July 8, 1998

Mr. Michael B. Sellman
Chief Nuclear Officer
Wisconsin Electric Power Company
231 West Michigan Street
Milwaukee, WI 53201

SUBJECT: POINT BEACH NUCLEAR PLANT, UNIT 2 - ISSUANCE OF RELIEF FROM ASME SECTION XI FOR POINT BEACH NUCLEAR PLANT UNIT 2 (TAC NO. M99664)

Dear Mr. Sellman:

By letter dated October 16, 1996, as supplemented on November 25, 1997, January 27, 1998, and April 9, 1998, Wisconsin Electric (WE) Power Company requested relief from performing the American Society of Mechanical Engineers (ASME) Code, Section XI volumetric coverage requirements for the steam generator nozzle-to-safe end welds and associated safe end-to-pipe welds during the third 10-year inservice inspection interval of Point Beach Unit 2.

The staff has reviewed your request for relief from the applicable ASME Code, Section XI, as stated in Relief Request RR-2-23 and has determined pursuant to 10 CFR 50.55a(g)(6)(i) that (1) the code requirement is impractical for the scope of this relief, (2) full volumetric examination of the steam generator nozzle-to-safe end welds and associated safe end-to-pipe welds would impose a burden on WE, and (3) the proposed volumetric examinations described in your request provide reasonable assurance of structural integrity. Therefore, your request for relief is granted for Point Beach Nuclear Plant, Unit 2, during the third 10-year inspection interval. The relief granted is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon WE that would result if the requirement was imposed on the facility. The staff's evaluation is enclosed. If you have any questions, please contact Linda Gundrum at 301-415-1380.

Sincerely,

ORIGINAL SIGNED BY
Cynthia A. Carpenter, Director
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket No: 50-301

Enclosure: Safety Evaluation

cc w/encl: See next page

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ON THE THIRD 10-YEAR INTERVAL INSERVICE INSPECTION

REQUEST FOR RELIEF RR-2-23

WISCONSIN ELECTRIC POWER COMPANY

POINT BEACH NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-301

1.0 INTRODUCTION

The Technical Specifications for the Point Beach Nuclear Power Plant, Units 1 and 2, state that the inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code 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). Section 50.55a(a)(3) of 10 CFR states that alternatives to the requirements of paragraph (c) may be used when authorized by the NRC 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 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 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 applicable ASME Code, Section XI, for the Point Beach Nuclear Power Plant third 10-year ISI interval is the 1986 Edition, no addenda. 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 and subject to Commission approval.

Pursuant to 10 CFR 50.55a(g)(5)(iii), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is impractical 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(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

By letter dated October 16, 1996, as supplemented on November 25, 1997, January 27, 1998, and April 9, 1998, the licensee, Wisconsin Electric Power Company, submitted Request for Relief No. RR-2-23 from the requirements of the American Society of Mechanical Engineers (ASME) Code, Section XI. The October 16, 1996, submittal included four nozzle to safe-end welds. In a letter dated November 25, 1997, the licensee added four nozzle safe-end to elbow welds to the request. On January 27, 1998, WE submitted a letter correcting a date and superseding in entirety the November 25, 1997, letter. Additional clarification was provided by a letter dated April 9, 1998 (letter NPL 98-0258) responding to a Nuclear Regulatory Commission (NRC) request for additional information. The staff has evaluated the information provided by the licensee in support of the request for relief in the following sections.

2.0 DISCUSSION

Component Identification:

Class 1 Circumferential Piping Welds and Nozzle-to-Safe End Welds

Weld Nos.
RC-34-MRCL-AI-05
RC-36-MRCL-AII-01A
RC-34-MRCL-BI-05
RC-36-MRCL-BII-01A
RC-34-MRCL-AI-04R1
RC-34-MRCL-BI-04R1
RC-36-MRCL-AII-01R1
RC-36-MRCL-BII-01R1

Code: The Code of record for the Point Beach Nuclear Plant, Unit 2, third 10-year inservice inspection (ISI) interval is the 1986 Edition of Section XI of the ASME Boiler and Pressure Vessel Code.

Code Requirement:

Examination Category B-F, Item B5.70, and Examination Category B-J, Item B9.11, require 100% surface and volumetric examination, as defined by Figure IWB-2500-8, for steam generator nozzle-to-safe end welds and Class 1 circumferential welds.

Alternate Requirement (as stated):

The required surface examinations will be completed. The required volumetric examination will be completed to the extent practical.

