



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

August 27, 2010

Mr. Randall K. Edington
Executive Vice President Nuclear/
Chief Nuclear Officer
Mail Station 7602
Arizona Public Service Company
P. O. Box 52034
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION, UNITS 2 AND 3 - RELIEF
REQUEST NO. RR-44, REACTOR VESSEL WELD VISUAL EXAMINATION
INTERVAL EXTENSION (TAC NOS. ME2335 AND ME2336)

Dear Mr. Edington:

By letter dated September 29, 2009, as supplemented by letter dated May 27, 2010, Arizona Public Service Company (the licensee), requested Nuclear Regulatory Commission (NRC) approval of Relief Request No. 44 (RR-44), to use an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, for examination of the Class 1 reactor vessel (RV) interior attachments beyond the beltline region and the removable core support structure at Palo Verde Nuclear Generating Station (PVNGS), Units 2 and 3. Specifically, pursuant to paragraph 50.55a(a)(3)(ii) of Title 10 of the *Code of Federal Regulations* (10 CFR), the licensee requested approval to extend the current inservice inspection (ISI) interval for visual examination of these RV components at PVNGS, Units 2 and 3, until 2027 and 2028, respectively, to coincide with the volumetric examination schedules for certain RV welds, authorized by the NRC staff for Relief Request No. 40, issued on February 22, 2010.

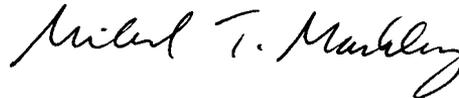
The NRC staff has completed its review of the information provided by the licensee for RR-44. The staff concludes that the information provided supports the granting of the proposed alternative of RR-44 pursuant to 10 CFR 50.55a(a)(3)(ii), because compliance with the ASME Code, Section XI ISI interval requirements represents a hardship without a compensating increase in the level of quality and safety for the subject ASME Code Class 1 components at PVNGS, Units 2 and 3. The licensee's proposed alternative is approved for the specified components, for the extended inspection interval dates of 2027 and 2028, for PVNGS, Units 2 and 3, respectively.

R. Edington

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A copy of the Safety Evaluation is enclosed. All other ASME Code, Section XI requirements for which relief has not been specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Sincerely,

A handwritten signature in black ink, reading "Michael T. Markley". The signature is written in a cursive style with a large, stylized initial "M".

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-529
and 50-530

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION PROGRAM RELIEF REQUEST NO. 44

REACTOR PRESSURE VESSEL VISUAL EXAMINATION INTERVAL EXTENSION

PALO VERDE NUCLEAR GENERATING STATION, UNITS 2 AND 3

ARIZONA PUBLIC SERVICE COMPANY

DOCKET NOS. STN 50-529 AND STN 50-530

1.0 INTRODUCTION

By letter dated September 29, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML092810228), as supplemented by letter dated May 27, 2010 (ADAMS Accession No. ML101590516), Arizona Public Service Company (the licensee) submitted Relief Request No. 44 (RR-44), for the Palo Verde Nuclear Generating Station (PVNGS), Units 2 and 3. In RR-44, the licensee requested an alternative to the examination requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI for a number of ASME Code Class 1 components at PVNGS, Units 2 and 3. Specifically, the licensee requested approval to extend the current inservice inspection (ISI) interval for visual examination of the reactor vessel (RV) interior attachments beyond the beltline region and the removable core support structure at PVNGS, Units 2 and 3, until 2027 and 2028, respectively. The proposed alternative would allow the licensee to conduct the subject visual examinations coincident with the volumetric examination schedules for certain RV welds authorized by the U.S. Nuclear Regulatory Commission (NRC) staff on February 22, 2010 (ADAMS Accession No. ML100290415). The staff reviewed and evaluated the licensee's request pursuant to the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(ii).

2.0 REGULATORY EVALUATION

Inservice inspection (ISI) of ASME Code Class 1, 2, and 3 components is performed in accordance with Section XI of the ASME Code and applicable addenda as required by 10 CFR 50.55a(g), except where specific relief has been granted by the NRC pursuant to 10 CFR 50.55a(g)(6)(i). The regulations in 10 CFR 50.55a(a)(3) state that alternatives to the requirements of paragraph (g) 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.

Enclosure

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 pre-service 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 regulation requires 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 Code of record for the third 10-year interval ISI program at PVNGS, Units 2 and 3 is the 2001 Edition of the ASME Code, Section XI, with 2003 Addenda. The third 10-year interval ISI program at PVNGS, Unit 2 ends on March 17, 2017. The third 10-year interval ISI program at PVNGS, Unit 3 ends on January 10, 2018.

