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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.: 319-8360  
SRP Section: 03.09.03 – ASME Code Class 1, 2, and 3 Components  
Application Section: 3.9.3  
Date of RAI Issue: 11/24/2015

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### **Question No. 03.09.03-6**

During a recent audit of component design and procurement specifications, the staff observed that uncertainties in net positive suction head required (NPSHr) did not appear to be clearly addressed in the portions of specifications that addressed qualification of pumps. In Table 3.6-1, "NPSHr for SI Pump and CS Pump," of technical report (TR) APR1400-E-N-NR-14001, "Design Features to Address GSI-191," the applicant addresses uncertainties in NPSHr for the SI and CS pumps. Specific values are provided for NPSHr3% (provided by the pump vendor as a result of factory testing as the value of NPSH which results in a 3 percent drop in pump discharge head) and for NPSH<sub>reff</sub> (the NPSHr3% value with uncertainties in NPSHr included). As described in SECY-11-0014, "Use of Containment Accident Pressure in Analyzing Emergency Core Cooling System and Containment Heat Removal System Pump Performance in Postulated Accidents," dated January 31, 2011, which was referenced by the applicant in the notes to Table 3.6-1, experience has shown that the uncertainty in NPSHr of a pump installed in the field is greater than the uncertainty obtained by testing at the pump vendor's facility for several reasons. However, uncertainties in NPSHr were not described in the audited specifications or in the TR for safety-related pumps other than the SI and CS pumps. Therefore, the applicant is requested to describe provisions to account for uncertainties in NPSHr for safety-related pumps other than the SI and CS pumps and revise the TR as appropriate, such that the application integrates this operating experience consistent with 10 CFR 52.47(a)(22).

### **Response**

The Technical Report APR1400-E-N-NR-14001 addresses the uncertainties of NPSHr for the SI and CS pumps to ensure the performance of the pumps for ECCS and CHRS functions in postulated accidents as discussed in SECY-11-0014 are adequate. The response for the relevant post-accident mitigation does not rely on any other safety related pumps to perform the ECCS and CHRS functions. Therefore, it is not necessary to address other pump uncertainties in NPSHr, nor be included in the TeR.

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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.