICE INSPECTION PROGRAM  
RELIEF REQUEST 2IR-13 (TAC NO. MB1800)

Dear Mr. Feigenbaum:

By letter dated April 18, 2001, North Atlantic Energy Service Corporation requested relief from paragraph IWA-2210 of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code under the provisions of 10 CFR 50.55a(a)(3)(i). Paragraph IWA-2210 requires, in part, that illumination levels from battery-powered portable lights shall be checked before and after each examination or series of examinations, not to exceed 4 hours between checks.

The staff has approved the requested relief. The staff's safety evaluation is provided in the Enclosure. This completes the staff's efforts on TAC No. MB1800.

Sincerely,

/RA/

James W. Clifford, Chief, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOR SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

REQUEST FOR RELIEF 2IR-13

FOR SEABROOK STATION, UNIT NO. 1

NORTH ATLANTIC ENERGY SERVICE CORPORATION

DOCKET NO. 50-443

1.0 INTRODUCTION

The Inservice Inspection (ISI) of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME Code and applicable edition and addenda as required by 10 CFR 50.55a(g), except where specific relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3) states in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the Nuclear Regulatory Commission (NRC), if the licensee 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 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) will 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 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 inservice inspection code of record for Seabrook Station, Unit No. 1 second 10-year ISI interval is the 1995 Edition through the 1996 Addenda of Section XI of the ASME Code.

By letter dated April 18, 2001, North Atlantic Energy Service Corporation (licensee) requested relief from the requirements of ASME XI, paragraph IWA-2210, which requires in part, that illumination levels from battery-powered portable lights shall be checked before and after each examination or series of examinations, not to exceed 4 hours between checks, per the illumination levels specified in Table IWA-2210-1.

## 2.0 EVALUATION

### 2.1 Code Requirements for which Relief is Requested (as stated)

ASME Section XI, 1995 Edition through the 1996 Addenda, Paragraph IWA-2210 Visual Examinations, requires in part that illumination levels from battery powered portable lights shall be checked before and after each examination or series of examinations, not to exceed 4 hr between checks. Illumination levels are specified in Table IWA-2210-1.

### 2.2 Licensee's Proposed Alternative to Code (as stated)

Continue the practice of verifying the adequacy of illumination levels from battery powered portable lights before and after each examination or series of examinations, not to exceed 4 hr between checks. In lieu of using a light meter, these checks may be made by verifying that the illumination is adequate (i.e., no discernable degradation in the visual examination resolution of the procedure demonstration test chart characters.)

### 2.3 Licensee's Basis for Relief (as stated)

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested from the Code requirements on the basis that the proposed alternative would provide an acceptable level of quality and safety.

Verification of illumination levels specified in Table IWA-2210-1 is performed using a light meter. North Atlantic's experience with light meters has been less than ideal. Light meters are inherently delicate instruments that at times do not withstand the environment they are subjected to in the field. Damage and/or calibration failure has led to re-examination. North Atlantic sends its light meters off-site for calibration on a periodic basis. Many examinations may be performed with the instrument between calibrations. If a light meter is determined to be out of calibration, the entire series of examinations could be void. This is burdensome especially when many of the examinations are conducted during a refueling outage.

North Atlantic feels that utilizing the procedure demonstration test chart characters specified in Table IWA-2210-1 at the maximum examination distance provides adequate verification of illumination. Paragraph IWA-2210 allows remote examination to be substituted for direct examination and states that the remote examination procedure shall be demonstrated to resolve the selected test chart characters.

The 1998 Edition of ASME Section XI, paragraph IWA-2210 (f) states: "The adequacy of the illumination levels from battery powered portable lights shall be checked before and after each examination or series of examinations, not to exceed 4 hr between checks. In lieu of using a light meter, these checks may be made by verifying that the illumination is adequate (i.e., no discernable

degradation in the visual examination resolution of the procedure demonstration test chart characters).”

## 2.4 Staff Evaluation

Title 10 of the *Code of Federal Regulations* Section 50.55a(b)(2) allows for the 1995 Edition and Addenda through the 1996 Addenda of the ASME Code, Section XI, Division 1 to be used. A comparison of the requirements established by the 1995 and 1998 Editions of the Code show no major differences in subparagraph IWA-2210(f). Paragraph IWB-2210 in both Editions of the Code lists the essential variables required to perform the visual examination. Both Editions have the same requirements for 1) a near distance vision test chart; 2) the use of 10X magnification or greater to verify the height of a representative lower case character/ selected type size, meets the requirements of Table IWA-2210-1; 3) permitted substitution of remote examinations for direct examinations, demonstration of remote examination procedures to resolve the selected test chart characters; and 4) use of alternatives to the direct visual examination distance requirements of Section V as specified in Table IWA-2210-1. The requirement to check the adequacy of battery-powered portable lights before and after each examination or series of examinations not to exceed 4 hours between checks remains the same for both Editions of the Code.

Verification of the illumination levels through satisfactory demonstration of the inspection resolution in lieu of using light meters is an acceptable method of demonstrating the quality and adequacy of the visual examination. Performing the examination with the same battery powered light to detect the .044" - .105" character height specified in Table IWA-2210-1 after 4 hours is sufficient to demonstrate that there was sufficient light to perform the examinations within the time limit which equates to an “out calibration” of the system. Finally, the use of light meters is a reactive, secondary way of validating the effective performance of the visual examination by demonstrating there may have been adequate illumination during the examinations, and invokes a variable since light meters may be unreliable.

## 3.0 CONCLUSION

Based on the discussion above, the staff concludes that the alternative proposed in ISI Program Relief Request 2IR-13, Revision 0, will provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the staff authorizes the proposed alternative for the second 10-year ISI interval at Seabrook Station, Unit No. 1.

Principal Contributor: T. Steingass

Date: December 19, 2001