3.0 TECHNICAL EVALUATION

3.1 Component Identification

RR-44 addresses the following ASME Code, Section XI, Examination Categories and Item Numbers covering examinations of ASME Code Class 1 components (the subject components) for the third 10-year interval ISI program at PVNGS, Units 2 and 3. The following examination categories and item numbers are from Table IWB-2500-1 of the 2001 Edition and 2003 Addenda of the ASME Code, Section XI.

ASME Code Class	Examination Category	Item Number(s)	Component Description
1	B-N-2 and B-N-3	B13.60 and B13.70	Interior Attachments Beyond Beltline Region Core Support Structure

3.2 NRC Staff Evaluation

Pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee submitted RR-44 in order to obtain authorization for an alternative to the examination requirements of the ASME Code, Section XI for the subject Class 1 components at PVNGS, Units 2 and 3. The 2001 Edition and 2003 Addenda of the ASME Code, Section XI, Article IWB-2500 requires that components be examined and tested as specified in Table IWB-2500-1 of the ASME Code, Section XI. Table IWB-2500-1 defines the specific examination requirements for the subject Class 1 components.

In RR-44, the licensee requested an alternative to the ASME Code, Section XI examination requirements specified in Table IWB-2500-1, Examination Categories B-N-2 and B-N-3, for the RV interior attachments beyond the beltline region and the removable core support structure at PVNGS, Units 2 and 3. The ASME Code, Section XI, requires a visual test level 3 (VT-3)

examination of all accessible welds for the RV interior attachments and all accessible surfaces for the removable core support structure components once each 10-year inspection interval.

The licensee requested approval to increase the interval for performing the required VT-3 examinations of these components at PVNGS, Units 2 and 3 because, according to the licensee, compliance with the ASME Code, Section XI requirements for completing these examinations during the scheduled third 10-year interval ISI programs for both units would result in hardship without a compensating increase in the level of quality and safety. The licensee proposed to defer the VT-3 examinations for these Examination Category B-N-2 and B-N-3 components until 2027 and 2028 for PVNGS, Units 2 and 3, respectively. The VT-3 examinations for these components were last performed in 2008 for Unit 2 and in 2009 for Unit 3.

The licensee stated that the increased inspection interval proposed for these components would align the VT-3 examinations of these components with the currently scheduled volumetric examinations of the Examination Category B-A and B-D RV welds. The licensee stated that the schedule for the examinations of the Examination Category B-A and B-D RV welds was addressed in a previous relief request. In that request, "Request for Relief From the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Reactor Vessel Weld Inspection Frequency – Relief Request No. 40," dated July 1, 2009 (RR-40) (ADAMS Accession No. ML091870432), the licensee proposed the deferral of the ASME Code, Section XI-required volumetric examinations for the Examination Category B-A and B-D RV welds based upon WCAP-16168-NP-A, Revision 2, "Risk-Informed Extension of the Reactor Vessel In-Service Inspection Interval," dated June 13, 2008 (ADAMS Accession No. ML082820046). In RR-40, the licensee requested an alternative to allow the volumetric examinations for the subject RV welds at PVNGS, Units 1, 2, and 3 to be deferred until 2016, 2027, and 2028, respectively.

The licensee stated that the visual examinations of the RV interior attachments beyond the beltline region and the core support structure require that the fuel and core support barrel be removed from the RV. Therefore, the licensee has historically performed these visual examinations during the same refueling outage as the volumetric examinations for the RV welds. The licensee stated that performing the visual examinations of the subject components during the same refueling outage as the RV weld volumetric examinations will result in a significant reduction in radiation exposure because the RV internals will only be removed once to accommodate both examinations. According to the licensee, an unnecessary risk is created by the removal of the fuel and core barrel more than once within an inspection interval for the sole purpose of performing a visual examination of these internal components. Furthermore, according to the licensee, the radiation exposure resulting from the performance of the visual examinations for these components would essentially double if the subject examinations did not occur during the same refueling outage as the volumetric examinations for the RV welds.

The licensee stated that the visual examinations of the RV interior attachments beyond the beltline region and core support structure have been performed several times at PVNGS, Units 2 and 3, with no relevant indications noted during the examinations. The visual examinations were last performed at PVNGS, Units 2 and 3, in 2008 and 2009, respectively, with acceptable results. According to the licensee, a review of industry operating experience

reveals that these examinations have been performed many times by the industry with no significant findings.

