From:	Bloom, Steven
To:	Diaz-Sanabria, Yoira; Plasse, Richard; Sayoc, Emmanuel
Cc:	Spruill, Crystal; Gardner, William; Green, Kimberly
Subject:	098 - Sequoyah AMR SER Stainless Steel 1 - Gardner Green Revised 08-1-13.docx
Date:	Thursday, August 22, 2013 7:44:00 AM
Attachments:	Form 655.docx 098 - Sequoyah AMR SER Stainless Steel 1 - Gardner Green Revised 08-1-13.docx

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Yoira,

Attached is an SER for Sequoyah TRP 98 AMR Stainless Steel. I have reviewed and approved this SER.

Crystal,

Please put into ADAMS this email and the attachment.

Thank you,

Steve

Steven Bloom, Acting Branch Chief
Aging Management of Plant Systems Branch (RAPB)
Division of License Renewal (DLR)
Office of Nuclear Reactor Regulation (NRR)
301-415-2431 (W)
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O-11E20
M/S O-11F1

TRP 98 Stainless Steel

Note H

3.2.2.3.2 Containment Spray System Summary of Aging Management Evaluation

Stainless steel piping exposed to treated borated water (int). In LRA Table 3.2.2-2, the applicant stated that stainless steel piping internally exposed to treated borated water will be managed for cracking by the One-Time Inspection program. The AMR item cites generic note H.

The staff noted that this material and environment combination is identified in the GALL Report, which states that stainless steel exposed to treated borated water is susceptible to loss of material due to pitting and crevice corrosion and recommends GALL Report AMP XI.M2, "Water Chemistry," to manage the aging effect. However the applicant has identified cracking as an additional aging effect. The applicant addressed the GALL Report identified aging effects for this component, material and environment combination in other AMR items in LRA Table 3.2.2-2.

The staff's evaluation of the applicant's One-Time Inspection program is documented in SER Section 3.0.3.1.15. As stated in the GALL Report (Section IX-D. Enviroments):

> [s]tress corrosion cracking (SCC) occurs very rarely in austenitic stainless steels below 140°F (60°C). Although SCC has been observed in stagnant, oxygenated borated water systems at lower temperatures than this 140°F threshold, all of these instances have identified a significant presence of contaminants (halogens, specifically chlorides) in the failed components. With a harsh enough environment (i.e., significant contamination), SCC can occur in austenitic stainless steel at ambient temperature. However, these conditions are considered event-driven, resulting from a breakdown of chemistry controls.

The staff finds the applicant's proposal to manage cracking using the One-Time Inspection program acceptable because stainless steel piping exposed to treated borated water is also being managed for loss of material using the applicant' s Water Chemistry Control -- Primary and Secondary program. The Water Chemistry Control – Primary and Secondary program controls the amount of contaminants, particularly the amount of chlorides, in the primary water systems, which are conducive to cracking. Minimizing the contaminants will minimize the potential for corrosion as well as cracking. The One-Time Inspection program will be used to verify the effectiveness of the Water Chemistry Control – Primary and Secondary program and confirm the absence of cracking.

3.2.2.3.3 Residual Heat Removal System Summary of Aging Management Evaluation

Stainless steel heat exchanger tubes exposed to treated water greater than 140°F (ext). In LRA Table 3.2.2-3, the applicant stated that stainless steel heat exchanger tubes externally exposed to treated water greater than 140°F will be managed for loss of material due to wear by the One-Time Inspection program. The AMR item cites generic note H, which indicates the aging effect is not in the GALL Report.

The staff noted that this material and environment combination is identified in the GALL Report. The GALL Report state that stainless steel heat exchange components exposed to closed-cycle

treated cooling water (e.g., treated water greater than 140°F) are susceptible to loss of material and recommends GALL Report AMP XI.M21A, "Closed Treated Water Systems," to manage the aging effect. However the applicant has identified loss of material as an additional aging effect. The applicant addressed the GALL Report identified aging effect (i.e., loss of material) for this component, material and environment combination in another AMR item in LRA Table 3.2.2-3.

The staff's evaluation of the applicant's One-Time Inspection program is documented in SER Section 3.0.3.1.15. During its review of the applicant's One-Time Inspection program, the staff noted an apparent discrepancy between the program activities described in the LRA and those described in the onsite documentation for the program with regard to the inspection method to be used to detect loss of material due to wear for the RHR heat exchanger tubes. Therefore, by letter dated June 25, 2013, the staff issued RAI B.1.29-1 requesting that the applicant state whether the eddy current or visual inspection method will be used to detect loss of material due to wear for the heat exchanger tubes. The staff's evaluation of the applicant's response is documented in SER Section 3.0.3.1.15. The staff finds the applicant's proposal to manage loss of material due to wear acceptable because the applicant will use the eddy current inspection method, which is capable of detecting wear on the external side of stainless steel heat exchanger tubes.

"CONCLUSION TO BE INSERTED BY PM."