

From: Vaidya, Bhalchandra
Sent: Thursday, March 14, 2013 7:05 AM
To: 'Patricia.Furio@cengllc.com'
Cc: Lupold, Timothy; Wallace, Jay; Meighan, Sean
Subject: NRC Verbal Approval of Calvert Cliffs RR-ISI-04-07A, TAC No. ME8871

Resending with Corrections in **BOLD**.

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Ms. Furio,

In accordance with Nuclear Reactor Regulation Office Instruction LIC-102, "Relief Request Reviews," (ADAMS ML091380595) the staff may provide verbal approval of relief requests provided:

- The proposed alternative is in writing and all information that the staff requires to write the SE has been docketed.
- An identified need for the verbal authorization is recognized given the circumstances of the licensee's request.
- The NRC technical staff has completed its review and determined that the proposed alternative is technically justified, but has not yet formally documented it in an SE.
- The technical branch and the Division of Operating Reactor Licensing (DORL) branch chiefs have agreed to the verbal authorization.

It is the NRR staff's understanding that Calvert Cliffs Unit No. 2 is currently in a refueling outage and that approval of Relief Request RR-ISI-04-07A is necessary before the facility can enter MODE 3. It is also NRR's understanding that Calvert Cliffs Unit No. 2 currently plans to enter MODE 3 on Wednesday, March 20, 2013. Therefore, the staff believes that the above criteria for granting temporary verbal approval has been met. Temporary verbal approval is being granted via the script below and the staff expects to provide a written safety evaluation within 150 days of today's date.

Participants in today's discussion were:

NRC Participants:

Tim Lupold, **Acting** Chief, Piping and NDE Branch, Division of Engineering
Sean Meighan, **Acting** Chief, Plant Licensing Branch I-1, DORL
Jay Collins, Piping and NDE Branch, Division of Engineering
Bhalchandra K. Vaidya, Calvert Cliffs Project Manager, DORL

Licensee Participants:

Larry Smith, General Supervisor – Engineering Programs
Russell Jones, Supervisor - Engineering
Craig Neyman, Sr. Licensing Analyst

[Tim Lupold speaking]

By letter dated June 7, 2012, as supplemented by letters dated January 10, 2013, and February 18, 2013 Calvert Cliffs Nuclear Power Plant, LLC., (the licensee) submitted "Relief Request RR-ISI-04-07A, Dissimilar Metal Butt Welds Baseline Examinations," for Nuclear Regulatory Commission review and authorization. The licensee's request for alternative has been submitted under 10 CFR 50.55a(a)(3)(ii), hardship without a compensating increase in the level of quality or safety.

The licensee is proposing to credit the ultrasonic (UT) examinations of the reactor coolant pump (RCP) suction and discharge dissimilar metal butt welds (DMBW) performed at Calvert Cliffs Nuclear Power Plant, Unit 2, in spring 2011 to fulfill the baseline examination requirement of 10 CFR 50.55a(g)(6)(ii)(F). The licensee states that the previous UT examinations were performed using ASME Code, Section XI, Appendix VIII, requirements, but could not obtain essentially 100 percent coverage of the required examination volume due to weld taper, insulation support obstruction, and the presence of the cast austenitic stainless steel (CASS) safe-ends. The staff has examined the drawings submitted by the licensee and finds that fulfilling the essentially 100 percent examination requirement would require modification and/or replacement of the components which would constitute a hardship.

The licensee has submitted UT scan coverage maps for the five (5) welds for which essentially 100 percent coverage could not be obtained. These maps showed the examination volume of the welds that could not be credited and which could contain a hypothetical flaw. The staff reviewed each of these weld examination maps and selected two bounding cases, weld 30-RC-21B-10 and weld 30-RC-22A-10, for additional staff evaluation. In response to the staff's request for additional information (RAI), the licensee proposed that the largest undetectable hypothetical circumferential flaw in weld 30-RC-21B-10 would have a depth of 1.2 inches and a length of 10 inches

and the largest undetectable hypothetical axial flaw in weld 30-RC-22A-10 would have a depth of 0.2 inches and a length of 0.4 inches. The NRC contracted Pacific Northwest National Laboratory to perform computer modeling of both welds' geometry and UT signal responses to determine what size hypothetical flaws would have been detectable during the licensee's spring 2011 examination. The staff finds that a circumferential crack in weld 30-RC-21B-10 with a depth of 1.3 inches could be detected, and an axial flaw of 10 percent of the wall thickness in weld 30-RC-22A could be detected. The staff finds that there is a high probability of finding hypothetical flaws of these assumed sizes, and has used them as the initial flaw sizes for flaw analysis to determine the reinspection frequency for these welds.

In response to the staff's RAI, the licensee submitted a flaw growth calculation for the hypothetical circumferential flaw growing by pressurized water stress corrosion cracking (PWSCC). The licensee's plot showed that the hypothetical 1.3 inch deep by 10 inch long circumferential flaw would require in excess of 72 months to grow to the ASME Code allowable flaw size of 75% through wall. The staff has performed an independent flaw growth analysis and has confirmed the licensee's calculation, thus finds it to be acceptable. The staff has also analyzed PWSCC growth of the assumed axial crack in weld 30-RC-22A and showed that the 72 month lifetime of the circumferential crack bounded the lifetime of the assumed axial crack.

In conclusion, the staff finds that performing the actions needed to achieve the UT examination coverage required by 10 CFR 50.55a(g)(6)(ii)(F) would constitute a hardship. The staff also finds that there is reasonable assurance of structural integrity and leak tightness of the subject welds for a period of at least 72 months from the time of the UT examination that was performed in spring 2011.

[Sean Meighan speaking]

On the basis of the above evaluation, the NRC finds that the proposed alternative will provide reasonable assurance of structural integrity and leak tightness of the subject reactor coolant pump dissimilar metal butt welds until the scheduled refueling outage in the spring 2017. In addition, the NRC finds that the licensee has demonstrated that performing an examination which results in essentially 100 percent coverage of the required volume would constitute a hardship without a compensating increase in quality and safety. The NRC therefore concludes that the regulatory requirements of 10 CFR 50.55a(a)(3)(ii) have been fulfilled and authorizes acceptance of the spring 2011 examination of the subject welds at Calvert Cliffs Nuclear Power Station, Unit 2, as the baseline examination required by 10 CFR 50.55a(g)(6)(ii)(F) until the scheduled spring 2017 refueling outage.

All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

[Conclusion of discussion]

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