The NRC staff reviewed the information provided by the licensee concerning its request to defer the VT-3 examinations of the RV interior attachments beyond the beltline region (Examination Category B-N-2) and removable core support structures (Examination Category B-N-3) until 2027 for PVNGS, Unit 2 and 2028 for PVNGS, Unit 3. The VT-3 examinations for these components were last performed in 2008 for Unit 2 and 2009 for Unit 3, with acceptable results. The end date for the third 10-year interval ISI program is March 17, 2017, for Unit 2 and January 10, 2018, for Unit 3. The ASME Code, Section XI, Subarticle IWB-2430, paragraph (d) states that for components inspected under Inspection Program B, the ISI intervals may be extended or decreased by as much as 1 year, and the adjustments to the length of ISI intervals shall not cause successive ISI intervals to be altered by more than 1 year from the original pattern of intervals for the plants. Therefore, the ASME Code, Section XI requires that these examinations be performed prior to March 17, 2018 for Unit 2 and January 10, 2019, for Unit 3. Accordingly, the examination deferral proposed in RR-44 would postpone the subject VT-3 examinations for 9 years beyond the time limit for performing these examinations required by the ASME Code, Section XI.

The NRC staff reviewed the licensee's justification for deferring the subject VT-3 examinations and agreed with the licensee's determination that the deferral proposed in RR-44 is necessary in order to align the VT-3 examinations for the subject components with the scheduled volumetric examinations for the Examination Category B-A and B-D RV welds. The staff verified that the licensee had submitted a separate request for an alternative to the ASME Code, Section XI examination requirements in order to defer the volumetric examinations for the Examination Category B-A and B-D RV welds until the 2027 and 2028 refueling outages for PVNGS, Units 2 and 3, respectively. The NRC staff authorized this 10-year deferral of the RV weld volumetric examinations in a safety evaluation that was transmitted to the licensee by letter dated February 22, 2010. The deferral of the volumetric examinations for the Examination Category B-A and B-D RV welds was authorized based on the licensee having demonstrated that it had met the risk-informed criteria of WCAP-16168-NP-A for the RV welds.

The NRC staff agreed with the licensee's determination that performing VT-3 examinations of the RV internal attachments beyond the beltline and core support structure so that the timing of these examinations would meet the ISI interval requirements of the ASME Code, Section XI represents a hardship without a compensating increase in the level of quality and safety. The staff agreed with this determination because: (1) an unnecessary risk is created by the removal of the fuel and core support barrel from the RV in order to perform these examinations, and (2) the radiation exposure resulting from the performance of these VT-3 examinations would double if these examinations were performed at a time different from the RV weld volumetric examinations. The staff agreed that the removal of the fuel and core support barrel is necessary in order to perform the VT-3 examinations of the RV interior attachments and core support structure and that these VT-3 examinations have historically been performed during the same refueling outage as the volumetric examinations for the RV welds. None of the previous examinations of the Examination Category B-N-2 and B-N-3 components at PVNGS, Units 2 and 3 have found indications of cracking or service-induced degradation. The staff also noted that no other nuclear power plant performs these VT-3 examinations on a different interval schedule than that for the Examination Category B-A and B-D RV welds.

Based on the above considerations, the NRC staff determined that performing the VT-3 examinations of the RV interior attachments beyond the beltline (Examination Category B-N-2) and the removable core support structures (Examination Category B-N-3) in order to meet the ISI interval requirements of the ASME Code, Section XI represents a hardship without a compensating increase in the level of quality and safety for PVNGS, Units 2 and 3. Therefore, the staff concludes that the licensee's request to defer the subject examinations until 2027 for PVNGS, Unit 2, and until 2028 for PVNGS, Unit 3 is acceptable.

4.0 CONCLUSION

The NRC staff has completed its review of RR-44 for PVNGS, Units 2 and 3. The staff concludes that compliance with the ASME Code, Section XI ISI interval requirements represents a hardship without a compensating increase in the level of quality and safety for the subject ASME Code Class 1, Examination Category B-N-2 and B-N-3 components at PVNGS, Units 2 and 3. Therefore, RR-44 is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the third 10-year interval ISI program at PVNGS, Units 2 and 3, and the licensee may defer the VT-3 examinations of the RV interior attachments beyond the beltline region and the removable core support structure until 2027 and 2028 for PVNGS, Units 2 and 3, respectively.

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

Principal Contributor: C. Sydnor

Date: August 27, 2010

R. Edington

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A copy of the Safety Evaluation is enclosed. All other ASME Code, Section XI requirements for which relief has not been specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Sincerely,

/RA/

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-529
and 50-530

Enclosure:
Safety Evaluation

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*SE memo dated

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DATE	8/ 25/10	8/17/10	7/16/10	8/27/10

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