

KHNPDCRAIsPEm Resource

From: Ciocco, Jeff
Sent: Monday, August 10, 2015 12:48 PM
To: apr1400rai@khnp.co.kr; KHNPDCRAIsPEm Resource; Harry (Hyun Seung) Chang; Yunho Kim; Christopher Tyree
Cc: Gran, Zachary; McCoppin, Michael; Betancourt, Luis; Olson, Bruce; Lee, Samuel
Subject: APR1400 Design Certification Application RAI 145-7932 (11.03 - Gaseous Waste Management System)
Attachments: APR1400 DC RAI 145 RPAC 7932.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 question. We may adjust the schedule accordingly.

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

Thank you,

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Hearing Identifier: KHNP_APR1400_DCD_RAI_Public
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Subject: APR1400 Design Certification Application RAI 145-7932 (11.03 - Gaseous Waste Management System)
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REQUEST FOR ADDITIONAL INFORMATION 145-7932

Issue Date: 08/10/2015
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:

QUESTIONS

11.03-1

10 CFR 20 Appendix B, Table 2 Effluent Concentration Limits
DCD Table 11.2-10 and DCD Table 11.3-6

In accordance with SRP 11.2 and 11.3 the staff reviewed the application and performed this review to determine if the application provided information in the DCD application to show that the concentrations of radioactive materials in liquid effluents released to unrestricted areas should not exceed the concentration limits in Table 2, Column 2, of Appendix B, to 10 CFR Part 20.

Staff reviewed DCD Table 11.2-10 and DCD Table 11.3-6 for verification of the Unity requirement of 10 CFR 20 Appendix B, Table 2, note 4. The Design Basis Release values and the 10 CFR 20, Appendix B Column 2 values listed in these tables either do not have enough information to verify the values, or contain incorrect values from 10 CFR 20 Appendix B. The foot notes do not provide any significant information to be able to verify the numbers developed in DCD Table 11.2-10 and DCD Table 11.3-6. Staff requests clarification of the values displayed in these two tables.

Examples from the staff review of DCD Table 11.2-10:

1. The ECL value for Y-91m being used in this table is for Air, not Liquid. The correct value is $3.00E-7$ uCi/mL or $1.11E4$ Bq/m³, not $7.40E3$.
2. The ECL value for Te-131 being used in this table is for that of Te-131m. The correct value is $8E-5$ uCi/mL or $2.96E6$ Bq/m³, not $2.96E5$.
3. The staff is unable to confirm the Design Basis release values in column 2 of DCD Table 11.2-10 for Te-129, I-131, Cs-134, Cs-136, Cs-137, and H-3.
4. Staff has noted a potential typo where duplicate rows of the table show duplicate rows of values for Pr-144 and H-3.

Examples from the staff review of DCD Table 11.3-6:

1. The ECL value for C-14 is $3E-9$ uCi/mL or $1.11E2$ Bq/m³. Review of this table indicated that the applicant is using $3E-7$ uCi/mL or $1.11E4$ in this table. The staff did not find any reasons listed for the use of a less conservative C-14 ECL value.
2. The staff was unable to confirm the Design Basis release values in column 2 of Table 11.3-6 for I-131, I-132, I-133, I-134, I-135, Kr-85m, Kr-85, Kr-87, Kr-88, Xe-133, Xe-135, Xe-138, Cs-134, Cs-136, and Cs-137.

The staff requests the applicant to:

1. Provide a detailed discussion and calculations for review and confirmation supporting DCD section 11.2.3.1. Provide the process utilized for determining the values in each column of Table 11.2-10 and Table 11.3-6.
2. Review the tables and the examples provided above and verify all values listed.
3. Provide footnote(s) in Table 11.2-10 to describe in more detail, the process used, and the values of flow rate, volume, etc., to derive the Effluent Concentration values.
4. Provide footnote(s) in Table 11.3-6 to describe in more detail, the process used, and the values of X/Q, flow rate, volume, etc., to derive the Effluent Concentration values.

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5. Please provide a detailed explanation of the equation in DCD section 11.2.3.1 and DCD section 11.3.3.1. Please explain what the equations are meant to be used for, along with what and where the values used in the equation came from. If the equation is used for creating values in DCD Tables 11.2-10 and 11.3-6, please make reference to the equation in a foot note to DCD Table 11.2-10 and Table 11.3-6.
6. Please provide equation numbers for reference, for example, "Equation 11.2-1"
7. Please provide all tables and values in English units.
8. Please title or label all DCD Tables and table columns.
9. Please explain the derivation and use of the MFi variable in the equation in DCD section 11.2.3.1, and 11.3.3.1. Why is it important to be included in this equation?

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

