

KHNPDCDRAIsPEm Resource

From: Ward, William
Sent: Thursday, May 14, 2015 6:17 PM
To: 'apr1400rai@khnp.co.kr'; 'Chang, Harry'; 'Yunho Kim (yshh8226@gmail.com)'; KHNPDCDRAIsPEm Resource; 'seung.choi@aecom.com'; 'Mannon, Steven (steven.mannon@aecom.com)'; 'Tyree, Christopher (christopher.tyree@aecom.com)'
Cc: Ciocco, Jeff; Lee, Samuel; Williams, Stephen; McCoppin, Michael; Olson, Bruce
Subject: APR1400 Design Certification Application RAI 10-7850 (11.1 Source Terms)
Attachments: image001.jpg; APR1400 DC RAI 10 RPAC 7850.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.

NOTE: This RAI was formerly identified as RAI 7833. It is now 7850.

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

Thank you,

William R. Ward, P.E.
Senior Project Manager
U.S. Nuclear Regulatory Commission
m/s T6-D38M
Washington, DC, 20555-0001
NRO/DNRL/Licensing Branch 2
ofc T6-D31
ofc (301) 415-7038 fax (301) 415-6350



Hearing Identifier: KHNP_APR1400_DCD_RAI_Public
Email Number: 13

Mail Envelope Properties (C0A338EE37A11447B136119705BF9A3F028816511CE8)

Subject: APR1400 Design Certification Application RAI 10-7850 (11.1 Source Terms)
Sent Date: 5/14/2015 6:17:24 PM
Received Date: 5/14/2015 6:17:33 PM
From: Ward, William

Created By: William.Ward@nrc.gov

Recipients:

"Ciocco, Jeff" <Jeff.Ciocco@nrc.gov>
Tracking Status: None
"Lee, Samuel" <Samuel.Lee@nrc.gov>
Tracking Status: None
"Williams, Stephen" <Stephen.Williams@nrc.gov>
Tracking Status: None
"McCoppin, Michael" <Michael.McCoppin@nrc.gov>
Tracking Status: None
"Olson, Bruce" <Bruce.Olson@nrc.gov>
Tracking Status: None
"apr1400rai@khnp.co.kr" <apr1400rai@khnp.co.kr>
Tracking Status: None
"Chang, Harry" <hyunseung.chang@gmail.com>
Tracking Status: None
"Yunho Kim (yshh8226@gmail.com)" <yshh8226@gmail.com>
Tracking Status: None
"KHNPDCDRAIsPEm Resource" <KHNPDCDRAIsPEm.Resource@nrc.gov>
Tracking Status: None
"seung.choi@aecom.com" <seung.choi@aecom.com>
Tracking Status: None
"Mannon, Steven (steven.mannon@aecom.com)" <steven.mannon@aecom.com>
Tracking Status: None
"Tyree, Christopher (christopher.tyree@aecom.com)" <christopher.tyree@aecom.com>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	Size	Date & Time
MESSAGE	735	5/14/2015 6:17:33 PM
image001.jpg	3989	
APR1400 DC RAI 10 RPAC 7850.pdf		82625

Options

Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:



Request for Additional Information 10-7850

Issue Date: 05/14/2015
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 11.01 - Source Terms
Application Section: SRP 11.1

QUESTIONS

11.01-1

The Standard Review Plan (SRP) 11.1 utilizes various source terms for a variety of purposes, including: A normal operational source term, based on operational reactor experience, as described in American National Standards Institute/American National Standard (ANSI/ANS) N18.1. The source term is also addressed in SRP Section 11.1 for reactor coolant (primary and secondary) and reactor steam design details, and in SRP Section 11.2, "Liquid Waste Management System," and SRP Section 11.3, "Gaseous Waste Management System," for system design features used to process and treat liquid and gaseous effluents before being released or recycled. This source term is used to meet the specific regulatory dose and effluent release requirements of 10 CFR 20 and 10 CFR 50 Appendix I. The application also commits to complying with RG 1.206, and NUREG 0800 - SRP 11.1, and utilizing the required ANSI Standard as the source term.

The staff attempted to verify the source term listed in the applicants' submittal in DCD Table 11.1-9. When comparing the radionuclides in the ANSI 18.1, 1999 Table 6 Numerical Values - Concentrations in Principal Fluid Streams of the Reference PWR with U-Tube Steam Generators (uCi/g) and DCD Table 11.1-9 Expected Specific Activities of Reactor Coolant During Normal Operation, with a footnote (1) denoting ANSI/ANS 18.1, in the applicants submittal there were major differences. Table 11.1-9 references the ANSI Standard 18.1, however the radionuclide values do not agree. Out of the 56 radionuclides, 20 agree within 4% of the ANSI value, 31 are greater than 4%, and 6 are greater than 12.99% of the ANSI value. These values are used along with the operational parameters in DCD Table 11.1-1 under the Normal Operation values, again with a footnote designating ANSI 18.1 as the reference for the expected source term. These table values are used as input into the NUREG-0017, PWR-GALE Code as RCS activity along with assumed operational data to develop the annual curies per year that will be estimated to be released in the liquid and gaseous effluents from this plant design. These effluent values are then carried on to calculate effluent doses to the environment attributed to this reactor design.

Request for Additional Information 10-7850

For DCD Table 11.1-9 and Section 11.1, please provide the following information:

1. Conversion to Bq/g is not required when submitting information to the NRC per 10 CFR 20.2101. Please revise the DCD Table values to uCi/g in the application.
2. Provide discussion in DCD Section 11.1 as to why the values submitted in DCD Table 11.1-9 do not agree with ANSI/ANS 18.1, 1999, or revise the table and section to reflect the ANSI values.
3. Provide and submit a plan to revise the DCD Table 11.1-9 values, if necessary, all subsequent tables, DCD sections (11.2, 11.3, etc.) that rely on the values listed in DCD Table 11.1-9, and calculations that utilize the Table 11.1-9 values.

Please address these items and provide a mark up for the proposed DCD changes.