

March 21, 2002

Mr. Mark E. Warner  
Site Vice President  
Kewaunee and Point Beach Nuclear Plants  
Nuclear Management Company, LLC  
6610 Nuclear Road  
Two Rivers, WI 54241

SUBJECT: POINT BEACH NUCLEAR PLANT, UNIT 2 - RELIEF REQUEST RR-2-31  
REGARDING SURFACE EXAMINATION OF THE REACTOR VESSEL CLOSURE  
STUDS (TAC NO. MB4063)

Dear Mr. Warner:

By letter dated September 19, 2001, Nuclear Management Company, LLC (the licensee) submitted Relief Request RR-2-31 for Point Beach Nuclear Plant (PBNP), Unit 2.

Relief Request RR-2-31, which was submitted pursuant to 10 CFR 50.55a(a)(3)(i), proposes to use the requirements of Performance Demonstration Initiative and Supplement 8 of Appendix VIII of the American Society of Mechanical Engineers (ASME) Code, Section XI, 1995 edition with addenda through 1996, as an alternative to the surface examination requirement for reactor pressure vessel closure studs in ASME Code, Section XI, Table IWB-2500-1, Code Category B-G-1, Item B6.30.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the proposed alternative, and has concluded that the use of Performance Demonstration Initiative and Supplement 8 of Appendix VIII of the 1995 edition of ASME Code, Section XI, with addenda through 1996, with the volumetric examination requirements provides an acceptable level of quality and safety for examination of the RPV closure studs. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the third ISI interval at PBNP, Unit 2.

Further details on the bases for the NRC staff's conclusions are contained in the enclosed safety evaluation. If you have any questions regarding this issue, please contact John G. Lamb, the Project Manager, at 301-415-1446.

Sincerely,

*/RA/*

William D. Reckley, Acting Chief, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-301

Enclosure: Safety Evaluation

cc w/encl: See next page

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May 2001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE THIRD INSERVICE INSPECTION INTERVAL

RELIEF REQUEST RR-2-31

NUCLEAR MANAGEMENT COMPANY, LLC

POINT BEACH NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-301

1.0 INTRODUCTION

Inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components is to be performed in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWB-2500-1, Examination Category B-G-1, Item B6.30 and applicable addenda as required by *Code of Federal Regulations* (10 CFR), Section 50.55a(g), except where specific written relief has been granted by the Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(6)(g)(i). The regulation at 10 CFR 50.55a(a)(3) states that alternatives to the requirements of 10 CFR 50.55a(g) may be used when authorized by the 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) 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 first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code, which were 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. For Point Beach Nuclear Plant (PBNP), Unit 2, the applicable edition of Section XI of the ASME Code for the third 10-year ISI interval is the 1986 edition.

By letter dated September 19, 2001, Nuclear Management Company, LLC (the licensee), submitted Relief Request RR-2-31, which requested relief from certain ASME Code, Section XI, ISI requirements. The information provided by the licensee in support of the request for relief has been evaluated and the basis for disposition is documented below.

ENCLOSURE

## 2.0 EVALUATION

### 2.1 Relief Request RR-2-31

Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee requests relief from the requirements of Examination Category B-G-1, Item B6.30, as specified in the 1986 edition of ASME Code, Section XI.

### 2.2 Components for Which Relief is Requested

Reactor pressure vessel (RPV) closure head studs.

### 2.3 ASME Code Requirement from Which Relief is Requested

ASME Code, Section XI, 1986 edition, Table IWB-2500-1, Examination Category B-G-1, "Pressure Retaining Bolting, Greater than 2 inches in Diameter," Item B6.30, "RPV closure head studs," which requires surface and volumetric examinations of all RPV closure head studs each interval.

### 2.4 Content of the Relief Request

Relief is requested to perform only a volumetric examination of the RPV closure head studs in lieu of conducting both the surface and the volumetric examinations as required by the 1986 edition of ASME Code, Section XI, Table IWB-2500-1, Code Category B-G-1, Item B6.30.

### 2.5 Basis for Requesting Relief and Justification for Granting Relief

The licensee states that 16 of the 48 studs at PBNP, Unit 2, have already been examined using surface techniques for the third 10-Year interval. The surface examinations of these studs have revealed only man-made indications, which were either scratches or dents, probably caused by handling. The surface examinations have not found any other type of indication.

### 2.6 Proposed Alternative Examination

The licensee proposes to use the alternative requirements of a volumetric examination of the RPV closure head studs utilizing personnel and procedures qualified in accordance with the Performance Demonstration Initiative (PDI), and Supplement 8 of Appendix VIII of ASME Code, Section XI, with 1995 addenda through 1996. This alternative matches the proposed rule change to 10 CFR 50.55a dated August 3, 2001, that adopted ASME Code, Section XI, 1998 edition with addenda through 2000, and would be in compliance with all current rules for volumetric examination.

### 2.7 NRC Staff Evaluation

The examination for RPV closure head studs require surface and volumetric examinations in accordance with the applicable Code (1986 edition of the ASME Code, Section XI). However, the licensee proposes to perform only the volumetric examination using an ultrasonic testing (UT) technique. In the case of the reactor vessel stud, a stress concentration occurs at the root of the thread and is, therefore, the most likely site for initiation of a crack which eventually will

propagate into the stud volume. During scanning of the stud from the ends, a circumferential crack emanating from the thread root will offer a large reflective surface to bounce back sound waves and is easily detectable with UT as a planar reflector. If scanning is done from the center hole of the stud, the crack tip will produce a reflection that lies between reflections from the inside surface and that of the thread root and is, therefore, detectable.

Demonstrated through procedure and performance qualification according to the criteria of Supplement 8 to Appendix VIII of ASME Code, Section XI, the UT technique is designed to find cracks and other reflectors in a stud. The demonstration requires the detection of flaws located at the minimum and maximum metal path. The demonstration establishes personnel and procedures capabilities in reliability detecting cracks.

The licensee seeks relief from performing a surface examination which is required in addition to the volumetric examination. The NRC staff believes that both volumetric and surface examination methods are equally sensitive in the detection of cracks originating from the thread root. The performance of a surface examination in addition to a volumetric examination for this application is redundant. Therefore, the elimination of the surface examination will not reduce examination effectiveness and the sole use of a UT examination will provide an acceptable level of quality and safety.

## 2.8 NRC Staff Conclusion

Based on the above evaluation, the NRC staff concludes that the use of a volumetric examination of the RPV closure head studs utilizing personnel and procedures qualified in accordance with the PDI, and Supplement 8 of Appendix VIII of ASME Code, Section XI, 1995 edition with addenda through 1996, provides an acceptable level of quality and safety for examination of the RPV closure head studs. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third ISI interval at PBNP, Unit 2.

## 3.0 CONCLUSION

The NRC staff has concluded, based on the considerations discussed above, that there is reasonable assurance that the health and safety of the public will not be endangered by implementation of the proposed alternatives, and that such activities will be conducted in compliance with the Commission's regulations.

Principal Contributors: P. Patnaik  
J. Lamb

Date: March 21, 2002