

KHNPDCRAIsPEm Resource

From: Ciocco, Jeff
Sent: Tuesday, August 25, 2015 10:46 AM
To: apr1400rai@khnp.co.kr; KHNPDCRAIsPEm Resource; Harry (Hyun Seung) Chang; Andy Jiyong Oh; Christopher Tyree
Cc: Williams, Stephen; McCoppin, Michael; Olson, Bruce; Lee, Samuel
Subject: APR1400 Design Certification Application RAI 171-8143 (11.03 - Gaseous Waste Management System)
Attachments: APR1400 DC RAI 171 RPAC 8143.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 45 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,

Jeff Ciocco
New Nuclear Reactor Licensing
301.415.6391
jeff.ciocco@nrc.gov



Hearing Identifier: KHNP_APR1400_DCD_RAI_Public
Email Number: 220

Mail Envelope Properties (26d2b85fc65e4e97ade57e89923560da)

Subject: APR1400 Design Certification Application RAI 171-8143 (11.03 - Gaseous Waste Management System)
Sent Date: 8/25/2015 10:46:23 AM
Received Date: 8/25/2015 10:46:24 AM
From: Ciocco, Jeff
Created By: Jeff.Ciocco@nrc.gov

Recipients:

"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
"Lee, Samuel" <Samuel.Lee@nrc.gov>
Tracking Status: None
"apr1400rai@khnp.co.kr" <apr1400rai@khnp.co.kr>
Tracking Status: None
"KHNPDCDRAIsPEM Resource" <KHNPDCDRAIsPEM.Resource@nrc.gov>
Tracking Status: None
"Harry (Hyun Seung) Chang" <hyunseung.chang@gmail.com>
Tracking Status: None
"Andy Jiyong Oh" <jiyong.oh5@gmail.com>
Tracking Status: None
"Christopher Tyree" <Christopher.tyree@aecom.com>
Tracking Status: None

Post Office: HQPWMSMRS08.nrc.gov

Files	Size	Date & Time
MESSAGE	634	8/25/2015 10:46:24 AM
APR1400 DC RAI 171 RPAC 8143.pdf		123627
image001.jpg	5040	

Options

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

REQUEST FOR ADDITIONAL INFORMATION 171-8143

Issue Date: 08/25/2015
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 11.03 - Gaseous Waste Management System
Application Section: 11.3

QUESTIONS

11.03-3

In SRP 11.3, BTP 11-5 describes acceptable methods to evaluate doses associated with the postulated releases of radioactive gases resulting from the failure of a gas decay tank or bed or a leak from a GWMS component.

The BTP presents guidelines for selecting the type of failure and model assumptions that provide reasonable assurance that the radiological consequences of a single failure of an active component will not result in doses exceeding a small fraction (10 percent) of the 10 CFR Part 100 dose limits for the whole body to any offsite individuals for the postulated event of systems designed to withstand explosions and earthquakes, or 1 mSv (0.1 rem) for systems not designed to withstand explosions and earthquakes. The analysis assumes that the waste gas system fails to meet its design bases, as required by 10 CFR 50.34a and GDC 60 and 61. The analysis relies on methods described in BTP 11-5 and the use of the PWR-GALE or BWR GALE code (NUREG-0016 or NUREG-0017) and Regulatory Guide 1.112.

The staff reviewed DCD section 11.3.3.2 and Table 11.3-9 that show the applicants Gaseous Waste Management System Failure Doses. These doses appear to be in within BTP 11-5 guidelines, however the staff requests a calculation package to verify the results provided in Table 11.3-9, specifically:.

1. BTP 11-5 describes the use of Regulatory Guide 1.109's Table B-1 for use in calculating the results of the BTP 11-5 analysis. Please verify the use of these values in Table B-1.
2. Results of NRC staff review of an equation on page 11.3-27 suggests that KHNP used FGR 12, applying the RADTRAD Computer Code, as the source for dose conversion factors. Please verify the source of the dose conversion factors.
3. The calculation package should include a description of all parameters used in the analysis to determine the results of Table 11.3-9. Please provide a detailed list of all parameters utilized to determine Table 11.3-9 results.
4. The calculation package should include a list all equations used to calculate the results of Table 11.3-9. Please provide all equations utilized for Table 11.3-9 calculations.
5. Please provide an equation or DCD reference section for all parameters found on page 11.3-27.
6. Please provide clarification to section 11.3.3.2 to describe the source of data for parameters $R(i)_n$, $R(i)_a$, and $MF(i)$ and also provide the equations used to calculate the discussed variables.

Please address the items above and provide a mark-up on the proposed DCD changes.

REQUEST FOR ADDITIONAL INFORMATION 171-8143

11.03-4

The applicant follows the guidance provided in RG 1.143 to classify structures and components of the GWMS.

Staff was unable to confirm the results provided for the Rad Waste Classifications listed in Tables 11.3-11. Indications are that the A1 and A2 values for the following radionuclides were chosen as zero.

- Table 11.3-11: Br-84, Kr-88, Xe-133m, Xe-135m, Xe-137, and Xe-138

In section 5.3 of Regulatory Guide 1.143, the use of 10 CFR 71 Appendix A is referenced for use in determining the classification of systems in an RW-IIa classification through the use of A1 and A2 values. 10 CFR 71, Appendix A, Table 1 contains the values for the A1 and A2 values. Missing from Table 1 are the values for the radionuclides listed above from Table 11.3-11. Appendix A to Part 71 states:

“II. a. For individual radionuclides whose identities are known, but which are not listed in Table A-1, the A_1 and A_2 values contained in Table A-3 may be used. Otherwise, the licensee shall obtain prior Commission approval of the A_1 and A_2 values for radionuclides not listed in Table A-1, before shipping the material.”

The staff requests that the applicant provide the A1 and A2 values for all radionuclides in accordance with the regulations in determining the radwaste classifications provided in Table 11.3-11.

The staff also requests that all calculations are provided for the determinations made in the above two tables.

Please address the items above and provide a mark-up on the proposed DCD changes.

