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1CAN021303

February 26, 2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Response to Request for Additional Information
Request for Relief ANO1-ISI-021
Arkansas Nuclear One, Unit 1
Docket No. 50-313
License No. DPR-51

REFERENCES: 1. Entergy letter to NRC, "Requests for Relief from American Society of Mechanical Engineers (ASME) Section XI Volumetric Examination Requirements – Fourth 10-Year Interval, First Period," dated July 25, 2012 (1CAN071202) (ML12207A594)

2. NRC email to Entergy, "Request for Additional Information – Relief Request ANO1-ISI-021," dated January 3, 2013 (TAC No. ME9147)

Dear Sir or Madam:

Entergy Operations, Inc. requested NRC's approval of several Requests for Relief for Arkansas Nuclear One, Unit 1 via Reference 1. These requests are associated with the requirements of the ASME, Boiler and Pressure Vessel Code, Section XI pertaining to volumetric examinations. In several locations, the required coverage cannot be obtained due to interference or geometry.

In Reference 2 the NRC determined that additional information was needed to complete the review of Request for Relief ANO1-ISI-021 provided in Reference 1. Attached are the requests for additional information and corresponding responses.

This submittal contains no regulatory commitments.

If you have any questions or require additional information, please contact me.

Sincerely,

ORIGINAL SIGNED BY STEPHENIE L. PYLE

SLP/rwc

Attachment: Response to Request for Additional Information
Relief Request – ANO1-ISI-021

cc: Mr. Elmo E. Collins
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Arlington, TX 76011-4511

NRC Senior Resident Inspector
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U. S. Nuclear Regulatory Commission
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One White Flint North
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Attachment to

1CAN021303

**Response to Request for Additional Information
Relief Request – ANO1-ISI-021**

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
RELIEF REQUEST ANO1-ISI-021

The Nuclear Regulatory Commission (NRC) staff has reviewed the information provided by Entergy Operations, Inc. (Entergy, the licensee) for Arkansas Nuclear One, Unit 1, and Relief Request No. ANO1-ISI-021 in its letter dated July 25, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12207A594), and has determined that additional information is necessary to complete the review of Relief Request No. ANO1-ISI-021.

Based on the staff's review of Relief Request ANO1-ISI-021, please provide a response which addresses the following requests:

1. Identify the ASME material designation for each part of the welds. If a material is clad with Stainless Steel or other metal, identify that material.

Weld	Head Material	Nozzle Material	Clad Stainless Steel
05-012	SA-516 Gr. 70	SA-508 Cl. 1	Yes
05-013	SA-516 Gr. 70	SA-508 Cl. 1	Yes

2. Provide details of the basis that 100% Ultrasonic testing cannot be accomplished, such as, the specific design and the conditions that prevent the welds from being 100% examined by the Ultrasonic testing technique.

The American Society of Mechanical Engineers (ASME) Code and ultrasonic examination procedure requires the component be examined at right angles to the weld axis and along the weld axis (axial and circumferential scanning) from opposing directions. The combination of the four scans together equal a 100% examination. The procedure scanning is limited around and across the weld and on the nozzle side due to configuration. Ultrasonic sound waves cannot reach the weld material from the nozzle side or across the blend radius of the weld with conventional pressure vessel weld examination techniques. The examination volume that is typically limited is in the nozzle base material and the outermost portion of the weld. The inside surface of the weld and component is being examined.

3. Have there been any indications detected on the pressurize nozzle-to-vessel welds that were evaluated to be either relevant or non-relevant indications? If any indications were detected, discuss the disposition of these indications.

During the examination of the Pressurizer Spray and Relief Nozzle Welds (Component numbers 05-012 and 05-013) the technician recorded 360° intermittent geometric reflectors at the nozzle bores with the 60° shear wave transducer only. These are evaluated as non-relevant indications and are acceptable. No other relevant indications were noted or recorded.

4. Has a visual examination been performed on these welds?

These Pressurizer Nozzles are part of the Reactor Coolant Pressure Boundary and as such are visually (VT-2) examined during each Class 1 Post Outage System Leakage Test required by Table IWB-2500-1, Examination Category B-P, Note 2.

5. Provide the dimensions for all of materials shown in Figures 1 and 2 in the relief request, specifically, provide the diameter and thicknesses for each of the welds.

Weld	Nozzle Size (inches)	Weld Circumference (inches)	Weld Thickness including Clad (inches)
05-012	4	30.6	5.30
05-013	3	29.0	5.30

6. There appears to be a discrepancy between the stated coverage percentages and the “uninspected area” shown in the figures. How was coverage calculated? Please provide a coverage map showing the areas that were missed.

Component 05-012 - Pressurizer Spray Nozzle to Head weld, was reported to have cumulative coverage of 36.6%, which is the average of the four scans taken each with the 45° and 60° angle beam transducers across the base material on the nozzle side, the weld and the base material on the head side of the component.

Scan illustrations appear to indicate more coverage than the reported 36.6% due to the 60° angle providing approximately 69% scan coverage in one direction across the weld from the vessel head side. The cumulative scan coverage is reduced considerably because the scan from the nozzle side could not be performed, and the circumferential scans could not be performed all the way across the Code-required surface area.

