October 4, 2006

Mr. James M. Levine
Executive Vice President, Generation
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. 35 RE: REQUEST TO EXTEND THE SECOND 10-YEAR INSERVICE INSPECTION (ISI) PROGRAM INTERVAL FOR REACTOR VESSEL VISUAL EXAMINATIONS (TAC NOS. MD2055 AND MD2056)

Dear Mr. Levine:

By letter dated May 26, 2006, Arizona Public Service Company submitted Relief Request No. 35, requesting relief from certain American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) requirements at Palo Verde Nuclear Generating Station (Palo Verde), Units 2 and 3. The request for relief would authorize an alternative to the ASME Code requirements to defer the reactor pressure vessel visual examinations of Palo Verde Units 2 and 3 for one fuel cycle.

Based on the enclosed safety evaluation, the Nuclear Regulatory Commission (NRC) staff concludes that the ASME Code, Section XI requirements, which set the end of the second 10-year ISI interval on March 17, 2007, for Palo Verde Unit 2 and January 10, 2008, for Palo Verde Unit 3, pose a hardship without a compensating increase in the level of quality and safety, due to the increased doses and increased risk associated with removal of the core barrel during two separate refueling outages. Furthermore, the NRC staff concludes that the licensee's proposed alternative and previous examinations of these components provide reasonable assurance of structural integrity of the subject components.

Therefore, pursuant to Section 50.55a(a)(3)(ii) of Title 10 of the *Code of Federal Regulations*, the licensee's alternative as stated in Relief Request No. 35 is authorized for Palo Verde Units 2 and 3 for the second 10-year inservice inspection interval. The proposed alternative is authorized until the end of the spring 2008 refueling outage for Palo Verde Unit 2 and until the end of the spring 2009 refueling outage for Palo Verde Unit 3.

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

Sincerely,

/RA/

David Terao, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-529 and STN 50-530

Enclosure: Safety Evaluation

cc w/encl: See next page

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

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION PROGRAM RELIEF REQUEST NO. 35

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

PALO VERDE NUCLEAR GENERATING STATION, UNITS 2 AND 3

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

1.0 INTRODUCTION

By letter dated May 26, 2006 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML061570194), Arizona Public Service Company (APS or the licensee) submitted Relief Request No. 35, requesting relief from certain American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) requirements at Palo Verde Nuclear Generating Station (Palo Verde or PVNGS), Units 2 and 3. The request for relief would authorize an alternative to the ASME Code requirements to defer the reactor pressure vessel (RPV) visual examinations of Palo Verde Units 2 and 3 for one fuel cycle.

2.0 REGULATORY REQUIREMENTS

The inservice inspection (ISI) of the ASME Code Class 1, 2, and 3 components in nuclear plants is to be performed in accordance with the ASME Code, Section XI, and applicable edition and addenda as required by 50.55a(g) of Title 10 of the *Code of Federal Regulations* (10 CFR), except where specific relief has been granted by the Commission. The regulation at 10 CFR 50.55a(a)(3) states: "Proposed alternatives to the requirements of paragraphs (c), (d), (e), (f), (g), and (h) of this section or portions thereof may be used when authorized by the Director of the Office of Nuclear Reactor Regulation. The applicant shall demonstrate that: (i) The proposed alternatives would provide an acceptable level of quality and safety, or (ii) Compliance with the specified requirements of this section 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 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 regulations require that ISI 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 second 10-year ISI interval for Palo Verde

Units 2 and 3 began in March 1997, and January 1998, respectively. The ISI Code of record is the 1992 Edition with the 1992 Addenda.

3.0 RELIEF REQUEST NO. 35, REQUEST TO EXTEND THE SECOND 10-YEAR ISI PROGRAM INTERVAL

3.1 Code Requirements

Paragraph IWA-2432, Inspection Program B, in the 1992 Edition of Section XI of the ASME Code with the 1992 Addenda, states in part, "The inspection intervals shall comply with the following, except as modified by ASME Code, Section XI, Paragraph IWA-2430(d): Successive Inspection Intervals -10 years following the previous inspection interval."

Paragraph IWA-2430(d) in this ASME Code reference states that for components inspected under ASME Code, Section XI, Paragraph IWA-2432, Program B, each inspection interval may be extended or decreased by as much as 1 year. Adjustments shall not cause successive intervals to be altered by more than 1 year form the original pattern of intervals.

Paragraph IWB-2412(a) in this ASME Code reference states that the inspection interval specified in IWB-2412(a) may be decreased or extended by as much as 1 year to enable an inspection to coincide with a plant outage, within the limitations of ASME Code, Section XI, Paragraph IWA-2430(d).

