KHNPDCDRAIsPEm Resource

From: Ciocco, Jeff
Sent: Thursday, November 12, 2015 9:36 AM
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Cc: Makar, Gregory; Mitchell, Matthew; Umana, Jessica; Lee, Samuel
Subject: APR1400 Design Certification Application RAI 305-8375 (06.01.02 - Protective Coating Systems (Paints) - Organic Materials)
Attachments: APR1400 DC RAI 305 MCB 8375.pdf

KHNP,

The attachment contains the subject request for additional information (RAI). This RAI was sent to you in draft form. Your licensing review schedule assumes technically correct and complete responses within 30 days of receipt of RAIs.

Please submit your RAI response to the NRC Document Control Desk.

Thank you,

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REQUEST FOR ADDITIONAL INFORMATION 305-8375

Issue Date: 11/12/2015
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 06.01.02 - Protective Coating Systems (Paints) - Organic Materials
Application Section: 6.1.2

QUESTIONS

06.01.02-1

The title of Final Safety Analysis Report (FSAR) Subsection 6.1.2, “Organic Materials,” does not match the content, which includes inorganic coatings. Please discuss your plans to address this, for example by providing a new subsection title, such as “Protective Coatings and Organic Materials.” This will improve the accuracy of the FSAR organization and assist in finding information in the future.

06.01.02-2

FSAR Section 6.1.2 states, “Organic materials including wood, clothes, plastics, lubricants, and asphalt are not used inside the containment.” The meaning of this sentence is not clear to the staff, since organic material such as epoxy coating is used inside containment according to FSAR Table 6.1-3. Organic cable insulation is also typically used inside containment. Please discuss your plans to clarify the use of organic materials in containment and any associated FSAR revisions.

06.01.02-3

Discuss your plans to revise Section 6.1.2 and Table 6.1-3 of the FSAR to clarify the use of coating systems with substrate materials inside the containment structure. Specifically,

- In the text of FSAR Section 6.1.2, expand the discussion to describe each type of coating and the corresponding substrate material(s). Table 6.1-3 should summarize, not replace, the description in the text.
- In the first column (“Surface To Be Coated”) of the first three rows in Table 6.1-3, identify the applicable substrate material(s).
- In the second column (“Type of Coating”) of the first row of Table 6.1-3, identify which are the primer and top coat layers.
- In the text of FSAR Section 6.1.2, paragraph “a.” is called, “Ferrous metal surfaces.” Since “ferrous metal” includes all grades of steel, including stainless steels, revise this heading to be clear about the substrate materials.

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06.01.02-4

According to the FSAR, the APR1400 conforms to Regulatory Guide (RG) 1.54, Rev. 2, "Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants", and FSAR Section 6.1.2 states that selection of Service Level I coatings is based on ASTM Standards D3911-08, D5144-08, and D3843-08. However:

- In RG 1.54, Rev. 2, the staff states that it is acceptable to use ASTM D3911-08, but only with specific acceptance criteria listed in the RG. These criteria were listed in previous revisions of D3911 but were removed from the 2008 version.
- D3843 was reapproved in 2008 without changes. Therefore, "D3843-08" is incorrect notation. This standard is identified by ASTM as "D3843-00 (reapproved 2008).
- The FSAR does not address the basis for selection of coatings other than Service Level I, but RG 1.54 addresses all Service Levels.

Please discuss your plans to revise FSAR Section 6.1.2 to establish consistency in the way coatings are being addressed through conformance to RG 1.54, Rev. 2, and the associated ASTM standards. Specifically:

- Revise FSAR Section 6.1.2 to describe the use of all coating service levels as defined in RG 1.54, Rev. 2. This information is needed for conformance with RG 1.54, which addresses coatings located in both safety-related and non-safety-related plant regions. Rev. 0 of the APR1400 FSAR addresses only Service Level I coatings (safety-related inside containment).
- Correct the notation for ASTM Standard D3843 and confirm that ASTM Standard D3911-08 will be used with the acceptance criteria listed in RG 1.54, Rev. 2.
- State that the protective coatings used inside the containment, Service Level I, are demonstrated to withstand design basis accident conditions (rather than design basis conditions) and to identify the type(s) of design basis accidents and test conditions on which this statement is based.
- Identify the selection criteria for Service Level III coatings and any Service Level II coatings used inside containment.
- Identify exceptions to the positions in RG 1.54, Rev. 2. For example, differences between the versions of ASTM standards being applied to the APR1400 and those accepted in the RG need to be identified as exceptions.

06.01.02-5

FSAR Section 6.1.2 describes the applicability of Service Level I to coatings on structures, equipment, and components. Please describe how the use of Service Level I will be assured for manufactured components that cannot be procured with coatings meeting the Service Level I requirements. In addition, provide your plans for addressing this in the FSAR. This information is needed to demonstrate that the coatings conform to the guidance in RG 1.54, Rev. 2.

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06.01.02-6

Please provide a revision FSAR Section 6.1.2, Combined License (COL) Item 6.1(1), that will require a COL applicant to describe the coatings program and its implementation, including maintenance and repair of coatings. This program should apply to all safety-related coatings, not only Service Level I coatings. This is required to comply with 10 CFR Part 50, Appendix B, and the Maintenance Rule (10 CFR 50.65), and the staff considers it the responsibility of a COL applicant to provide this information. Rev. 0 of the FSAR acknowledges that a coatings program is required, and it proposes COL Item 6.1(1) for the implementation milestones, but it does not require the COL applicant to describe the program.

06.01.02-7

The third paragraph in FSAR Section 6.1.2 states that some particulate debris of appreciable size settles to the bottom of the Holdup Volume Tank. Please discuss your plans to revise FSAR Subsection 6.1.2 to address the following:

- This paragraph is inconsistent with the Generic Safety Issue (GSI)-191 analysis, which assumes all coating debris is transported to the emergency core cooling system strainers (FSAR Subsection 6.8.4.5.3). Any non-transport of debris would require a technical justification.
- Instead of a statement about non-transport of particulate, FSAR Subsection 6.1.2 should describe how coatings are evaluated as a potential debris source in addressing GSI-191, or it should identify another FSAR subsection that provides this information.


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