

KHNPDCDRAIsPEm Resource

From: Ciocco, Jeff
Sent: Wednesday, October 14, 2015 8:02 AM
To: apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Harry (Hyun Seung) Chang; Andy Jiyong Oh; Erin Wisler
Cc: Thomas, Vaughn; Istar, Ata; Betancourt, Luis; Umana, Jessica; Lee, Samuel
Subject: APR1400 Design Certification Application RAI 248-8295 (03.08.05 - Foundations)
Attachments: APR1400 DC RAI 248 SEB1 8295.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. However, KHNP requests, and we grant, a 45 day response. We may adjust the schedule accordingly.

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

Thank you,

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REQUEST FOR ADDITIONAL INFORMATION 248-8295

Issue Date: 10/14/2015
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 03.08.05 - Foundations
Application Section: Appendix 3.8A

QUESTIONS

03.08.05-1

10 CFR 50.55a and 10 CFR Part 50, Appendix A, General Design Criteria (GDC) 1, 2, 4 and 5 provide the regulatory requirements for the design of the seismic Category I structures. Standard Review Plan (SRP) Section I, "Areas of Review," in item 1, "Description of the Containment," states that "The reviewer examines the arrangement of the containment and the relationship and interaction of the shell with its surrounding structures and with its interior compartment walls and floors to determine the effect of these structures on the design boundary conditions and expected structural behavior of the containment when subjected to design loads." SRP 3.8.3, Section I, "Areas of Review," in item 1, "Description of the Internal Structures," sub-item A.v., "Other Interior Structures," states that "The review also evaluates other major interior structures of PWR dry containments in a similar manner, including the concrete refueling pool walls, refueling water storage tank (if applicable), the operating floor, other intermediate floors and platforms, and the polar crane supporting elements." SRP 3.8.4, Appendix C to SRP Section 3.8.4, "Design Report," in item I., "Objective," states that "The primary objective of the design report provided by the applicant is to supply the reviewer with design and construction information more specific than that contained in the SARs. This information can assist the reviewer in planning and conducting a structural audit. For this review, the information must be in quantitative form representing the scope of the actual design computations and the final design results. The design report should also provide criteria for reconciliation between design and as-built conditions." SRP Item II.2, "Key Structural Elements and Description," states that the design report should provide descriptions of the key (critical) structural elements.

APR1400 DCD Tier 2, Section 3.8A.1.4.1.3.5, "Design Sections," identifies the portion of the containment structure considered to be critical design sections. The applicant identified the base of the containment wall, the mid-height of the containment wall, the polar crane bracket level and springline, and the thickened sections around large penetrations, such as the equipment hatch and the personnel airlock. The staff reviewed the list of critical sections and noted that the critical sections for the dome, steel plate liner to the containment, and mainsteam and feedwater penetrations appears to be missing. Therefore, per 10 CFR 50.55a; Appendix A to 10 CFR Part 50, General Design Criteria 1, 2, 4, 16 and 50; and SRP 3.8.1 and 3.8.5, the applicant is requested to address the following:

- a. Whether any other critical sections such as the dome; steel plate liner to the containment; floor slab between the SSW and the containment, and a steal bean and/or column; and mainsteam and feedwater penetrations are identified as critical sections. If so, the applicable portion of the DCD should be updated accordingly.

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- b. In Section 3.8A.2.4, "Analysis and Design for Critical Sections," the applicant stated, "The location of critical sections are shown in Figures 3.8A-25 through 3.8A-28 and the location of the concrete frame is shown in Figure 3.8A-53." The staff noticed that figure does not show a concrete frame for the AB, but instead shows several walls of the EDG building. The applicant is requested to provide the appropriate figure.

- c. In the case of some structures, the required strength or steel reinforcement and the provided values, along with the margins of safety, for the critical sections, are presented (e.g., Table 3.8A-27 for the AB basemat). However, for other structures this information is not provided. Therefore, for all critical sections for all structures, where this information is lacking, the applicant is requested to include this data in the appropriate tables. Note in the case of the containment basemat this information was provided for the steel reinforcement but not for the concrete stress.



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