

KHNPDCDRAIsPEm Resource

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Sent: Monday, August 10, 2015 1:23 PM
To: apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Harry (Hyun Seung) Chang; Yunho Kim; Steven Mannon
Cc: Rodriguez, Ricardo; Karas, Rebecca; Roy, Tarun; Lee, Samuel
Subject: APR1400 Design Certification Application RAI 149-8147 (02.05.04 - Stability of Subsurface Materials and Foundations)
Attachments: APR1400 DC RAI 149 RGS1 8147.pdf; image001.jpg

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.

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

Thank you,

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REQUEST FOR ADDITIONAL INFORMATION 149-8147

Issue Date: 08/10/2015

Application Title: APR1400 Design Certification Review – 52-046

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

Docket No. 52-046

Review Section: 02.05.04 - Stability of Subsurface Materials and Foundations

Application Section: SRP 2.5.4

QUESTIONS

02.05.04-12

In response to RAI 8-7847, Question 02.05.04-3, the applicant provided the basis for selection and applicability of the minimum soil angle of internal friction parameter. The response stated that "The minimum soil angle of internal friction is applied below the footprint of the Seismic Category I structures at its excavation depth." However, no changes were proposed to DCD Section 2.5.4.2, Tier 2 Table 2.0-1 and Tier 1 Table 2.1-1. In order to avoid confusion with a COL applicant referencing the APR1400 design, this information should be included in appropriate sections of 2.5.4 and in the aforementioned tables. In accordance with 10 CFR Parts 50, 52.47, and 100 please update Section 2.5.4.2 and Tables 2.0-1 and 2.1-1 with the required information.

02.05.04-13

In response to RAI 8-7847, Question 02.05.04-6, the "Minimum Dynamic Shear Modulus" and "Minimum Damping Ratio" listed on DCD Tier 1 table 2.1-1 and Tier 2 Table 2.0-1, was updated to "Normalized Shear Moduli and Damping". The word "Minimum" was deleted from the new version of the aforementioned tables as part of the response. In accordance with 10 CFR part 50, 52.47, and 100 please clarify if the updated "Normalized Shear Moduli and Damping" values correspond to minimum values and provide changes to applicable sections of 2.5.4, Tier 1 Table 2.1-1 and Tier 2 Table 2.0-1, as applicable.

02.05.04-14

In response to RAI 8-7847, Question 02.05.04-8, changes were proposed to DCD Section 02.05.06, "Combined License Information" by adding COL 2.5 (12). This new COL action item tasks the COL applicant with verifying the predicted settlement against the maximum differential settlement **within** buildings, as specified in DCD Tier 2 Table 2.0-1. However, no COL action is mentioned regarding a comparison between the predicted settlement and the maximum differential settlement **between** buildings, as specified in Table 2.0-1. In accordance with 10 CFR Part 50 and 100 please update COL 2.5 (12) to include COL applicant actions to verify settlement **between** buildings.

REQUEST FOR ADDITIONAL INFORMATION 149-8147

02.05.04-15

In response to RAI 8-7847, Question 02.05.04-8, updates were made to the Tier 1, Table 2.1-1 and Tier 2, Table 2.0-1 parameter descriptions related to the allowable static and dynamic bearing capacities. The new proposed updates to the aforementioned tables do not include the required Factors of Safety (FOS) related to the allowable static and dynamic bearing capacities. The proposed updates, for both cases of bearing capacity, refer to "*a factor of safety appropriate for the design load combinations*"; whereas updated section 2.5.4.11 states "*...for bearing capacity, the required FOS is greater than or equal to 3.0 for the static condition and greater than or equal to 2.0 for the dynamic condition...*". This apparent discrepancy may create confusion with a COL applicant referencing the APR 1400 design. In accordance with 10 CFR Part 50 and 100 please update Tier 1, Table 2.1-1 and Tier 2, Table 2.0-1 to include the required FOS for static and dynamic allowable bearing capacities.