Pursuant to 10 CFR 50.55a(g)(5)(iii), the licensee has requested relief for the following examination areas:

Weld ID	Description	Coverage*	Cumulative Coverage
RC-34-MRCL-AI-05	Safe end-to-S/G inlet nozzle	44% Nozzle side 100% Safe end side	86%
RC-36-MRCL-AII-01A	S/G outlet nozzle-to-safe end		
RC-34-MRCL-BI-05	Safe end-to-S/G inlet nozzle		
RC-36-MRCL-BII-01A	S/G outlet nozzle-to-safe end		
RC-34-MRCL-AI-04R1	Elbow-to-S/G inlet nozzle safe end	40% Two-direction 100% One-direction	85%
RC-34-MRCL-BI-04R1	Elbow-to-S/G inlet nozzle safe end	17% Two-direction 100% One-direction	79%
RC-36-MRCL-AII-01R1	S/G outlet nozzle safe end to elbow	36% Two-direction 100% One-direction	84%
RC-36-MRCL-BII-01R1	S/G outlet nozzle safe end to elbow	30% Two-direction 100% One-direction	82.5%
*All welds received 100% surface examination and 100% coverage for the circumferential scans			

Reason for the Proposed Alternate Requirement: (As stated)

PBNP Unit 2 replaced both the A and B Steam Generators during the U2R22 outage (Fall 1996). The examination of the components above have been examined by ultrasonic testing methods to the extent practical as required by the Code. Refracted longitudinal waves were used to perform the examination because of the acoustic properties of the materials involved. The use of refracted longitudinal waves prevents the use of beam reflection to increase the examination volume.

Due to the geometric changes in the nozzle configuration (for welds 1 thru 4 above) complete coverage of the examination volume from the nozzle side could not be

obtained. Coverage obtained was approximately 44% from the nozzle side. Complete coverage from the safe-end side was obtained. Therefore, 44% of the weld volume received two-directional coverage and 100% of the weld received one-directional coverage. Similarly, for 5 thru 8 above the geometrical configuration of the piping and adjacent nozzle to safe-end welds, complete coverage of the examination volume could not be obtained. The following weld examination volume coverage could be obtained:

Exam Area	Coverage Obtained
5) RC-34-MRCL-AI-04R1	40% two-directional 100% one-directional
6) RC-34-MRCL-BI-04R1	17% two-directional 100% one-directional
7) RC-36-MRCL-AII-01R1	36% two-directional 100% one-directional
8) RC-36-MRCL-BII-01R1	30% two-directional 100% one-directional

Alternative components could not be substituted for examination because this is a preservice examination requirement for the replacement steam generators. The welds were volumetrically examined utilizing radiographic techniques. Because of the piping and wall thickness, the source for the radiography must be placed in the center of the pipe. To duplicate this technique for inservice inspection, significant exposure would be obtained. The radiation exposure in a steam generator head near the nozzle is estimated at 12 rem/hr. An entry to position a source holding fixture in the nozzle would take approximately 10 minutes. Therefore, the radiation exposure associated with performing radiography of one weld (neglecting exposure from other associated with the evolution) would be approximately 1.2 rem.

Since the radiation exposure associated with the examination technique is excessive, the proposed alternate is to perform the required volumetric examination utilizing ultrasonic examination to the extent practical.

In the April 9, 1998, letter, the licensee stated:

The intent of this request is to apply to future inservice examination of these welds. The preservice volumetric examination techniques included both ultrasonic and radiographic examination. The ultrasonic examination techniques resulted in a limited examination to the extent as delineated in the relief request. Because of the limitations, a subsequent radiographic examination technique was used and achieved full coverage of the subject welds. Both volumetric examination techniques employed were performed with consideration to Paragraph IWB-2200 of the ASME Code.

The request for relief is directed at using the ultrasonic examination technique for subsequent inservice examinations. The radiographic technique can be employed in subsequent inservice examinations. However, the radiation exposure associated with applying this technique is excessive. Due to the configuration and wall thickness of these welds, the source is required to be positioned in a fixture within the inside diameter of the pipe. As delineated in the relief request, the radiation exposure associated with the inspection of one weld would be approximately 1.2 rem. For this

reason, relief is requested from the ASME Code volumetric coverage requirements for ultrasonic examination so the ultrasonic examination technique can be used for future inservice examinations in lieu of the radiographic examination technique.

3.0 EVALUATION

The Code requires 100% surface and volumetric examination of Class 1 nozzle-to-vessel welds. However, due to nozzle geometry and configuration, examination of the subject nozzle welds could not be performed to the extent required by the Code. Therefore, the Code coverage requirements are impractical for these welds. To meet the Code requirements, design modifications would be necessary to provide access for examination. Imposition of these requirements would create a burden on the licensee.

The licensee can complete a significant portion (≥79%) of the Code-required volumetric examination for each of the subject nozzle-to-vessel welds. In addition, a complete "outside diameter" surface examination can be performed. This combination of examinations should detect any pattern of degradation that may occur; therefore, reasonable assurance of the continued structural integrity will be provided.

4.0 CONCLUSION

The staff has reviewed the licensee's submittal and concludes that the Code examination coverage requirements are impractical for the welds specified in Request for Relief No. RR-2-23 and that reasonable assurance of the structural integrity has been provided by the examinations that can be completed. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for the third 10-year ISI interval at Point Beach Nuclear Plant, Unit 2, for the current interval. The relief granted is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that would result if the requirement was imposed on the facility.

Principal contributor: T. McLellan

Date: July 8, 1998