



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

October 14, 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, UNIT 3 – RELIEF
REQUEST NO. 47 RE: ASME CODE CLASS 1 WELD AND COMPONENT
VOLUMETRIC EXAMINATIONS FOR THE SECOND 10-YEAR INSERVICE
INSPECTION INTERVAL (TAC NO. ME3052)

Dear Mr. Edington:

By letter dated December 21, 2009, as supplemented by letter dated August 27, 2010, Arizona Public Service Company (APS, the licensee) submitted Request for Relief No. 47 to the Nuclear Regulatory Commission (NRC) for relief from certain American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI requirements at Palo Verde Nuclear Generating Station, Unit 3 (PVNGS-3). In its submittal, the licensee, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(6)(i), requested relief from certain ASME Code Class 1 weld and component examinations for the second 10-year inservice inspection (ISI) program interval on the basis that the ASME Code requirement is impractical.

As set forth in the enclosed safety evaluation, the NRC staff has reviewed the licensee's submittal and concludes that ASME Code examination coverage requirements are impractical for Reactor Vessel Nozzle-to-Vessel Welds 1-15 and 1-18. Furthermore, imposition of these ASME Code requirements would create a burden on the licensee. The staff further determined that it is reasonable to conclude that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that were performed. Furthermore, the staff concludes that the examinations performed to the extent practical on the subject reactor vessel nozzle-to-vessel welds provide reasonable assurance of structural integrity of the subject welds.

Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(6)(i). Therefore, the NRC staff grants relief for the subject examinations of the components contained in Relief Request No. 47 at PVNGS-3 for the second 10-year ISI program interval, which ended on January 10, 2008.

The NRC staff has further determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) 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 could result if the requirements were imposed on the facility.

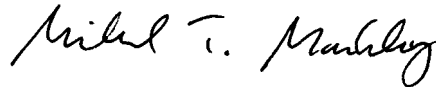
R. Edington

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

If you have any questions, please contact James R. Hall at 301-415-4032.

Sincerely,

A handwritten signature in cursive script that reads "Michael T. Markley".

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

Docket No. STN 50-530

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF NO. 47

REGUARDING CERTAIN REACTOR VESSEL NOZZLE-TO-VESSEL WELDS

ARIZONA PUBLIC SERVICE COMPANY

PALO VERDE NUCLEAR GENERATING STATION, UNIT 3

DOCKET NO. STN 50-530

1.0 INTRODUCTION

By letter dated December 21, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML100040068), as supplemented by letter dated August 27, 2010 (ADAMS Accession No. ML102510171), Arizona Public Service Company (APS, the licensee) submitted Request for Relief No. 47 to the Nuclear Regulatory Commission (NRC) for relief from certain American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI requirements at Palo Verde Nuclear Generating Station, Unit 3 (PVNGS-3). In its submittal, the licensee, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(6)(i), requested relief from certain ASME Code Class 1 weld and component examinations for the second 10-year inservice inspection (ISI) program interval on the basis that the ASME Code requirement is impractical.

2.0 REGULATORY EVALUATION

Inservice inspection of the ASME Code Class 1, 2, and 3 components is to be 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 Commission 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 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, 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

Enclosure

the requirements in the latest edition and addenda of Section XI of the ASME Code, which was 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 ASME Code of record for PVNGS-3's second 10-year ISI program interval, which ended on January 10, 2008, is the 1992 Edition, through 1992 Addenda, of Section XI of the ASME Boiler and Pressure Vessel Code.

3.0 TECHNICAL EVALUATION

3.1 Relief Request No. 47

Relief Request No. 47 supports closure of the second 10-year ISI program interval for PVNGS-3. Based on a one-cycle deferral of the PVNGS-3 reactor vessel nozzle-to-vessel weld examinations, submitted in Relief Request 34 and approved by the NRC on May 16, 2007 (ADAMS Accession No. ML071140033), the subject PVNGS-3 examinations were performed during the unit's 14th refueling outage completed on May 28, 2009. As such, the licensee's submittal of this request for relief on December 21, 2009, was less than 12 months after the completion of the subject examinations and consistent with the requirements of 10 CFR 50.55a(g)(5)(iv) as they apply in this circumstance.

