NRR-PMDAPEm Resource

From: Wiebe, Joel
Sent: Wednesday, November 06, 2013 2:50 PM
To: Tom Loomis
Subject: Preliminary Additional RAI Questions Regarding Use of Code Case N-786

Tom,

Let me know if you need a clarifying phone call regarding these additional RAIs. A response is requested within 30 days.

Joel

By letter dated February 27, 2013 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML13059A498) as supplemented on June 24, 2013 (ADAMS Accession No. ML13176A143), Exelon Generation Company (Exelon) requested relief from the requirements of American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, IWA-4000, for the repair of degraded Class 2 and 3 moderate-energy carbon steel piping systems at Braidwood Station Units 1 and 2, Byron Station Units 1 and 2, Clinton Power Station Unit 1, Dresden Nuclear Power Station Units 2 and 3, LaSalle County Stations Units 1 and 2, Limerick Generating Station Units 1 and 2, Oyster Creek Nuclear Generating Station, Peach Bottom Atomic Power Station Units 2 and 3, Quad Cities Nuclear Power Station Units 1 and 2, and Three Mile Island Nuclear Station Unit 1.

To complete its review, the Nuclear Regulatory Commission (NRC) staff requests the following additional information:

1. Exelon's proposed alternative to allow the use of sleeves in lieu of the requirements of the ASME code for the repair of degraded class 2 and 3 moderate energy piping appears to be based primarily on the premise of identifying the corrosion mechanism involved and assuming a corrosion rate of twice the measured corrosion rate at the degraded pipe location or four times the corrosion rate as identified by other means or in other pipe locations (Reference: Exelon's response to RAI Questions Nos. 9 and 10 dated June 24, 2013). However, it is not clear:

> (a). how the corrosion mechanism will be determined, i.e., what testing will be conducted and if inside diameter sampling will be conducted to identify the corrosion mechanism such as microbiologically influenced corrosion (MIC);
> (b). how the corrosion rate will be determined once the corrosion mechanism is identified, i.e., will the identified corrosion rate be based on literature data, other plant data, or on system-specific experimental data;
> (c). how the corrosion rate will be determined if the corrosion mechanism is not conclusively determined, i.e., if the corrosion mechanism is not conclusively identified will the mechanism with the highest corrosion rate (probably MIC) be used;
> (d). whether the same standards for the determination of corrosion rates be applied to temporary repairs (Type A and partial-structural Type B sleeves) and permanent repairs (full-structural Type B sleeves).

Provide additional information to address issues (a) to (d) above.

2. The proposed alternative requires examinations of permanent repairs (full-structural Type B sleeves) on the first two refueling outages following repairs and then every fourth refueling outage. It appears that the purpose of these examinations is to verify that the degradation has not spread laterally beyond the sleeve or radially through the sleeve. It also appears that these measurements are proposed as being a means of validating the assumed corrosion rates. The NRC staff does not understand how the proposed ultrasonic examination of the surface of the full-structural Type B sleeve and its welds will fully accomplish the desired purpose. It does not appear that the ultrasonic examination will accurately measure the corrosion rate of the pipe because ultrasonic testing techniques will not likely penetrate the interface between pipe and sleeve as would be required to measure a corrosion rate of the pipe, especially for localized corrosion. Describe (a) how the proposed ultrasonic examination of the full-structural Type B sleeve will accurately

identify the corrosion rate occurring at the site of the repair, especially if the corrosion mechanism is a localized corrosion mechanism such as MIC; and (b) why an alternate corrosion rate measurement technique is not required or proposed. Alternate techniques could include but are not limited to: use of corrosion coupons in the same piping system, volumetric examination of an area of the pipe which is adjacent to the repair which is undergoing the same form of degradation, or inline inspection of the pipe by robotic means.

3. The relief request is not clear regarding whether the proposed alternative repair or an ASME Code repair will be made if the pipe degradation is discovered during an outage. Discuss, for the buried pipe and above ground pipe, whether an ASME Code repair or the proposed alternative repair will be performed if degradation is identified during a scheduled refueling outage or an outage other than a scheduled refueling outage.

4. Page 4 of the relief request states that "…Exelon will remove full-structural Type B reinforcing sleeves and perform an ASME Code repair or replacement prior to the time that inservice monitoring indicates that structural integrity could be impaired based on measured degradation between monitoring activities…". The NRC staff notes that, especially for localized corrosion, leak-tight integrity and structural integrity may not be identical. Please provide additional information as to how the proposed alternative addresses leak-tight integrity of piping, especially piping carrying licensed material or environmentally sensitive material.

5. Localized corrosion is a significant issue in many raw water systems. Localized corrosion often occurs in these piping systems in many locations which are spaced fairly closely. It appears that examination of a somewhat larger area may be required when performing pre-installation and post-installation pipe inspection in order to identify whether additional corrosion is occurring in nearby locations. Justify why it is not necessary to examine the pipe for at least a fixed distance e.g., X pipe diameters or Y sleeve lengths in each direction from the point of degradation during the pre- and post-installation inspection.

6. In response to RAI Question 1(1) dated June 24, 2013, the licensee stated that "…Type B reinforcing sleeves could include new integral branch connections (weldolet or socket welded or threaded half-coupling) when required by design, such as for vent or fill connections for pressure testing, or to replace a degraded section of piping containing a branch connection…" The above statement appears to imply that a branch connection could be attached to a Type B sleeve as part of the repair. However, Code Case N-786 does not specify such a design or configuration. Justify why a branch connection could be attached to a Type B sleeve as part of the proposed repair.

Hearing Identifier: NRR_PMDA
Email Number: 903

Mail Envelope Properties (Joel.Wiebe@nrc.gov20131106144900)

Subject: Preliminary Additional RAI Questions Regarding Use of Code Case N-786
Sent Date: 11/6/2013 2:49:49 PM
Received Date: 11/6/2013 2:49:00 PM
From: Wiebe, Joel

Created By: Joel.Wiebe@nrc.gov

Recipients:
"Tom Loomis" <thomas.loomis@exeloncorp.com>
Tracking Status: None

Post Office:

Files	**Size**	**Date & Time**
MESSAGE	6707	11/6/2013 2:49:00 PM

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received: