

KHNPDCDRAIsPEm Resource

From: Ciocco, Jeff
Sent: Monday, May 16, 2016 10:48 AM
To: apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Jung-ho Kim (jhokim082@gmail.com); Andy Jiyong Oh; Christopher Tyree
Cc: Burja, Alexandra; Karas, Rebecca; Wunder, George; Williams, Donna
Subject: APR1400 Design Certification Application RAI 483-8602 (09.01.01 - Criticality Safety of Fresh and Spent Fuel Storage and Handling)
Attachments: APR1400 DC RAI 483 SRSB 8602.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.

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

Thank you,

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REQUEST FOR ADDITIONAL INFORMATION 483-8602

Issue Date: 05/16/2016

Application Title: APR1400 Design Certification Review – 52-046

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

Docket No. 52-046

Review Section: 09.01.01 - Criticality Safety of Fresh and Spent Fuel Storage and Handling

Application Section:

QUESTIONS

09.01.01-41

In 10 CFR Part 50 Appendix A, General Design Criterion (GDC) 62 requires the prevention of criticality in fuel storage and handling. 10 CFR 50.68(b) sets specific requirements for the demonstration of nuclear criticality prevention in wet fuel storage. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 9.1.1, directs the reviewer to verify that appropriate assumptions are used in the criticality analysis. In addition, NRC Interim Staff Guidance DSS-ISG-2010-01 states that rodged operation may affect the discharge reactivity of fuel assemblies and should be considered in spent fuel pool criticality analyses. DSS-ISG-2010-01 further states that bounding reactor parameters should be used in the fuel depletion analysis.

RAI 167-8191, Question 09.01.01-7 noted that the applicant did not appear to consider rodged fuel depletion history and asked the applicant to revise or justify the assumption of rodged operation and provide revised depletion and criticality analyses as necessary. The applicant's December 10, 2015, response clarified that it assumed all rods out in its depletion calculations because it expected the effects of rodged operation to be small and covered by the bounding reactor parameters assumed in the depletion calculation.

However, the staff does not have a sense for whether the effects would truly be small enough to be captured in the bounding reactor parameters. In a teleconference held on March 14, 2016, the applicant committed to perform a sensitivity study based on control rod operational data from an OPR1000, and should control rod history significantly affect the reactivity of the depleted fuel, the applicant agreed to revise the criticality analysis to consider rodged operation.

Therefore, please provide the sensitivity study results and, if the results show significant effects, revise the depletion and criticality assumptions and calculations in DCD Section 9.1.1 and technical report APR1400-Z-A-NR-14011-P.