Table IWB-2500-1, Examination Category B-N-2, Items B13.50 and B13.60 in this ASME Code reference require a VT-1 and VT-3 visual examination, respectively, on all accessible welds.

Table IWB-2500-1, Examination Category B-N-3, Item B13.70 in this ASME Code reference requires a VT-3 visual examination on all accessible surfaces.

3.2 Components for which Relief is Requested

From the 1992 Edition of Section XI of the ASME Code with the 1992 Addenda, Table IWB-2500-1:

Examination Category B-N-2, Item No. B13.50, Interior Attachments within Beltline Region
Examination Category B-N-2, Item No. B13.60, Interior Attachments Beyond Beltline Region
Examination Category B-N-3, Item No. B13.70, Core Support Structure (Core Barrel)

3.3 Licensee's Proposed Alternative (As Stated)

> Pursuant to 10 CFR 50.55a(a)(3)(ii), [APS] hereby requests approval to use an alternative to the requirements of the [ASME Code,] Section XI, Paragraph IWB-2412, Inspection Program B, for PVNGS Units 2 and 3. The alternative is to defer the Unit 2 and 3 reactor vessel attachments and core support structure visual examinations for one fuel cycle. The one cycle deferral will allow performance of the reactor vessel internal examinations in conjunction with the reactor vessel weld examinations.

Currently, PVNGS Units 2 and 3 are in the third period of their second ten-year ISI interval. The second ISI interval is currently scheduled to end on March 17, 2007, for Unit 2 and January 10, 2008, for Unit 3. Applying the one year extension allowed by [ASME Code, Section XI, Paragraph] IWA-2430(d) would extend the end of the interval until March 17, 2008, for Unit 2 and January 10, 2009, for Unit 3. The 2R14 and 3R14 refueling outages are currently scheduled for the spring of 2008 and 2009, respectively. However, an additional amount of extension time will be required to capture the 2R14 and 3R14 outages, and the [RPV] examinations, in their respective Second [10-year ISI] Intervals.

The additional extension being requested is less than 60 days for Unit 2 and less than 150 days for Unit 3. Although the proposed inspection dates are one refueling outage beyond the Code required inspection interval, the net duration between the [RPV] inspections will not be more than the maximum eleven years allowed by the Code.

The visual examinations of the [RPV] interior attachments and the core barrel have been performed several times at PVNGS with no relevant indications noted during the examinations. These examinations were last performed during the 1997 refueling outage for Unit 2 and the 1998 refueling outage for Unit 3 with acceptable results. Review of industry surveys (Reference 2) [in the licensee's May 26, 2006, application] indicate that these examinations have been performed many times by the industry without any reportable findings.

During the 2006 and 2007 refueling outages, PVNGS will be performing the ASME [Code] category B-N-1 visual examination. This includes the space above and below the reactor core that is made accessible for examination by core removal during normal refueling outages. This examination is required once each period [of the 10-year ISI interval] and will provide additional assurance of structural integrity.

In Relief Request 34[1], PVNGS requested a one-cycle extension of the reactor vessel mechanized [volumetric] examinations at PVNGS. The one-cycle interval extension being requested for the visual examinations is dependent upon approval of Relief Request 34 and would allow both exams to be performed during the same outage. The visual examination activities are estimated to add 4 days to the cycle 13 refueling outages. Removal of the core barrel is an infrequent evolution. As such, each removal of the core barrel contains an element of risk for equipment damage. Additionally, each removal and reinstallation of the core barrel results in approximately 200 millirem of dose to the workers. Performing the vessel weld (Relief Request 34) and vessel [interior attachments/core support structure] visual examinations (Relief Request 35) in the same outage will reduce dose and avoid the risk of removing the core barrel during two separate refueling outages.

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1. Relief Request 34 was approved by the NRC in a letter dated September 20, 2006 (ADAMS Accession No. ML062490513)

Therefore, this one-cycle interval extension is requested because compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The proposed inspection date is one refueling outage beyond the Code required inspection interval, which would defer the subject examinations to the 2R14 and 3R14 refueling outages. In accordance with 10 CFR 50.55a(a)(3)(ii), this interval extension is requested on the basis that the current ISI interval can be extended while providing an acceptable level of quality and safety.

3.4 Duration of Licensee's Proposed Alternative (As Stated)

The alternative is requested to extend the second ISI interval by one refueling cycle beyond the ASME Code required 10-year inspection interval, which is beyond the Code-allowed twelve month extension for the subject examinations. This request is applicable to the second [ISI] interval for Units 2 and 3 only and is subject to the approval of Relief Request 34. If this relief request is approved, the second ISI interval will end at the conclusion of the spring 2008 refueling outage in unit 2 and spring 2009 refueling outage in Unit 3 for the subject examinations.

