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## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

### APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.: 54-7963  
SRP Section: 18 – Human Factors Engineering  
Application Section: 18.1 HFE Program Management  
Date of RAI Issue: 06/26/2015

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#### **Question No. 18-6**

Section 2.4.3 "HFE Process and Procedures," of NUREG-0711, criterion 5 "HFE Documentation," indicates that applicants should briefly describe the process for making licensing documents available to the NRC for review.

APR1400-E-I-NR-14001-P, Section 6 "Results Summary Report" indicates that all results summary reports "are available for review by the NRC." However, the plan for submitting the various ReSRs to the NRC is unclear from the submitted materials. Please provide additional information (or provide a reference to other docketed material) that indicates the KHNP process for submission of ReSRs and other relevant documents to the NRC. If KHNP does not intend to submit ReSRs to the NRC then a method for communicating completion of the ReSRs should be developed so that the NRC understands when they are complete and can thus schedule inspections/audits as needed.

#### **Response**

The method for communicating the completion of ReSRs was presented at the pre-application review meeting (27 August, 2014) and is indicated in Figure 4-2, "APR1400 Program Milestones" of APR1400-E-I-NR-14001-P, "Human Factors Engineering Program Plan;" the ReSRs will be submitted during the COL application process. No ReSR are to be completed before completion of the DC review. The COL applicant will be responsible for submitting ReSRs or scheduling audits/inspections so that the staff can review the reports.

The following is the method for communicating completion of ReSRs:

1. Schedule for ReSR Completion

Eight ReSRs (i.e., HFEPP, OER, FRA/FA, S&Q, TIHA, HD, HF V&V, and DI) will be completed during COL application, and the submission schedule for each ReSR will be provided by the COL applicant.

In the case of the Human Factors (HF) Verification and Validation (V&V) ReSR, the full-scale dynamic simulator is a prerequisite condition to perform the HF V&V and the simulator will be developed when the as-built design is available. The detailed construction schedule for the as-built design will be established by the COL applicant.

The expected schedule for simulator development and HF V&V based on prior experience is as follows:

- As-built design completion: X
- Simulator development: X + 16 months
- Simulator installation: X + 19 months
- Operator training: X + 25 months
- HF V&V completion: X + 30 months
- HF V&V ReSR: X + 36 months

The proceeding is a typical schedule applicable and may be affected by the construction and design implementation schedule activities, such as procedure development and operator licensing tests.

## 2. Audits and Inspections

Audits of the ReSRs can be executed as needed per the ReSR submission schedule provided by the COL applicant.

Inspections for the results of the HF V&V (i.e., ITAAC closure) can be performed in the simulator room during the HF V&V or via an audit of the HF V&V ReSR.

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### **Impact on DCD**

There is no impact on the DCD.

### **Impact on PRA**

There is no impact on the PRA.

**Impact on Technical Specifications**

There is no impact on the Technical Specifications.

**Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical, or Environmental Report.

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### **Question No. 18-9**

NUREG-0711, Section 2.4.5 "Technical Program," Criterion 2 states that applicants should identify approximate schedules for completing HFE activities that are not complete at the time of the application.

Figure 4-2, "APR1400 HFE Program Milestones," of APR1400-E-I-NR-14001-P displays the relative order of HFE product completion but does not provide information indicating when applicable ReSRs will be complete.

Please identify any ReSR that are expected to be submitted prior to the completion of the NRC review of the DC application. Also indicate any ReSR that are expected to be submitted after the completion of the DC review. It is not necessary to submit specific calendar dates as these are likely to change and are not within the scope of this criterion.

### **Response**

As KHNP presented at the pre-application review meeting (27 August, 2014) and as indicated in Figure 4-2, "APR1400 Program Milestones" of APR1400-E-I-NR-14001-P, "Human Factors Engineering Program Plan," eight ReSRs will be submitted during the COL application process. The submission schedule for each ReSR will be provided by the COL applicant. No ReSRs are to be completed before completion of the DC review. The COL applicant will be responsible for submitting ReSRs and scheduling audits/inspections so that the staff can review the reports.

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### **Impact on DCD**

There is no impact on the DCD.

**Impact on PRA**

There is no impact on the PRA.

**Impact on Technical Specifications**

There is no impact on the Technical Specifications.

**Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical, or Environmental Report.