NRR-PMDAPEm Resource

From: Lingam, Siva
Sent: Friday, August 09, 2013 7:21 AM
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Cc: Broaddus, Doug; Lupold, Timothy; Rodriguez, Rafael; Tsao, John; Collins, Jay; Cumblidge, Stephen; Anderson, Michael T (Michael.Anderson@pnnl.gov) (Michael.Anderson@pnnl.gov); Katzman, Eric (Eric.Katzman@fpl.com)
Subject: St. Lucie, Unit 1 Relief Request No. 5 - 2nd Round of Requests for Additional Information (RAIs) (TAC No. MF0675)

Please note the following official RAIs. These RAIs were discussed during our conference call on August 8, 2013. Please provide your responses as early as possible.

By letter dated February 4, 2013 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML13046A101) with supplement dated July 30, 2013, Florida Power & Light Company (the licensee) requested relief from Title 10, Code of Federal Regulations, Part 50 (10 CFR 50), paragraph 10 CFR 50.55a(g)(6)(ii)(F)(3) and 10 CFR 50.55a(g)(6)(ii)(F)(4) which impose a condition on American Society of Mechanical Engineers (ASME) Code Case N-770-1 requiring essentially 100 percent coverage be achieved for the baseline volumetric examinations of dissimilar metal welds (DMW). The licensee proposed an alternative to the required examination coverage for the eight DMWs at reactor coolant pump (RCP) nozzles at St Lucie Unit 1 as documented in Relief Request Number 5, Revision 0. To complete its review, the Nuclear Regulatory Commission (NRC) staff requests the following additional information.

(1) In response to RAI-3A (page 5) in the July 30, 2013, submittal, the licensee performed flaw analyses using dissimilar metal weld thickness of 3.2 inches. The licensee stated that this thickness was conservative. However, in response to RAI-3B (page 9), the licensee used a pipe thickness of 2.9 inches. Discuss how the weld thickness was determined (e.g.. weld profile taken using zero degree probe, etc.) and why the thickness used is considered to be conservative. Also, are these weld thickness values used in response to RAI 3A and 3B conservative for both welds (RC-121-6-504 or RC-124-7-504)?

(2) (a) Discuss whether the crack face pressure is included in the flaw growth calculation. If not, provide justification. (b) Provide axial stresses and bending stresses that were used to calculate the growth of the circumferential flaw.

(3) Explain why the weld residual stresses used to calculate the growth of the axial flaw and circumferential flaws did not use the same assumptions for the depth of the internal repair and heat treatment? Specifically, the axial flaw growth calculation used weld residual stresses based on the “50% ID repair with no heat treatment”, whereas the circumferential flaw growth calculation used weld residual stresses based on the “25% ID repair with heat treatment”.

(4) In RAI-5 A, the licensee was asked for the “as-built” weld geometry. This information is necessary to accurately determine volumetric coverage and beam intensities in the model. The licensee responded by stating that the sketches (included in the initial submittal) are scaled, and that further dimensional information is located in response to question RAI-4 D. However, in the response to RAI-4 D, the information in the table provided by the licensee describes “minimum design thickness,” thus it is unclear whether the actual as-built thickness is the value stated in this table. Please clarify and provide the actual (as-built) thicknesses and other as-built geometrical information (such as inside and outside diameter taper and pipe cross sectional dimensions).

(5) In RAI-5 B(1), the licensee states that three (3) elements from each probe were tested per ASTM E-1065 for frequency, bandwidth, and pulse duration for the GEIT 115-000-545, 2 x 16 element matrix array probes. Further, the licensee states that center frequencies of 1.59 to 1.65 MHz were found during these tests. The manufacturers design center frequency for this probe is 1.5 MHz. Please explicitly state the pulse excitation type and duration used during the examinations of Welds RC-121-6-504 and RC-124-7-504.

(6) In RAI-5 B(2), the licensee states that both longitudinal and shear wave modes of sound propagation were used during the examinations. When using phased array techniques, in order to properly set the nominal angles for each of these modes of examination, it is standard to apply two different sets of wedges, one set for longitudinal and one for shear wave modes. However, two sets of wedges (along with their dimensions) have not been included in the response. Please clarify which mode (longitudinal or shear) of propagation was being used for the one set of wedges described in the RAI response. Further, clarify and state if the same wedges were being used for the second mode of propagation, or if a second set of wedges was applied. If a second set of wedges was used, please provide dimensional information (similar to that originally requested) for the second set of wedges.

(7) In RAI-5 D(3), the licensee was asked for transmit and receive delay values for each of the elements in the phased array probe in order for PNNL to simulate proper beam formation in the component. The licensee responded:

> "Not available. These examinations were performed using the WesDyne Intraphase instrument. The Intraphase has an internal proprietary focal law generator based on the essential input parameters defined in the qualified EPRI-DMW-PA-1 procedure."

The time delays for element firing are controlled by software and must be validated to ensure the beams are steered and focused correctly. These values are necessary for PNNL to complete the simulation of the examinations using CIVA. The licensee should submit the delay law values as requested. If these are considered WesDyne proprietary, PNNL will treat them as such, and not release this information to any outside party.

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