4.0 TECHNICAL EVALUATION

The licensee proposed to defer the Palo Verde Units 2 and 3 RPV attachments and core support structure visual examinations for one fuel cycle. The one cycle deferral will allow performance of the RPV internal examinations in conjunction with the volumetric RPV weld examinations. The requested extension applies only to the affected ASME Code, Section XI examination categories and item numbers listed above. In conjunction with this relief, the licensee submitted Request for Relief No. 34 in a letter dated May 4, 2006 (ADAMS Accession No. ML061300676), requesting an extension to the second 10-year ISI interval for the RPV volumetric examinations by one refueling cycle beyond the current end dates. The NRC approved Request for Relief No. 34 on September 20, 2006 (ADAMS Accession No. ML062490513).

Palo Verde Units 2 and 3 are currently in their third period of their second 10-year ISI intervals, which are scheduled to end on March 17, 2007, for Unit 2 and January 10, 2008, for Unit 3. The 1-year extension allowed by ASME Code, Section XI, Paragraph IWA-2430(d) would extend the end of the interval until March 17, 2008, for Unit 2 and January 10, 2009, for Unit 3. Refueling Outages 2R14 and 3R14 are currently scheduled for the spring of 2008 and 2009, respectively, for each unit. The licensee requires time in addition to the 1-year extension allowed by the ASME Code to include Refueling Outages 2R14 and 3R14 in their respective second 10-year ISI intervals and to perform the subject examinations.

The licensee noted that the additional extension time being requested is less than 60 days for Palo Verde Unit 2 and less than 150 days for Palo Verde Unit 3. The proposed inspection dates are one refueling outage beyond the ASME Code-required inspection interval, and the time between the first 10-year ISI and second 10-year ISI interval RPV inspections will not be more than 10 years.

Removal of the core barrel is an infrequent evolution. As such, each removal of the core barrel contains an element of risk for equipment damage. Additionally, each removal and reinstallation of the core barrel results in approximately 200 millirem of dose to the workers. Performing the RPV weld volumetric (Relief Request 34) and vessel interior attachments/core support structures visual examinations (Relief Request 35) in the same outage will reduce dose and avoid the risk of removing the core barrel during two separate refueling outages.

Visual examinations of the RPV interior attachments and the core barrel have been performed at PVNGS in previous refueling outages with no relevant indications noted during the examinations. These examinations were last performed during the 1997 refueling outage for Palo Verde Unit 2 and the 1998 refueling outage for Palo Verde Unit 3 with acceptable results. Industry experience has indicated that no reportable findings were found during the examinations of the subject components. In addition, the ASME Code Category B-N-1 visual examinations are currently scheduled by the licensee for the spring 2006 and 2007 refueling outages. This would include the space above and below the reactor core that is made accessible for examination by core removal during normal refueling outages for Palo Verde Units 2 and 3, respectively. This examination is required once each inspection period of the 10-year ISI interval.

Based on the above considerations, the NRC staff concludes that the performance of the examinations for which relief is requested as currently scheduled would result in a hardship without a compensating increase in the level of quality or safety, due to the increased doses and increased risk associated with removal of the core barrel during two separate refueling outages. Previous examination of these components, the performance of ASME Code Category B-N-1 examinations each period of the current second 10-year ISI interval, and the licensee's proposed schedule to perform the B-N-2 and B-N-3 examinations for which relief has been requested no later than the end of the spring 2008 and 2009 refueling outage collectively provide reasonable assurance of structural integrity of the subject components.

5.0 CONCLUSION

The NRC staff has reviewed the licensee's proposed Relief Request No. 35, which requests authorization for an alternative to the ASME Code requirements to defer the reactor pressure vessel visual examinations of Palo Verde Units 2 and 3 for one fuel cycle. The NRC staff concludes that the ASME Code, Section XI requirements, which set the end of the second 10-year ISI interval on March 17, 2008, for Palo Verde Unit 2 and January 10, 2009, for Palo Verde Unit 3, pose a hardship without a compensating increase in the level of quality and safety, due to the increased doses and increased risk associated with removal of the core barrel during two separate refueling outages. Furthermore, the staff concludes that the licensee's proposed alterative and previous examinations of these components provide reasonable assurance of structural integrity of the subject components.

Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the staff authorizes the proposed alternative for the second 10-year ASME Code inservice inspection interval at Palo Verde Units 2 and 3. This proposed alternative is authorized until the end of the spring 2008 refueling outage for Palo Verde Unit 2 and spring 2009 refueling outage for Palo Verde Unit 3.

All other requirements of the ASME Code, Section III and 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: T. McLellan

Date: October 4, 2006

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Units 1, 2, and 3

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