KHNPDCDRAIsPEm Resource

From: Ciocco, Jeff
Sent: Tuesday, September 15, 2015 2:37 PM
To: apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Harry (Hyun Seung) Chang; Andy Jiyong Oh; Steven Mannon
Cc: Xu, Jim; Chuang, Tze-Jer; Betancourt, Luis; Lee, Samuel
Subject: APR1400 Design Certification Application RAI 215-8231 (03.05.03 - Barrier Design Procedures)
Attachments: image001.jpg; APR1400 DC RAI 215 SEB1 8231.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, 90 days to respond to this RAI. We may adjust the schedule accordingly.

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

Thank you,

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U.S.NRC
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Hearing Identifier: KHNP_APR1400_DCD_RAI_Public
Email Number: 264

Mail Envelope Properties (7f5ca2957c8744beb39ef0e0c5301cc3)

Subject: APR1400 Design Certification Application RAI 215-8231 (03.05.03 - Barrier Design Procedures)
Sent Date: 9/15/2015 2:36:49 PM
Received Date: 9/15/2015 2:36:51 PM
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REQUEST FOR ADDITIONAL INFORMATION 215-8231

Issue Date: 09/15/2015
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 03.05.03 - Barrier Design Procedures
Application Section: SRP 3.5.3

QUESTIONS

03.05.03-1

Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix A, General Design Criterion (GDC) 2, “Design bases for protection against natural phenomena,” states in part that structures, systems, and components (SSCs) important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami and seiches without loss of capability to perform their functions including consideration of the most severe of natural phenomena that have been historically reported for a site and appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena. Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix A, General Design Criterion (GDC) 4, “Environmental and dynamic effects design bases,” states in part that structures, systems, and components (SSCs) important to safety shall be protected against environmental and dynamic effects, including the effects of missiles, that may result from equipment failure. Standard Review Plan (SRP) 3.5.3, Section II.2, provides the guidance on the analysis and design of the bariers for safety related structures. It states that after it has been demonstrated that the missile will not penetrate the barrier, an equivalent static load concentrated at the impact area should then be determined, from which the global structural response, in conjunction with other design loads, can be evaluated using conventional design methods.

The staff reviewed Section 3.5.3.2, "Overall Damage Prediction," and noted that additional information is needed in order to better understand the overall effects of concrete and steel barriers subjected to missile impact loads. Therefore, In order for the staff to determine whether the APR1400 design of structures, shields and barriers can withstand the effect of environmental and natural phenomena, per 10 CFR 50, GDCs 2, and 4; and SRP 3.8.3, the applicant is requested describe in DCD Tier 2 Section 3.5.3.2 “Overall Damage Prediction,” the methodology used to assess the flexural, shear and buckling effects on the overall damage predictions for the concrete as well as the steel barriers.