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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.: 434-8352  
SRP Section: SRP 19  
Application Section: 19.1  
Date of RAI Issue: 03/08/2016

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### **Question No. 19-92**

10 CFR 52.47(a)(27) states that a design certification (DC) application must contain an FSAR that includes a description of the design-specific PRA and its results. In addition, SRP Chapter 19.0, draft Revision 3, Section II "Acceptance Criteria," Item 4 on Page 19.0-13 states "The staff will determine that the applicant has identified risk-informed safety insights based on systematic evaluations of the risk associated with the design such that the applicant can identify and describe the following: A. The design's robustness, levels of defense-in-depth, and tolerance of severe accidents initiated by either internal or external events and B. The risk significance of potential human errors associated with the design." In addition, Item 13 on Page 19.0-16 states "The staff will determine that the assumptions made in the applicant's PRA during design development and certification, in which a specific site may not have been identified or all aspects of the design (e.g., balance of plant) may not have been fully developed, are identified in the DC application and either remain valid or are adequately addressed within the COL application." Furthermore, Item 14 on Page 19.0-16 states that "The staff will determine that FSAR Chapter 19 includes PRA qualitative results, including the identification of key PRA assumptions, the identification of PRA-based insights, and discussion of the results and insights from importance, sensitivity, and uncertainty analyses."

Thus, in this context, the staff reviewed APR1400 DCD Table 19.1-4 "Risk Insights and Key Assumptions" and found this table is not comprehensive in identifying the APR1400 PRA-related key assumptions and insights. Therefore, in order for the staff to reach a reasonable assurance finding, please enhance Table 19.1-4 of the DCD to identify all PRA key assumptions and PRA-based insights, and also the insights from the importance, sensitivity, and uncertainty analyses.

### **Response**

The DCD Table 19.1-4 "Risk Insights and Key Assumptions" provides risk insights that are based on key design features, severe accident design features, and PRA that includes key assumptions, importance, and sensitivity analyses. There were a total of fifty-eight (58) specific items listed in Table 19.1-4, and six (6) additional items, mostly related to LPSD conditions,

were added during the DCD review. Among these risk insights, forty (40) items are related to the base design features and severe accident design features that are important in PRA, eleven (11) items are tied to key assumptions in PRA, and thirteen (13) items are associated with PRA models, results and importance.

Table 19.1-4 will be reviewed after the CAFTA model is developed, which will incorporate the changes to several key PRA assumptions, to ensure that risk insights listed in the table are consistent with all PRA key assumptions and PRA-based insights, and also the insights from the importance, sensitivity, and uncertainty analyses.

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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.