



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

August 4, 2016

Vice President, Operations
Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360-5508

SUBJECT: PILGRIM NUCLEAR POWER STATION - ISSUANCE OF RELIEF REQUEST
NO. PRR-53 – RELIEF FROM ASME CODE, SECTION XI REQUIREMENTS
FOR ULTRASONIC INSPECTION QUALIFICATIONS OF WELD OVERLAYS
(CAC NO. MF6697)

Dear Sir or Madam:

By letter dated September 1, 2015 (Agencywide Documents Access and Management System Accession No. ML15253A196), Entergy Nuclear Operations, Inc. (the licensee) submitted Relief Request No. PRR-53 to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI requirements for ultrasonic inspection qualifications of weld overlays at the Pilgrim Nuclear Power Station (Pilgrim).

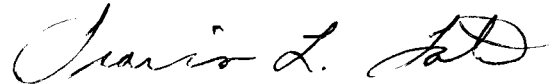
Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(z)(1), the licensee requested to use the proposed alternative in Relief Request No. PRR-53 on the basis that the alternative provides an acceptable level of quality and safety. The licensee proposed to use the Performance Demonstration Initiative (PDI) Program as an alternative to the requirements in the ASME Code, Section XI, 2001 Edition, Appendix VIII, Supplement 11, "Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds," at Pilgrim for its Fifth 10-year inservice inspection (ISI) interval.

The NRC staff determined that using the PDI inspection qualification program in lieu of ASME Code, Section XI, Appendix VIII, Supplement 11, provides an adequate level of rigor to provide reasonable assurance that the procedures, equipment, and personnel qualified under this program would be able to find fabrication flaws and service-induced flaws in the weld-overlaid piping. As set forth in the enclosed Safety Evaluation, the NRC staff concludes that the alternatives proposed in Relief Request No. PRR-53 provide an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, pursuant to 10 CFR 50.55a(z)(1), PRR-53 is authorized for use during the Fifth 10-year ISI interval for Pilgrim, until December 31, 2017.

- 2 -

If you have any questions, please contact the project manager, Booma Venkataraman, at (301) 415-2934 or Booma.Venkataraman@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Travis L. Tate". The signature is fluid and cursive, with a large, stylized initial "T" at the end.

Travis L. Tate, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-293

Enclosure:
Safety Evaluation

cc w/enclosure: Distribution via Listserv



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROPOSED ALTERNATIVE RELIEF REQUEST NO. PRR-53

ENTERGY NUCLEAR OPERATIONS, INC.

PILGRIM NUCLEAR POWER STATION

DOCKET NO. 50-293

1.0 INTRODUCTION

By letter dated September 1, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15253A196), Entergy Nuclear Operations, Inc. (Entergy or the licensee) submitted Relief Request No. PRR-53 to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI requirements for ultrasonic inspection qualifications of weld overlays at the Pilgrim Nuclear Power Station (Pilgrim).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(z)(1), the licensee requested to use the proposed alternative in Relief Request No. PRR-53 on the basis that it provides an acceptable level of quality and safety. The licensee proposed to use the Performance Demonstration Initiative (PDI) Program as an alternative to the requirements in the ASME Code, Section XI, 2001 Edition, Appendix VIII, Supplement 11, "Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds," at Pilgrim for its Fifth 10-year inservice inspection (ISI) interval.

2.0 REGULATORY REQUIREMENTS

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) must 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.

However, 10 CFR 50.55a(z) states, in part, that alternatives to the requirements of 10 CFR 50.55a(g) may be used, when authorized by the NRC, if the licensee demonstrates that (1) the proposed alternatives would provide an acceptable level of quality and safety, or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Enclosure

Based on analysis of the regulatory requirements, the NRC staff concludes that regulatory authority exists to authorize the proposed alternative pursuant to 10 CFR 50.55a(z)(1).

3.0 TECHNICAL EVALUATION

3.1 ASME Code Component Affected

The components covered in this relief request are various Class 1 Pressure Retaining Piping Welds subject to ultrasonic examination using procedures, personnel, and equipment qualified by demonstration to ASME Section XI, Appendix VIII, Supplement 11.

3.2 ASME Code Requirements

The code of record for the Fifth 10-year ISI interval is the 2007 Edition with 2008 Addenda of ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components."

ASME Code, Section XI repair/replacement, pressure testing and nondestructive testing activities at Pilgrim are being maintained to the 2001 Edition through the 2003 Addenda for the Fifth 10-Year Interval until December 31, 2017, using Alternative Request PRR-26, which was NRC approved on June 19, 2015 (ADAMS Accession No. ML15166A401).

The requirements for qualifying ultrasonic procedures, personnel, and equipment for weld overlay examinations are described in ASME Code, Section XI, Appendix VIII, Supplement 11, "Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds."

3.3 Licensee's Proposed Alternative to the ASME Code

The licensee requests approval to use the PDI Program for weld overlay inspection qualifications as an alternative to the requirements within the 2001 Edition ASME Section XI, Appendix VIII, Supplement 11.

3.4 Reason for Request

The licensee stated, in part, in its application that this alternative request is being submitted for authorization because the ASME Section XI at Pilgrim will not be updated from the 2001 Edition through the 2003 Addenda until after December 31, 2017. Implementation of Appendix VIII, Supplement 11 requirements of the 2001 Edition using the alternatives based on the use of the PDI Program requirements in this request are still needed at Pilgrim when using the 2001 Edition through the 2003 Addenda of Section XI.

