From:	Ciocco, Jeff
Sent:	Thursday, May 07, 2015 10:36 AM
To:	apr1400rai@khnp.co.kr; Chang, Harry (hyunseung.chang@gmail.com); Yunho Kim (yshh8226@gmail.com); KHNPDCDRAIsPEm Resource
Cc:	Phan, Hanh; Lee, Samuel; Steckel, James; Mrowca, Lynn
Subject:	APR1400 Design Certification Application RAI 5-7842 (19.0 PRA and Severe Accident Evaluation)
Attachments:	APR1400 DC RAI 5 SPRA 7842.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.   However, KHNP requests and we grant 60 days to respond to the RAI. We may adjust the schedule accordingly.

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

Thank you,

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Subject: APR1400 Design Certification Application RAI 5-7842 (19.0 PRA and Severe Accident Evaluation)
Sent Date: 5/7/2015 10:35:51 AM
Received Date: 5/7/2015 10:35:53 AM
From: Ciocco, Jeff

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APR1400 DC RAI 5 SPRA 7842.pdf	88091	
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Options
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Request for Additional Information 5-7842

Issue Date: 05/07/2015
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 19 - Probabilistic Risk Assessment and Severe Accident Evaluation
Application Section: 19 - PRA

QUESTIONS

19-1

10 CFR 52.47(a)(27) requires that a standard design certification applicant provide a description of the design-specific PRA. Item 10 of Section II, "Acceptance Criteria," of the Standard Review Plan (SRP) 19.0 (Draft) Revision 3, states that, "The staff will determine that the technical adequacy of the PRA is sufficient to justify the specific results and risk insights that are used to support the DC application." This SRP references RG 1.200 and the ASME/ANS PRA Standard "RA-Sa-2009." In the ASME/ANS PRA Standard, Item (I) states, "Document the model integration process including… asymmetries in quantitative modeling to provide application users the necessary understanding of the reasons such asymmetries are present in the model."

The staff reviewed APR1400 DCD Section 19.1, "Probabilistic Risk Assessment," and found no information regarding the asymmetric configuration and modeling. Therefore, it is not clear whether the APR1400 PRA model is symmetric or not. Since the staff needs this information to make a reasonable assurance finding on the APR1400 PRA technical adequacy, please address the following items and include discussion of each in the DCD:

a) The assumption on the asymmetric configurations for analyzed initiating events (e.g., LOCA) and post-accident operations during power and low-power/shutdown conditions
b) The asymmetric configuration assumption relevant to the structure, system, or component (SSC) unavailability due to test/maintenance
c) The assessment of common cause failure (CCF) of components relative to the asymmetric configuration (e.g., CCF among standby and running components)
d) The modeling approach and impact of asymmetric configurations on internal fires, internal floods, seismic, and other external events
e) The effect of the asymmetry-related assumptions on component/train-specific importance measures and PRA results/insights/applications (i.e., RAP list)
f) A new COL information item to be added to the DCD to ensure that the asymmetric conditions due to modeling simplicity will be addressed or properly accounted for when the PRA is used for decision making.

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