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11/18/2011
76FR 69292

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December 13, 2011

(2)

Ms. Cindy K. Bladey
Chief, Rules, Announcements and Directives Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Request for Comments on Draft License Renewal Interim Staff Guidance, LR-ISG-2011-01, "Aging Management of Stainless Steel Structures and Components in Treated Borated Water." Docket ID NRC-2011-0256

Project Number: 689

Dear Ms. Bladey:

Federal Register notice 76 FR 69292 issued for public comment, a draft Interim Staff Guidance (ISG) titled "Aging Management of Stainless Steel Structures and Components in Treated Borated Water." Comments on the draft ISG were originally requested by December 2, 2011 and a 15-day extension request was granted by letter dated November 22, 2011, resulting in final comments being due by December 17, 2011. The purpose of this letter is to provide industry comments on the subject ISG.

The draft ISG is intended to provide an interim revision to NUREG-1800, Revision 2, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR) and the "Generic Aging Lessons Learned (GALL) Report." The draft ISG proposes to delete credit for boron as a corrosion inhibitor for stainless steel components in treated borated water. This change will result in revisions to the SRP-LR and GALL Report to include additional aging management activities.

In general, we find LR-ISG-20011-01 an acceptable way to manage aging in stainless steel structures and components in treated borated water. However, we have one significant comment regarding the fouling of heat exchange tubes. There is no operational experience data to support the added burden of a one-time inspection program of heat exchanger tubes to confirm the effectiveness of the water chemistry program where the water chemistry is controlled in accordance with the EPRI standards. In most cases, the secondary side of the Chemical and Volume Control System heat exchangers is cooled by closed-cycle cooling water, which is chemically treated to control fouling. This one-time inspection would result in significant dose for inspection personnel with no added safety benefit.

SUNSI Review Complete

E-RIDS = ADM-03

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Additional comments can be found in the attachment.

We appreciate the opportunity to comment on the ISG and respectfully request that you incorporate industry comments as stated in the attachment. If you have any questions or require additional information, please contact me (202.739.8108; jyk@nei.org).

Sincerely,

Julie Keys

Attachment

c: Ms. Melanie A. Galloway, NRR/DLR, NRC
Dr. John P. Wise, NRR/DLR/RAPB, NRC
NRC Document Control Desk

Enclosure 1
Draft LR-ISG-2011-01 Comments

Comment 1

As cited on page 2 of the Draft Interim Staff Guidance (ISG), the NRC staff has correctly identified that several primary side systems, e.g., containment spray and spent fuel cooling, are exposed to indoor air and are saturated with oxygen. Therefore, the NRC has added the One-Time Inspection Program requirements to the component types in treated borated water for the ESF Systems (Section V) and Auxiliary Systems (Section VII), as shown in Appendices B and C of the ISG. However, on page B-6 of the ISG, the Chemical and Volume Control System (Section VII.E1) does not have the One-Time Inspection requirement added to the tables. The rationale for excluding the main portion of this system from the One-Time Inspection requirement is valid, since the main portion of the system is continuously scavenged for oxygen during normal operations and controlled to a concentration of less than 5 ppb.

However, the VII.E1 table does not account for the other parts of the Chemical & Volume Control System that do not have the oxygen level controlled to the same level of less than 5 ppb. Examples of these subsystems include the primary water system and boric acid system.

Proposed Resolution

Add additional line items under Draft ISG Section VII.E1 table for piping and components that do not have oxygen controlled as part of the normal system operation. These items should also be added to the appropriate row/column in Table 3.3-1. The word "(primary)" is indicated for the Chemical and Volume Control System (Section VII.E1) line items where dissolved oxygen is controlled in the system. This term should be defined by identifying the environment in the AMR lines and Table 1 lines as "Treated Borated Water (Primary with oxygen levels controlled)." Therefore, the table entry for piping and components where the treated borated water environment is not oxygen-controlled would be identified to indicate that the line item is used for the oxygen-saturated portion of the system.

