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## REVISED 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. 19-86**

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. For additional guidance, Standard Review Plan (SRP) Chapter 19.0, draft Revision 3, Section II "Acceptance Criteria," Item 28 states "The staff will determine that a seismic equipment list (SEL) has been prepared which documents the SSCs associated with the accident sequences that will require seismic fragility evaluation for determining sequence-level HCLPF."

The staff reviewed APR1400 DCD Section 19.1.5.1.1.1 "Development of Seismic Equipment List" and the SEL provided in Table 19.1-42 and found the information provided in this section is insufficient for the staff to make a determination regarding the completeness and acceptability of this SEL.

Therefore, in order for the staff to reach a reasonable assurance finding, please address by discussing in detail in the APR1400 DCD the following items:

- a) Why the medium loss of coolant accident (LOCA) is not considered as seismic initiating event
- b) How the reactor coolant pump (RCP) seal cooling (especially, the components necessary to maintain RCP thermal barrier cooling) is modeled in PRA-based seismic margins assessment (SMA) to maintain cooling to the RCP seals and thereby maintain the integrity of RCS
- c) Why the large fuel oil storage tanks are not included in the SEL
- d) Why the non-seismic Category I major structures, where failure could impact the structures, systems, and components (SSCs) on the SEL, are not included in the SMA analysis (i.e., access building, fuel oil storage tanks building, etc.)

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**Response – (Rev. 1)**

- a) In the analysis, fragility values for the RCS were based on the reference plant. These values showed that the RCS was considered rugged and that failures could be screened from further consideration. Subsequent APR1400-specific fragility evaluation has been performed and is documented in the response to RAI 19-75 and the update to DCD Table 19.1-43. These evaluations no longer support the conclusion that the RCS is seismically rugged. Therefore, the SMA has been updated to include medium LOCA as a potential consequence of a seismic event.
- b) The SMA was developed to determine the plant-level HCLPF for key seismic-induced events. A loss of RCP seal cooling would result in a small LOCA which is explicitly evaluated on the seismic event trees. Therefore, the plant-level HCLPF for accident sequences that result from a loss of RCP seal cooling is considered.

The fragility of a seismically induced small LOCA is based on generic and conservative data. Evaluation of the specific equipment needed to maintain RCP seal cooling and, therefore, prevent a loss of RCP seal integrity is considered bounded by the fragility information used for the SLOCA.

Because the APR1400 SMA evaluates a proposed design, any assessment of component-specific, seismic induced failures would require that assumptions be made regarding HCLPF values. Use of such assumptions would provide no insights not already shown by the SLOCA sequences.

- c) The fuel oil storage tanks are included on the SEL. The tanks are identified as “Diesel Fuel Oil Storage Tank.” These tanks are used as the makeup source to the day tanks and contain at least seven days of fuel for the associated EDG.
- d) There are two non-seismic Category I structures adjacent to seismic category I structures. Both of the non-seismic Category I structures, the turbine building and the compound building, are seismic Category II, augmented quality structures. There is no access building. Two fuel oil storage tanks are located in the auxiliary building and two fuel oil storage tanks are located in the EDG building, both seismic Category I structures.

The turbine building and compound building have been addressed in COL 19.1(17) as shown in RAI 433-8363 Question 19-73 attachment 2.

The SEL Notebook (APR1400-K-P-NR-013301-P, Rev.0) will be updated to reflect this change, which will be available for review in the Electronic Reading Room.

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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 Environment Report.