

## KHNPDCRAIsPEm Resource

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**Sent:** Monday, August 10, 2015 1:31 PM  
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**Cc:** Williams, Stephen; McCoppin, Michael; Olson, Bruce; Lee, Samuel  
**Subject:** APR1400 Design Certification Application RAI 150-8144 (11.02 - Liquid Waste Management System)  
**Attachments:** APR1400 DC RAI 150 RPAC 8144.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 question. We may adjust the schedule accordingly.

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

Thank you,

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image001.jpg	5040	

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**Expiration Date:**  
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# REQUEST FOR ADDITIONAL INFORMATION 150-8144

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: 11.02 - Liquid Waste Management System  
Application Section: 11.2

## QUESTIONS

11.02-1

SRP 11.2, and BTP 11-6 relates to the assessment of a potential release of radioactive liquids following:

- the postulated failure of a tank and,
- the tank components,
- located outside of containment, and

impacts of the release of radioactive materials at the nearest potable water supply, located in an unrestricted area, for direct human consumption or indirectly through animals, crops, and food processing.

The review of the consequences of a liquid tank failure having the potential to release radioactive materials to a potable water supply is performed under SRP Branch Technical Position (BTP) 11-6, using the requirements of Title 10 of the Code of Federal Regulations (CFR), Section 20.1302 and Table 2, Column 2, of Appendix B to 10 CFR Part 20.

The staff review of DCD section 11.2.3.2 and Table 11.2-9 that show the applicant's Liquid Waste Management System Failure Doses. These doses appear to be within the BTP 11-6 guidelines, however the staff requests a calculation package to verify the results provided in Table 11.2-9, specifically:

1. In the evaluation of this application, the staff requests the details as to how the applicant justifies the dilution of the source term to be 10% of the 10 CFR 20 Appendix B, Table 2 limits, in place of making assumptions on site specific parameters that limit release doses.
2. Staff is unable to determine the source term that is being referenced by the applicant for the presentation of results found in DCD Table 11.2-9. Current staff analysis observes that the source term is based on DCD Table 12.2-13, and a volume based on information found in DCD Figure 11.2-2 and DCD Table 9.3.4-2, of 420k gallons. Given the stated information staff is still unable to verify the holdup tank inventory provided in DCD Table 11.2-9.
3. Staff is attempting to verify the holdup tank inventory with the information provided in DCD section 11.2.3.2. Given that information, the staff requests information pertaining to additional tank volumes and tank inventories that were considered in identifying the tank for the BTP 11-6 analysis.
4. Staff requests the applicant provide information to support verification of calculations and details to follow the applicant's analysis. Include an analysis of the calculations performed to generate the Holdup Tank Inventory, and the Concentration at Nearest Potable Water for all radionuclides presented in Table 11.2-9. In addition:
  - Provide the tank volume used with a reference DCD section,
  - Provide the nuclide inventory used in this analysis with a reference DCD section,
5. Provide details of the other tanks considered in this analysis. Include DCD references to tank volumes and expected tank activity.

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6. Provide a discussion that details how the DCD is following the guidance of BTP 11-6 as is described by text provided in DCD section 11.2.3.2, concerning:
  - BTP 11-6 includes details about the use of 80% of the volume capacity of the tank and its components, but a discussion for this is not described in 11.2.3.2.
  - BTP 11-6 describes that the inventory of the radioactive material is based on the expected failed fuel fraction of 0.12%, but this information is not discussed in DCD section 11.2.3.2.
7. To ensure clarity in the DCD the staff requests that DCD section 11.2.3.2 contain updated text based on the results of this RAI to include discussions that:
  - a. Clearly state the basis for the source term. Currently there is no discussion provided as to if the source term is based on 0.12% fuel defect.
  - b. A justification for whatever site-specific assumptions are taken. The current rationale of calculating a dilution factor that would reduce the nuclide concentrations is unacceptable since there is no basis provided to review to understand this assumption.
  - c. Provide a discussion in the DCD for how the values of Table 11.2-9 are obtained.

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

