

## **KHNPDCDRAIsPEm Resource**

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**From:** Ciocco, Jeff  
**Sent:** Wednesday, December 23, 2015 10:05 AM  
**To:** apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Harry (Hyun Seung) Chang; Andy Jiyong Oh; James Ross  
**Cc:** Park, Sunwoo; Roche, Robert; Steckel, James; Lee, Samuel  
**Subject:** APR1400 Design Certification Application RAI 354-8416 (19.03 Beyond Design Basis External Event (APR1400))  
**Attachments:** APR1400 DC RAI 354 SEB1 8416.pdf

KHNP,

The attachment contains the subject request for additional information (RAI). This RAI was sent to you in draft form. Your licensing review schedule assumes technically correct and complete responses within 30 days of receipt of RAIs. However, KHNP requests, and we grant, 60 days to respond to this RAI. We may adjust the schedule accordingly.

Please submit your RAI response to the NRC Document Control Desk.

Thank you,

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**Hearing Identifier:** KHNP\_APR1400\_DCD\_RAI\_Public  
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## REQUEST FOR ADDITIONAL INFORMATION 354-8416

Issue Date: 12/23/2015

Application Title: APR1400 Design Certification Review – 52-046

Operating Company: Korea Hydro & Nuclear Power Co. Ltd.

Docket No. 52-046

Review Section: 19.03 Beyond Design Basis External Event (APR1400)

Application Section: 19.3 - Fukushima

### QUESTIONS

#### 19.03 Beyond Design Basis External Event (APR1400)-10

NRC Order EA-12-049 requires equipment credited for FLEX mitigation strategies be protected from applicable external events. NEI 12-06, Section 3 provides guidelines for establishing baseline coping capability based on an assumption that installed equipment is robustly designed with respect to design basis external events and is fully available for mitigation strategies. Specifically, NEI 12-06, Section 3.2.1.3 addresses a set of initial conditions that should be taken into account in establishing plant-specific baseline coping capability including conditions pertaining to the storage and protection of installed plant equipment.

APR1400 DCD, Tier 2, Section 19.3.2.3 describes that APR1400 FLEX strategies ensure reasonable protection for the associated equipment from external events. The KHNP report, APR1400-E-P-NR-14005-P, Section 5.1.2 states that the guidance for developing, implementing, and maintaining mitigation strategies from JLD-ISG-2012-01 and the methodology to establish baseline coping capability from NEI 12-06 were considered in developing the APR1400 FLEX strategies and evaluating the resultant baseline coping capability after a beyond design basis external event (BDBEE). However, the staff finds that APR1400 DCD Tier 2, Section 19.3 and APR1400-E-P-NR-14005-P did not provide information with respect to the capability of the structures and tanks for providing protection and storage for mitigation equipment and cooling inventories. In order to complete an evaluation of APR1400 FLEX strategies with respect to credited structures and tanks, the applicant is requested to provide the following information:

(1) A description of the structures credited for protection of permanent plant equipment identified for APR1400 mitigation strategies. The description should include classifications, locations, and structural functions credited for protection. If a structure that houses such equipment is not classified as safety-related, the applicant should demonstrate that the design of the structure is robust enough to withstand the effect of an applicable external event including seismic events, floods, and high winds and associated missiles so that the permanent plant equipment credited for APR1400 mitigation strategies remains protected from the event.

(2) A description of the tanks credited for protection and storage of cooling and makeup water inventories or fuel for equipment identified for APR1400 mitigation strategies. The description should include classifications, locations, and functions credited for protection and storage. If such tanks are not safety-related, the applicant should demonstrate that the design of these tanks and the structure that houses tank(s) are robust enough to withstand the effect of an applicable external event including seismic events, floods, and high winds and associated missiles so that the tank(s) remain functional for protecting the cooling and makeup water inventories and fuel for equipment credited for APR1400 mitigation strategies.

## REQUEST FOR ADDITIONAL INFORMATION 354-8416

### 19.03 Beyond Design Basis External Event (APR1400)-11

NRC Order EA-12-049 requires that reasonable protection be provided for the mitigation equipment from applicable external events including seismic. For structures that house permanent plant equipment credited for APR1400 mitigation strategies, potential seismic interaction effect between these structures with adjacent structures that are not designed to be seismically robust should be assessed. Similarly, potential seismic interaction effect between a non-seismically robust structure with standalone tank(s) that contain cooling and makeup water inventories or fuel for equipment credited for APR1400 mitigation strategies should be assessed. The applicant is requested to provide information which demonstrates that the failure of a non-seismically robust structure will not affect the integrity of the structure(s) that house permanent plant equipment credited for APR1400 mitigation strategies or the function of the standalone tank(s) that contain cooling and makeup water inventories or fuel for equipment credited for APR1400 mitigation strategies.

### 19.03 Beyond Design Basis External Event (APR1400)-12

NEI 12-06 provides detailed guidelines for selecting suitable storage locations that would provide reasonable protection for FLEX equipment from applicable external events. In APR1400 DCD, Tier 2, Section 19.3.4, the applicant provided Combined License Information pertaining to the Near Term Task Force (NTTF) recommendations. Specifically, the COL Information Item, COL 19.3(4), specifies that "The COL applicant is to address the details of storage location for FLEX equipment." Because reasonable protection of FLEX equipment during an applicable external event is a key consideration in selecting storage locations, the applicant is requested to expand the COL Information Item, COL 19.3(4), in such a way that it highlights reasonable protection of FLEX equipment in selecting storage locations.



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