

Lent, Susan

From: Gibson, Lauren
Sent: Wednesday, November 21, 2012 11:35 AM
To: 'Robert.Roehler@aps.com'
Subject: RAI related to Relief Request 48 (TAC Nos. ME9171, ME9172, and ME9173)
Attachments: Request for Additional Information RR48 (TAC Nos ME9171 ME9172 and ME9173).docx

Rob,

By letter dated August 1, 2012 (Agencywide Documents Access & Management System (ADAMS) Accession No. ML12229A046), the Arizona Public Service Company (APS, the licensee) submitted Relief Request 48 (RR48), requesting relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Section XI, Paragraph IWA-4221. The 2001 Edition 2003 Addenda of ASME Section XI, paragraph IWA-4221 requires the use of the construction code for repair and replacement activities. The licensee is proposing to use phased array ultrasonic testing as an alternative to the required radiographic testing. The licensee presented further information at a public meeting on August 30, 2012 (ADAMS Accession No. ML12243A435).

The Nuclear Regulatory Commission (NRC) staff has reviewed the submitted information and determined that the additional information identified in the enclosure is needed to complete its review.

On November 21, 2012, you agreed to respond by December 31, 2012.

Thank you,
Lauren

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REQUEST FOR ADDITIONAL INFORMATION
RELIEF REQUEST (RR) 48 REGARDING PHASED ARRAY
ULTRASONIC EXAMINATION TECHNIQUES IN LIEU OF RADIOGRAPHY
ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION UNITS 1, 2, AND 3
DOCKET NOS. 50-528, 50-529, AND 5-530

By letter dated August 1, 2012 (Agencywide Documents Access & Management System (ADAMS) Accession No. ML12229A046), the Arizona Public Service Company (APS, the licensee) submitted Relief Request 48 (RR48), requesting relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Section XI, Paragraph IWA-4221. The 2001 Edition 2003 Addenda of ASME Section XI, paragraph IWA-4221 requires the use of the construction code for repair and replacement activities. The licensee is proposing to use phased array ultrasonic testing as an alternative to the required radiographic testing. The licensee presented further information at a public meeting on August 30, 2012 (ADAMS Accession No. ML12243A435).

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the submitted information and determined that the following information is needed for the staff to complete its review:

1. RR48 describes that, in the near term, the licensee would like to use UT in Lieu of RT for economizer feedwater piping in containment. Please provide a description of the components to be examined in the upcoming outage, including the identification of the components, the inner diameters, thicknesses, and geometries.
2. Based on the submittal and the August 30, 2012, public meeting it appears that the specimens described in Attachment 1 have been examined extensively to develop the inspection procedures. Please provide flaw maps showing the true state for several examples of each type of flaw including those found by PT, the ultrasonic results including detection and characterization of flaws, and the radiographic results for these specimens.
3. Radiographic testing provides an archival-quality record of the examination that can be stored and interpreted after several decades. Encoded electronic data requires backup and proprietary data formats may become obsolete in the future. How will the ultrasonic results be stored and protected from data loss and future changes in hardware and software that could render the data unreadable?

4. RR48 states that the proposed alternative will utilize ASME Section III (2001 Edition 2003 Addenda) NC-5300 for acceptance criteria. However, the RT or UT acceptance criteria to be applied is not specified.
 - a. Which acceptance standards, NC-5320 "Radiographic Acceptance Standards", or NC-5330 "Ultrasonic Acceptance Standards" will be used?
 - b. Both NC-5320 and NC-5330 require discrimination between defect types. Please describe how discrimination between defect types will be accomplished, including examples of various defects and the ultrasonic features that allow for discrimination.
 - c. If NC-5320 is to be used, discuss and provide data that UT inspection procedures can detect internal root weld conditions (undercut, concavity, etc.) and characterize them using the acceptance standards in NC-5320.
 - d. If NC-5330 is to be used, the NC-5330 Ultrasonic Acceptance Standards require evaluation of responses greater than 20% of the reference level. Will procedures be held to the 20% of reference level standard, or will the procedures have freedom to evaluate indications with lower-amplitude responses?

5. The qualification for the personnel who will acquire and analyze the ultrasonic data is described in RR 48, but some important details were not provided. Please answer the following questions about the personnel qualifications:
 - a. It was verbally stated at the August 30, 2012, public meeting that the procedure demonstration will be open and the personnel tests will be conducted as blind tests. Discuss how the open procedure demonstration and the blind personnel tests will be conducted and why this provides an acceptable level of quality.
 - b. In RR48 it is stated:

For detection, the minimum number of flawed and unflawed grading units and associated minimum detection criteria noted in ASME Section XI table VIII-S2-1 will be met.

Will the false call test acceptance criteria from ASME Code Section XI Appendix VIII Supplement 2 also be required? Please discuss how false calls and or missed calls will affect the qualification of the inspector. (i.e., if the operator finds the 5 out of 5 flawed grading units in the mock-up but also has 2 false calls out of 10 unflawed grading units, does the operator receive his qualification?).
 - c. Will the blind personnel test require the inspector to correctly determine what types of flaws (porosity, slag, cracks, etc) have been detected? If not, why not?
 - d. During the blind personnel qualification, if an inspector detected a crack but misidentified the crack as porosity or slag, would this be considered a successful

detection or count as a missed flaw? If it considered a successful detection, how could the NC-5300 acceptance criteria is applied?

6. Page 2 of RR48 states that the proposed alternative will utilize ASME Section V, Article 4 (2001 Edition 2003 Addenda), and that the demonstration will document the requirements of Table T-421. There is no Table T-421 in the 2001 Edition 2003 Addenda. Please clarify. Do you mean Table T-422?
7. Please provide Reference 14, "EPRI presentation, dated May 2010; *Ultrasonic Capability study for reduction of weld repair during the construction-UT Technical Presentation.*"