

KHNPDCDRAIsPEm Resource

From: Ciocco, Jeff
Sent: Tuesday, December 22, 2015 10:59 AM
To: apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Harry (Hyun Seung) Chang; Andy Jiyong Oh; Erin Wisler
Cc: Walker, Jacqwan; Junge, Michael; Ward, William; Lee, Samuel
Subject: APR1400 Design Certification Application RAI 351-8381 (18 - Human Factors Engineering)
Attachments: APR1400 DC RAI 351 COLP 8381.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, 60 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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REQUEST FOR ADDITIONAL INFORMATION 351-8381

Issue Date: 12/22/2015
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 18 - Human Factors Engineering
Application Section:

QUESTIONS

18-60

NUREG-0711, "Human Factors Engineering Program Review Model," Chapter 4, "Functional Requirements Analysis and Function Allocation" (FRA/FA), Section 4.3, "Applicant Products and Submittals," states that at a minimum, the "Results Summary Report" (ReSR) should include the following:

- an explanation of the methodology used to define the safety functions
- the set of safety functions for the facility
- an explanation of the methodology used to allocate functions and the final set of allocations
- the technical basis for modifying high-level functions of predecessor plants in the new design
- a complete set of functional requirements necessary to satisfy the plant goals
- identification of how personnel and automatic systems perform the functions
- the technical basis for all function allocations

Section 6, "Results Summary Report," of APR1400-E-I-NR-14003-P, Rev.0, "Functional Requirements Analysis and Function Allocation Implementation Plan," (FRA/FA IP) lists several items that will be included in the FRA/FA ReSR. For some items, the staff was able to find a correlation to what is requested in Section 4.3 above. As an example, for "the set of safety functions for the facility," the IP states that the ReSR will have "Defined those *functions* that must be carried out to satisfy the plant's *safety goals* and its goal of generating power."

However, the staff was not able to correlate other items provided in Section 6 to those mentioned in Section 4.3 of NUREG-0711. For instance, "Each FRA/FA team member's name, the SME position fulfilled, and the types of FRA/FA outputs generated by that team member," or "A detailed description of any resulting HEDs identifying conflicts between FRA/FA results and the APR1400 plant design." In addition, the staff could not determine if other items in the NUREG-0711, Section 4.3 list would be provided in the FRA/FA ReSR, such as "the technical basis for modifying high-level functions of predecessor plants in the new design," or "the technical basis for all function allocations."

Revise the IP to address all bullets in Section 4.3 of NUREG-0711.



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