

KHNPDCDRAIsPEm Resource

From: Ciocco, Jeff
Sent: Monday, May 02, 2016 8:39 AM
To: apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Jung-ho Kim (jhokim082@gmail.com); Andy Jiyong Oh; Christopher Tyree
Cc: Hernandez, Raul; Dias, Antonio; Wunder, George; Williams, Donna
Subject: APR1400 Design Certification Application RAI 473-8582 (09.01.03 - Spent Fuel Pool Cooling and Cleanup System)
Attachments: APR1400 DC RAI 473 SPSB 8582.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, the following RAI question response times. We may adjust the schedule accordingly.

09.01.03-4: 60 days
09.01.03-5: 45 days

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

Thank you,

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REQUEST FOR ADDITIONAL INFORMATION 473-8582

Issue Date: 05/02/2016

Application Title: APR1400 Design Certification Review – 52-046

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

Docket No. 52-046

Review Section: 09.01.03 - Spent Fuel Pool Cooling and Cleanup System

Application Section: SRP 9.1.3

QUESTIONS

09.01.03-4

9.1.3 – 4

In RAI 77-7991 question 9.1.3-1 item a, the staff requested the applicant to indicate the minimum water level needed to provide the SFP cooling pumps with adequate NPSH. The safety related SFP cooling pumps need to have adequate NPSH at the minimum safety water level. The applicant's response stated that the SFP low level (153'-10") was considered for the calculation of the NPSH available for the SFP cooling pump. However, the staff identified several non-conservative or contradictory statements in this RAI response:

- The applicant mentioned that the SFP has non-Seismic Category I connections as low as the 149'-0" elevation. Based on the definition of seismic classifications in Chapter 3, only Seismic Category I components would remain functional following a safe shutdown earthquake (SSE). So, the staff would imply the SFP minimum safety water level should be revised to 149'-0".
- In response to item c of RAI 9.1.3-1, the applicant stated that there is an automatic interlock that shuts the SFPCS pumps if the SFP water level drops below elevation 144' -11". So, the staff would imply the SFP minimum safety water level should be higher than 144'-11".
- In response to item d of RAI 9.1.3-1, the applicant stated that "all non-Seismic Category I components (skimmer suction nozzle, cleanup discharge nozzle, demineralized water makeup nozzle, and cleanup suction nozzle) are located above EL. 144'-0", corresponding to the elevation of the suction nozzle of the SFP cooling pump. Therefore, the failure of non-Seismic Category I components will not drain the SFP water below the water level needed to operate the safety-related SFP cooling pumps." The staff finds this statement not only an indication that the SFP minimum safety water level should be revised to 144'-0" but also a contradiction to the EL. 144'-11" when the pumps would stop working, as mentioned in the bullet above.

The staff requests the applicant to:

- a. clearly identify the minimum safety water level credited to be retained in the SFP in order to ensure the proper operation of the safety-related SFPCS, and update the DCD accordingly;
- b. clearly demonstrate that the minimum safety water level still provides adequate NPSH to operate the SFPCS pumps, and to update the DCD accordingly;
- c. revise the thermal-hydraulic calculations associated with the SFP cooling system using the revised minimum safety water level, and update the DCD accordingly.

REQUEST FOR ADDITIONAL INFORMATION 473-8582

09.01.03-5

9.1.3-5

While evaluating the applicant's responses to RAI 77-7991, the staff identified that, in some places the normal water level has been identified as elevation 154', while in other places it shows as elevation 153'. The technical specifications identify the normal water level as 23' above the stored fuel, which results in EL. 153'.

The staff requests the applicant to:

- a. correct the inconsistency in the values of normal water level, and update the DCD accordingly.
- b. revise the thermal-hydraulic calculations associated with the SFP cooling system using the appropriate normal water level, and update the DCD accordingly.