VII AUXILAIRY SYSTEMS E1 Chemical and Volume Control System (PWR)							
Item	Link	Structure and/or Component	Material	Environment	Aging Effect/ Mechanism	Aging Management Program (AMP)	Further Evaluation
VII.E1.X-YY	*New Record*	*Piping, piping components, and piping elements*	Steel (with stainless steel cladding); Stainless steel	*Treated borated*	*Loss of material due to pitting and crevice corrosion*	*Chapter XI.M2, "Water Chemistry" and Chapter XI.M32, "One-Time Inspection"*	No
VII.E1.X-YY	*New Record*	*Piping, piping components, and piping elements)*	Stainless steel	*Treated borated water*	*Cracking due to stress corrosion cracking*	*Chapter XI.M2, "Water Chemistry" and Chapter XI.M32, "One-Time Inspection"*	No

Comment 2
As part of the changes to the various heat exchangers (tubes) in the treated borated water systems, additional requirements for the application of Water Chemistry and One-Time Inspection programs were placed in the Table 2 line items and corresponding Table 1 line items. The One-Time Inspection requirement for checking the reduction of heat transfer is not the appropriate program to confirm the degradation of heat transfer. In addition to not being the appropriate method for determining whether a heat exchanger has under gone a reduction in heat transfer capability, a one-time visual inspection of the Chemical and Volume Control System heat exchangers would result in significant dose to personnel performing the inspections.

Industry operating experience indicates that the low oxygen levels for the heat exchangers in the main flow path of Chemical and Volume Control System would not cause significant corrosion or fouling in the tubes for this part of the system.

The fouling of heat exchanger tubes on the primary side of systems where the water chemistry is controlled in accordance with the EPRI standards does not have operational experience data to support the additional burden of a one-time inspection to confirm the effectiveness of the water chemistry program. In most cases, the secondary side of the Chemical and Volume Control System heat exchangers is cooled by closed-cycle cooling water, which is chemically treated to control fouling.

Proposed Resolution
Eliminate the proposed requirement (see Item VII.E1.A-101 of Draft ISG Appendix D) for a one-time visual inspection of a heat exchanger in the Chemical and Volume Control System primary side to confirm that the reduction of heat transfer function has not been reduced. There is no operating experience associated with CVCS heat exchangers in treated borated water with a low oxygen controlled environment that justifies the need to verify the chemistry program effectiveness with management of the reduction of heat transfer aging effect.

Comment 3
During the review of GALL items affected by this draft Interim Staff Guidance (ISG), specifically items VII.A2.A-96 and VII.A2.A-97, it was identified that additional line items related to this issue would provide further clarity and better alignment in future applicant aging management review comparisons. The two referenced GALL items have both been revised in this ISG to include the "One-Time Inspection" program to verify the effectiveness of the Water Chemistry program in managing cracking due to stress corrosion cracking of stainless steel spent fuel storage racks in treated and treated borated water. However, there are no line items recommending a program to manage the loss of material aging effect for stainless steel spent fuel storage racks in treated water environments.

Proposed Resolution
To provide further clarity and promote better aging management review alignment in future license renewal applications, it is recommended that two additional line items be added to address the loss of material aging effect due to pitting and crevice corrosion of stainless steel spent fuel storage racks in a treated water (BWR) and treated borated water (PWR) environment. Since spent fuel pool treated water environments are saturated with oxygen as well, the One-Time Inspection program is appropriate to

confirm the effectiveness of the Water Chemistry Program in managing the loss of material aging effect. Below is a proposed mark-up of the recommended additions, including the unique GALL item numbers designated "-YY" for NRC Staff determination. The corresponding Table 1 items would also need to be updated.

VII AUXILAIRY SYSTEMS A2 Spent Fuel Storage							
Item	Link	Structure and/or Component	Material	Environment	Aging Effect/ Mechanism	Aging Management Program (AMP)	Further Evaluation
VII.A2.X-YY	*New Record*	*Spent fuel storage racks (BWR)*	Stainless steel	*Treated water*	*Loss of material due to pitting and crevice corrosion*	*Chapter XI.M2, "Water Chemistry" and Chapter XI.M32, "One-Time Inspection"*	No
VII.A2.X-YY	*New Record*	*Spent fuel storage racks (PWR)*	Stainless steel	*Treated borated water*	*Loss of material due to pitting and crevice corrosion*	*Chapter XI.M2, "Water Chemistry" and Chapter XI.M32, "One-Time Inspection"*	No