Component 05-013 - Pressurizer Head to Safety Nozzle weld, was reported to have cumulative coverage of 42%, which is the average of the four scans taken each with the 45° and 60° angle beam transducers across the base material on the head side, the weld and the base material on the nozzle side of the component.

Scan illustrations appear to indicate more coverage than the reported 42% due to the 60° angle providing approximately 71% scan coverage in one direction across the weld from the vessel head side. The cumulative scan coverage is reduced considerably because the scan from the nozzle side could not be performed, and the circumferential scans could not be performed all the way across the Code-required surface area.

Refer to attached Figures 1 and 2 which illustrate the extent of examination volume that was interrogated to some extent with the ultrasonic process by at least one examination angle.

7. Does the inspection procedure require one inspection angle or all three inspection angles for the area to be considered inspected?

The ultrasonic procedure requires beam angles of 45° and 60° for angle beam examinations conducted from the vessel outside surface. In addition, the 0° straight beam examination is required across the examination volume.

Figure 1

Scan Plan and Coverage for Component 05-012

(Shaded area depicts code-required volume)
Not to Scale

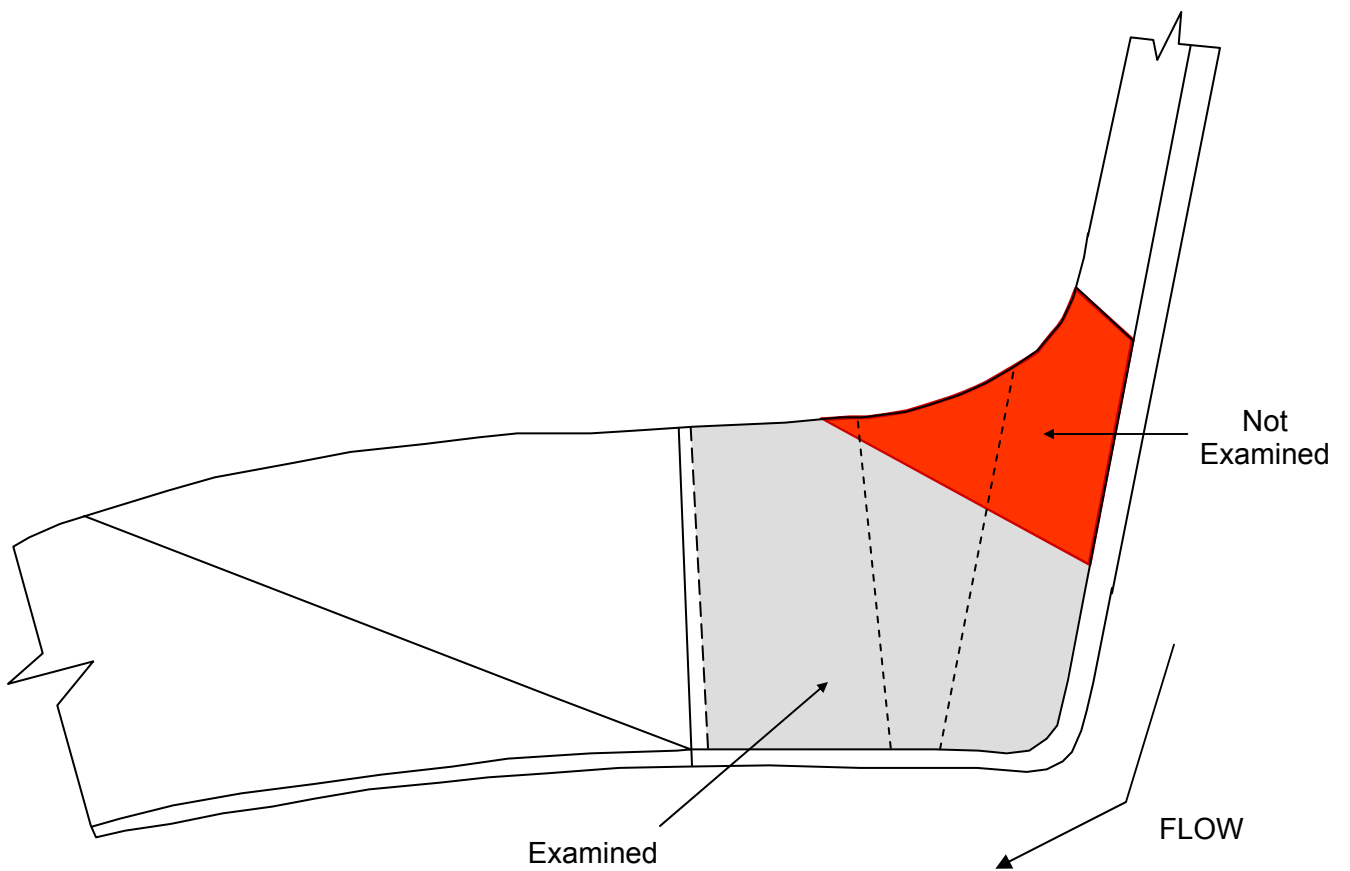


Figure 2

Scan Plan and Coverage for Component 05-013

(Shaded area depicts code-required volume)
Not to Scale

