

NRR-DMPSPeM Resource

From: Pulvirenti, April
Sent: Friday, February 1, 2019 9:48 AM
To: Zamber, Maria
Cc: Pascarelli, Robert
Subject: Waterford 3 - FINAL Request for Information regarding Relief Request WF3-RR-19-001 for Application of Dissimilar Metal Weld Full Structural Weld Overlay

Maria,

By letter dated January 28, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19028A436), Entergy Operations, Inc. (the licensee) requested relief from certain requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, IWA-4000, at Waterford Steam Electric Station Unit 3. Pursuant to Title 10 of the Code of Federal Regulations (CFR) 50.55a(z)(1), the licensee submitted Alternative WF3-RR-19-1 proposing an alternate repair of the degraded welds in the cold leg drain lines of the reactor coolant system.

To complete its review, the Nuclear Regulatory Commission (NRC) staff requests the following additional information. This Request for Additional Information was discussed with Maria Zamber and others of your staff on January 31, 2019.

1. Section 8, under the heading, *Suitability of Ambient Temperature Temper Bead Techniques*, page 8, of the Enclosure to the January 28, 2019 letter, states that ambient temperature temper bead welding will be performed in accordance with Code Case N-638-6, as conditionally approved in RG 1.147, with proposed alternatives:

Code Case N-638-6, paragraph 3(c) states that the interpass temperature during welding shall be determined by temperature measurement (e.g., pyrometers, temperature indicating crayons, thermocouples). In lieu of this requirement, the licensee proposed monitoring preheat and interpass temperatures during FSWOL welding as follows: "Preheat and interpass temperatures will be measured using a contact pyrometer. In the first three layers, the interpass temperature will be measured every three to five passes. After the first three layers, interpass temperature measurements will be taken every six to ten passes for the subsequent layers. Contact pyrometers will be calibrated in accordance with approved calibration and control program documents."

The licensee provided the following basis for its proposed alternative: The proposed preheat and interpass temperature controls are based on field experience with depositing FSWOLs and have been successfully used throughout the industry. Interpass temperatures beyond the third layer have no impact on the metallurgical properties of the ferritic steel heat affected zone.

The NRC staff interprets "interpass temperature" to mean the temperature of the weld area after the completion of a weld pass before the next weld pass begins. If it is impractical to perform direct measurement to monitor each weld pass, the Code Case provides other alternative methods such as the use of heat flow calculations or the measurement of the actual interpass temperature on a test coupon.

The licensee stated that the temperature controls are based on "field experience." However, the NRC staff does not consider "field experience" to be an adequate technical justification when no additional information has been provided.

The NRC staff requests that the licensee provide documentation of the field experience that is referenced, including a thorough discussion on why the referenced field experience provides an adequate technical justification for the proposed alternative to the requirements to measure the interpass temperature in Code Case N-638-6, paragraph 3(c).

2. Enclosure, Attachment 1, Section A1.1, states that the requirements for the design, analysis, fabrication, examination, and pressure testing of the overlays are derived from applicable portions of ASME Code Case N-740-2.

Enclosure, Attachment 1, Section 1.4(c), *Inservice Inspection*, page 7, states that preservice inspection and inservice inspection will be performed in accordance with Code Case N-770-2 as endorsed by the NRC in 10 CFR 50.55a.

As shown above, it is unclear as to the proposed preservice and inservice inspection requirements under the proposed alternative. The submittal appears to indicate that the current NRC requirements of 10 CFR 50.55a(g)(6)(ii)(F) which requires the use of Code Case N-770-2, will be followed for both the preservice and inservice examinations. If this is the case, the licensee does not need to request relief for the requirements in 10 CFR 50.55a(g)(6)(ii)(F), unless a deviation is planned by the licensee. If no other ASME Code Case will be used, such as N-740-2, for the preservice or inservice examinations, clarify the proposed alternative regarding the exact requirements (i.e., the code case) that will be followed for the preservice and inservice examinations of the overlaid welds.

3. Enclosure, Attachment 2, page 7, compares the preservice examination requirements in Code Case N-504 and ASME Code, Section XI, Appendix Q, to that of Code Case N-740-2. However, the licensee did not compare the inservice examination requirements. The NRC staff notes that Enclosure, Attachment 1, Section 1.4(c), page 7, states that preservice inspection and inservice inspection will be performed in accordance with Code Case N-770-2 as endorsed by the NRC in 10 CFR 50.55a. The NRC staff finds that it is not necessary to compare N-504/Appendix Q to N-770-2 because the NRC has approved all three documents. Please clarify the comparison made regarding the preservice examination on Enclosure, Attachment 2, Page 7.

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"Pascarelli, Robert" <Robert.Pascarelli@nrc.gov>
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"Zamber, Maria" <mzamber@entergy.com>
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