



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 26, 2018

MEMORANDUM TO: Michael D. McCoppin, Chief
Licensing Branch 2
Division of New Reactor Licensing
Office of New Reactors

FROM: Cayetano Santos Jr., Project Manager */RA/*
Licensing Branch 2
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: SUMMARY OF MARCH 14, 2018, PUBLIC MEETING WITH
KOREA HYDRO AND NUCLEAR POWER CO. LTD. TO
DISCUSS HUMAN FACTORS ENGINEERING TOPICS
RELATED TO THE ADVANCED POWER REACTOR 1400
DESIGN

On March 14, 2018, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and Korea Hydro and Nuclear Power Co. Ltd. (KHNP) at the NRC offices in Rockville, Maryland. The meeting notice was posted on the NRC website and is also in the NRC's Agencywide Documents Access and Management System (ADAMS) under Accession Number ML18054A049. The purpose of the meeting was to discuss human factors engineering (HFE) topics related to the Advanced Power Reactor 1400 (APR1400) design certification application that was submitted to the NRC on December 23, 2014, and formally accepted for review on March 5, 2015. Enclosures 1 and 2 are the meeting agenda and attendance list for the meeting, respectively.

On September 16, 2017, the staff issued request for information (RAI) 553-9084, Question 18-134 asking KHNP to: (1) revise the proposed inspections, tests, analyses, and acceptance criteria (ITAAC) related to HFE and (2) revise the designation of portions of the HFE implementation plans from Tier 2 to Tier 1 (ADAMS Accession Number ML17249A979). KHNP responded to this RAI on November 13, 2017 (ADAMS Accession Number ML17317A397). During the March 14, 2018 public meeting, the staff provided the following comments to KHNP on the RAI response:

- The staff commented that if no additional HFE ITAAC are provided, a method for constraining changes to the Tier 2 implementation plans is needed.
- The Tier 1 design control document (DCD) should specifically state that the implementation plans conform to the review criteria in NUREG-0711, "Human Factors Engineering Program Review Model," Revision 3, because these are the criteria used by the staff as the basis for making the safety finding for the HFE program.

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301-415-7270

- Not all of the review criteria in NUREG-0711, Revision 3, are relevant to the KHNP application because some review criteria are applicable only to boiling water reactors (the APR1400 is a pressurized water reactor) and some of the review criteria are applicable only to modifications to control rooms at operating plants (KHNP has submitted a design certification application).
- Some of the review criteria in NUREG-0711, Revision 3, related to integrated system validation (ISV) testing are not prescriptive enough to control changes to the implementation plans. In these cases, the specific information in the Verification and Validation implementation plan should be added to Tier 1 DCD Section 2.9 or the ITAAC itself.
- The Verification and Validation scenarios document was reviewed as part of the design certification application and is an extension of the Verification and Validation implementation plan. However, it was not incorporated by reference into Tier 2 of the DCD, unlike the other HFE implementation plans. The staff commented that the Verification and Validation scenarios document should be incorporated by reference into DCD Tier 2.
- The RAI response included a figure from the HFE program plan titled, "ITAAC Closure Schedule," which shows that the implementation plans were submitted with the design certification application and that a combined license applicant will need to complete the results summary reports as discussed in the implementation plans. The results of completing the HFE activities are then used in the design process as shown in the figure, and the ISV validates the design resulting from the process. There is only one ITAAC for the ISV, and this ITAAC identifies the Verification and Validation implementation plan. The staff commented that including this figure in the Verification and Validation implementation plan would help ensure the combined license applicant understands that the other HFE activities need to be done to support closure of the ITAAC because the other activities are shown as prerequisites to the ISV and ITAAC closure.
- The staff also provided some editorial comments on the proposed Tier 1 DCD changes provided as part of the response to the RAI.

There was an opportunity for members of the public to provide comments and ask questions. No comments or questions were received.

Please direct any inquiries to Cayetano Santos Jr. at 301-415-7270 or via e-mail at Cayetano.Santos@nrc.gov.

Docket No.: 52-046

Enclosures:
As stated

cc w/ enclosures: See next page

SUBJECT: SUMMARY OF MARCH 14, 2018, PUBLIC MEETING WITH KOREA HYDRO AND NUCLEAR POWER CO. LTD. TO DISCUSS HUMAN FACTORS ENGINEERING TOPICS RELATED TO THE ADVANCED POWER REACTOR 1400 DESIGN
 DATED: 3/26/2018

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NRC-001

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NAME	CSantos	CSmith *	MMcCoppin	CSantos
DATE	03/26/18	03/15/18	03/26/2018	03/26/18

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**AGENDA FOR PUBLIC MEETING
U.S. NUCLEAR REGULATORY COMMISSION (NRC)
Wednesday, March 14, 2018
9:00 a.m. – 11:00 a.m.**

PURPOSE: The U.S. Nuclear Regulatory Commission (NRC) staff and Korea Hydro and Nuclear Power Co., Ltd. (KHNP), will conduct a public meeting to discuss proprietary and nonproprietary topics of the Advanced Power Reactor 1400 (APR1400) related to human factors engineering.

Time	Topic	Led By
OPEN		
9:00 a.m. – 9:05 a.m.	Opening Remarks	NRC
9:05 a.m. – 10:15 a.m.	Discussion of HFE and Request for Additional Information (RAI) 553-9084 Question 18-134	NRC/KHNP
10:15 a.m. – 10:30 a.m.	Opportunity for Public Comment	PUBLIC
CLOSED (If needed)		
10:30 a.m. – 11:00 a.m.	Proprietary discussion of HFE and Request for Additional Information (RAI) 553-9084 Question 18-134	NRC/KHNP
11:00 a.m.	Adjourn	

PUBLIC MEETING WITH KOREA HYDRO AND NUCLEAR POWER CO.

MARCH 14, 2018

9:00 A.M. – 11:00 A.M.

LIST OF ATTENDEES AND PARTICIPANTS

Representing	First Name	Last Name
NRC	Cayetano	Santos
NRC	Lauren	Kent
KHNP (AECOM)	Robert	Sweeney

KHNP Mailing List

02/06/2018

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