Further, the licensee stated that the alternative qualification requirements are based on the PDI Program requirements. The U.S. nuclear industry utilizes the PDI program for the qualification of equipment, procedures and personnel. The PDI Program does not meet the letter of the Code requirements identified in ASME Section XI, Appendix VIII, Supplement 11 of the 2001 Edition or the latest edition and addenda. As a result, other alternative requests have been authorized throughout the industry for the implementation of the PDI program in lieu of Supplement 11, and Pilgrim needs the authorization of this request to use the PDI program.

3.5 Licensee's Basis for Use

Compliance with the proposed alternatives in this request, versus those in the 2001 Edition of ASME Section XI, Appendix VIII, Supplement 11, are needed to support qualification requirements for the examination of weld overlays. The proposed alternative qualification requirements are very similar to the 2001 Edition of ASME Section XI, Appendix VIII, Supplement 11 requirements.

The primary differences between the ASME Code, Section XI, Appendix VIII requirements and the PDI program are listed below:

- 1) A scope statement has been added to reflect the applicability of Supplement 11.
- 2) The use of 3-inch minimum grading unit length in Appendix VIII vs. an 1-inch minimum grading unit size in the PDI program.
- 3) The names of the grading units were changed from "base metal" and "overlay fabrication" to "inservice" and "preservice," respectively.
- 4) The term "base metal flaws" was changed to "service-induced flaws" and the term "overlay fabrication flaws" was changed to "fabrication-induced flaws."
- 5) Provisions have been added for qualification of "Optimized" weld overlays.
- 6) Qualification for width sizing of laminar flaws is now addressed.

3.6 Duration of the Alternative

The licensee stated this request will apply to a portion of the Fifth 10-Year Interval, which starts on July 1, 2015 and will continue to December 31, 2017.

3.7 NRC Staff Evaluation of the Alternative

The licensee proposed to use the PDI qualification program for weld overlay inspections in lieu of the requirements of ASME Code, Section XI, Appendix VIII, Supplement 11, on the basis that the PDI Program provides an acceptable level of quality and safety.

The NRC staff performed a comparison of the PDI qualification program and the ASME Code, Section XI, Appendix VIII, Supplement 11 requirements. Based on the review of the two programs, the NRC staff determined that the PDI Program for qualifying procedures, equipment, and personnel, as described in the proposed alternative, is technically very similar to ASME Code, Section XI, Appendix VIII, Supplement 11. For the qualification of full structural weld overlays, the differences between the Appendix VIII requirements and the PDI Program are largely administrative or semantic in nature, such as changing "base metal flaws" to "service-induced flaws." The major technical difference between the 2001 Edition of the Code and the PDI program is the use of 3-inch long minimum grading units in ASME Code, Section XI, Appendix VIII, versus 1-inch long minimum grading units in the PDI program. This

difference was reviewed by the NRC staff to determine the effects on the qualification program and found the use of 1-inch grading units was acceptable. The change in grading unit size is incorporated into the 2007 Edition of ASME Code, Section XI, Appendix VIII, which is incorporated by reference in 10 CFR 50.55a.

Based upon the NRC comparison of the PDI weld overlay inspection qualification program and ASME Code Section XI, Appendix VIII, Supplement 11, the NRC determined that using the PDI inspection qualification program in lieu of ASME Code, Section XI, Appendix VIII, Supplement 11 requirements provides an adequate level of rigor to provide reasonable assurance that the procedures, equipment, and personnel qualified under this program would be able to find fabrication flaws and service-induced flaws in weld overlays.

4.0 CONCLUSION

As set forth above, the NRC staff concludes that the proposed alternative to use the PDI Program to qualify procedures, equipment, and personnel for ultrasonic inspections of weld overlays at Pilgrim for the Fifth 10-year ISI interval provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes relief request PRR 53 pursuant to 10 CFR 50.55a(z)(1) during the Fifth 10-year ISI interval at Pilgrim until December 31, 2017.

All other ASME Code, Section XI requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Stephen Cumblidge

Date: August 4, 2016

If you have any questions, please contact the project manager, Booma Venkataraman, at (301) 415-2934 or Booma.Venkataraman@nrc.gov.

Sincerely,

/RA/

Travis L. Tate, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-293

Enclosure:
Safety Evaluation

cc w/enclosure: Distribution via Listserv

DISTRIBUTION:

PUBLIC
LPL1-1 R/F
RidsNrrDorlDpr Resource
RidsNrrDeEpn Resource

RidsNrrDorlLpl1-1 Resource
RidsNrrLAKGoldstein Resource
RidsRgn1MailCenter Resource

RidsNrrPMPilgrim Resource
RidsACRS_MailCTR Resource
SCumblidge, NRR

ADAMS Accession No.: ML16194A326

*by memo

OFFICE	DORL/LPL1-1/PM	DORL/LPL1-1/LA	DE/EPNB/BC*	DORL/LPL1-1/BC
NAME	BVenkataraman	KGoldstein, (PBlechman for)	DAlley	TTate
DATE	7/12/16	07/15/16, 8/2/16	06/16/16	8/4/16

OFFICIAL RECORD COPY