

NRR-PMDAPEm Resource

From: DiFrancesco, Nicholas
Sent: Friday, May 20, 2011 12:09 PM
To: 'Lisa.Schofield@exeloncorp.com'
Cc: Zimmerman, Jacob; 'jeff.hansen@exeloncorp.com'
Subject: Draft Supplemental Information Request for Braidwood Station, Units 1 and 2 - Relief Request I3R-08: Alternative Requirements to ASME Code Requirements for Class 1 Pressure Retaining Welds (TAC Nos. ME6024 and ME6025)

Ms. Lisa Schofield,

Provided below is a draft of the supplemental information requested to facilitate the review of Braidwood Station, Units 1 and 2 - Relief Request I3R-08: Alternative Requirements to ASME Code Requirements for Class 1 Pressure Retaining Welds (TAC Nos. ME6024 and ME6025).

The draft supplemental information request has been provided below to support the May 24 clarification teleconference.

Sincerely,

Nicholas DiFrancesco

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DRAFT

SUPPLEMENTAL INFORMATION REQUEST

RELIEF REQUEST I3R-08

EXELON GENERATION COMPANY, LLC

BRAIDWOOD, UNIT NOS. 1 AND 2

DOCKET NOS. 50-456 AND 50-457

1. The request was submitted in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(i). At a public meeting dated November 30-December 1, 2010, the NRC gave a presentation titled, "NRC Request for Dissimilar Metal Weld [DWM] Performance Demonstration Data on ID [inside diameter] Depth Sizing Error," (ADAMS Accession No. ML103400306). The presentation stated that an RR should be based on impracticality (10 CFR 50.55a(g)(5)(iii)).
 - (a) Please change the 10 CFR reference accordingly to 10 CFR 50.55a(g)(5)(iii).
 - (b) Provide the necessary information to support a request for impracticality.

- (c) Since the Mechanical Stress Improvement Process is performed from the outside Diameter (OD), include a discussion on accessibility of the subject welds for depth sizing cracks from the OD surface using state-of-the-art, Appendix VIII, qualified ultrasonic (UT) test techniques.
2. The request states that “EGC contacted the Electric Power Research Institute (EPRI) NDE Center on February 7, 2011, and confirmed that no vendor has successfully demonstrated compliance with the Code” At a public meeting dated December 2 and 3, 2008, the NRC gave a presentation titled, “NRC Perspectives on Inside Diameter Pipe Examinations Depth Sizing Root Mean Square Error,” (ADAMS Accession Nos. ML090760523 (memo) and ML090760695 (presentation)) with conclusions and recommendations for demonstrating RMSE depth sizing by licensees and vendors. At a public meeting dated May 27 and 28, 2009, the EPRI-Performance Demonstration Initiative (PDI) identified the differences between the test sets used for successful qualifications from the OD and unsuccessful qualifications from the inside diameter (ID) surfaces (ADAMS Accession Nos. ML091760056 (memo), and ML091590560 (presentation)). Currently, the PDI program does not have or considered assembling from other programs test sets with conditions similar to test sets used for depth sizing qualification from the OD.
- (a) Provide a discussion on the last time the UT vendor participated in an Appendix VIII, Supplement 2 or 10, ID performance demonstration and any future scheduled Appendix VIII, Supplement 2 and 10, or other (non-Appendix VIII) future programs involving ID performance demonstrations.
- (b) Provide a discussion on the time and effort necessary to secure mockups for site-specific vendor ID RMSE demonstrations.
- (c) Provide a discussion on the availability of mockups for future outages at Braidwood Station, Units 1 and 2.
3. Licensees have located representative mockups (smooth ID surfaces similar to their welds) containing cracks within the industry. UT vendors have used these mockups to demonstrate ID depth sizing RMSE capabilities. Also, vendors have independently participated in blind and non-blind round robin demonstrations on mockups containing representative cracks.
- (a) Provide a discussion of EGC’s effort to provide representative mockups containing cracks (or simulated cracks with crack like responses) with ID surfaces similar to the surfaces used for successful OD depth sizing qualifications.
- (b) Provide a discussion of your vendor’s participation in ID depth sizing demonstration that may have been independent of the PDI program. If available, include a description of the specimens (ID surface waviness, configurations, and materials) and cracks, type of tests (blind or non-blind), differences between the procedures and personnel used for the demonstrations and those being proposed for examining the subject welds, summary of results and RMSE values, and the organization sponsoring or proctoring the demonstrations.
4. Starting in 2004 (ADAMS Accession No. ML050690198), EPRI has requested licensees to make surface profilometry measurements of DMWs and adjacent similar metal welds to identify scanning gaps greater than 0.32-inches between the component surface and probe.
- (a) Provide a discussion (surface waviness, probe lift-off, probe foot-print, etc) on any previously performed profilometry of the subject welds, including approximate coverage affected by gaps exceeding 0.32-inches and restrictions from counter bores and pipe curvatures (such as elbow curvature away from weld).
- (b) Include a discussion on changes to the subject welds that minimizing examination effects from gaps greater than 0.32-inches and surface restrictions.

- (c) If the same vendor is performing the next examination of the subject welds, include a discussion on the improvements made to their UT technique for minimizing examination effects from gaps greater than 0.32-inches and surface restrictions.
 - (d) Provide a cross section sketch of the weld areas showing the base metal, weld, butter, and cladding and identify the materials (stainless steel, carbon steel, Inconel).
5. The request states that, "Applying the difference between the RMS error and the achieved RMS error to the actual flaw being sized will ensure a conservative bounding flaw depth value...." The growth of primary water stress corrosion cracking (PWSCC) in DMW can be relatively fast and can increase with greater crack depths. Experience shows that UT normally under sizes the depth of deep cracks. The proposed add-on is approximately 1/9 of the worse case error for DMW and 1/6 of the worse case error for austenitic-to-austenitic welds. The conditions influencing PWSCC growth and depth sizing accuracy reduces any conservatism that may exist in the proposed alternative. The origin of the proposed alternative was considered a short term solution until vendors were qualified.
- (a) Using statistics and PDI ID DMW and similar metal weld test data, provide the percentage of flaws that would exceeding the proposed 0.064-inch for DMWs and 0.124 for similar metal weld screening criteria. Identify assumption, if any.
 - (b) Limit the relief request to this outage.

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