ASME Code, Section XI, Examination Category B-D, Reactor Vessel Nozzle-to-Vessel Welds, Item Number B3.90 in Table IWB-2500-7 requires essentially 100 percent volumetric examination of the reactor vessel nozzle-to-vessel welds. "Essentially 100%," as clarified by ASME Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds," is greater than 90 percent coverage of the examination volume, or surface area, as applicable. ASME Code Case N-460 has been approved for use by the NRC in Regulatory Guide 1.147, Revision 15, "Inservice Inspection Code Case Acceptability" (RG 1.147). The licensee is requesting relief from the requirement to examine essentially 100 percent of the reactor vessel nozzle-to-vessel welds for the following components:

- Weld 1-15 on hot leg nozzle A
- Weld 1-18 on hot leg nozzle B

In its letter dated December 21, 2009, the licensee provided the following information:

3.1.1 Impracticality of Compliance (as stated by the licensee)

ASME Code requires a minimum of 90 percent coverage of the weld volume; but, because of the configuration of the reactor vessel outlet nozzles and the geometric shape, the examination is limited and APS is seeking relief from the [ASME] Code requirement.

3.1.2 Burden Caused by Compliance (as stated by the licensee)

Due to component geometry several scans are performed on these nozzles to maximize coverage. To comply with the [ASME] Code, the reactor vessel outlet nozzles and geometric shape would need to be redesigned and modified to increase the coverage to 90 percent or better.

3.1.3 Proposed Alternative and Basis for Relief (as stated by the licensee)

Figure 1 [shown on page 3 of the Enclosure to the licensee's letter dated December 21, 2009] illustrates the ISI drawing for Zone 1 and the welds 1-15 and 1-18. The design of the reactor vessel outlet nozzle protrusion provides a geometric limitation to the scanning area. The examination robot and transducer sled are physically limited by this protrusion.... All reactor vessel surfaces were examined, with the exception of scanning from the radius and protrusion. Examination scanning was performed on these nozzles to obtain the highest examination volume practical. The examination volume coverage was 98% for perpendicular to the weld centerline scans from the nozzle bore. The tangential scans that are parallel to the weld centerline are limited to 67%. The overall combined examination volume was 82.5%.

Based on the above evaluation, the proposed alternative is to examine these welds to the extent practical.

3.2 NRC Staff Evaluation

The ASME Code requires essentially 100 percent volumetric examination of the reactor vessel nozzle-to-vessel welds; however, due to the design of the reactor vessel outlet nozzle, a protrusion provides a geometric limitation to the scanning area. To comply with the ASME Code, the reactor vessel outlet nozzles would need to be redesigned and modified to increase the coverage to 90 percent or better. Imposition of this requirement would create a burden on the licensee; therefore, the ASME Code-required examination is impractical.

Ultrasonic examination scanning was performed on these nozzles to obtain the highest examination volume practical. The examination volume coverage was 98 percent for perpendicular to the weld centerline scans from the nozzle bore. The tangential scans that are parallel to the weld centerline are limited to 67 percent. The overall combined examination volume was 82.5 percent. This was confirmed by the NRC staff's review of figures and drawings provided by the licensee to substantiate the coverage obtained. There were no indications recorded during the ultrasonic inspections of Welds 1-15 and 1-18. Based on the volumetric examination coverage obtained on the nozzle welds, it is reasonable to conclude that, if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations performed. Furthermore, the staff concluded that the examinations performed to the extent practical provide reasonable assurance of structural integrity of the subject welds.

4.0 CONCLUSION

The NRC staff has reviewed the licensee's submittal and concludes that ASME Code examination coverage requirements are impractical for Reactor Vessel Nozzle-to-Vessel Welds 1-15 and 1-18. Furthermore, imposition of these ASME Code requirements would create a burden on the licensee. The staff further determined that it is reasonable to conclude that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that were performed. Furthermore, the staff concludes that the

examinations performed to the extent practical on the subject reactor vessel nozzle-to-vessel welds provide reasonable assurance of structural integrity of the subject welds.

Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(6)(i). Therefore, the NRC staff grants relief for the subject examinations of the components contained in Relief Request No. 47 at PVNGS-3 for the second 10-year ISI program interval, which ended on January 10, 2008.

The staff has further determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) 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 could result if the requirements were imposed on the facility.

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

Principal Contributor: Edward Andruszkiewicz

Date: October 14, 2010

R. Edington

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

If you have any questions, please contact James R. Hall at 301-415-4032.

Sincerely,

/RA/

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

Docket No. STN 50-530

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv

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ADAMS Accession No. ML102670080

**via Safety Evaluation*

OFFICE	NRR/LPL4/PM	NRR/LPL4/PM	NRR/LPL4/LA	DCI/CVIB/BC	NRR/LPL4/BC	NRR/LPL4/PM
NAME	LKGibson	JRHall	JBurkhardt	MMitchell*	MMarkley	JRHall
DATE	10/4/10	10/12/10	10/4/10	9/23/10	10/14/10	10/14/10

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