

## **KHNPDCDRAIsPEm Resource**

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**From:** Ciocco, Jeff  
**Sent:** Monday, September 21, 2015 8:08 AM  
**To:** apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm 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 218-8183 (11.02 - Liquid Waste Management System)  
**Attachments:** APR1400 DC RAI 218 RPAC 8183.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.

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

Thank you,

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**U.S.NRC**

United States Nuclear Regulatory Commission

*Protecting People and the Environment*

REQUEST FOR ADDITIONAL INFORMATION 218-8183

Issue Date: 09/21/2015  
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

11.02-3

Staff review of DCD Tier 1, Revision 0, Section 2.7.6 and Table 2.7.6.1-2 found that information on ITAAC for the LWMS to demonstrate compliance with 10 CFR 52.47(b)(1) and to provide reasonable assurance that a plant that incorporates the APR1400 design certification and operates in accordance with the design certification will meet the provisions of the Atomic Energy Act and NRC regulations was not fully described. Without confirming the initial introduction of the proper types and amounts of filtration and adsorbent media, the LWMS would fail to meet the design criteria in the DCD Tier 2, Revision 0, Section 11.2.1.2. As a result, liquid releases could exceed 10 CFR 20, Appendix B, Table 2, effluent concentration and dose limits, and 10 CFR 50, Appendix I dose objectives. The staff requests the applicant to address the following:

1. Describe in DCD Tier 1, Table 2.7.6.1-2, how the as-built LWMS is designed to process liquid waste prior to release and ensure compliance with 10 CFR 20, Appendix B, Table 2 effluent concentration and dose limits, and 10 CFR 50, Appendix I dose objectives for liquid effluents when the plant is operational.
2. Describe in DCD Tier 1, Section 2.7.6, the process design of the LWMS subsystems and how the initial loading of the subsystem demineralizers and vessels includes the appropriate of types of filtration and adsorption media capability that will meet or exceed the decontamination factors listed in DCD Tier 2, Revision 0, Table 11.2-3. Provide in DCD Tier 1, Table 2.7.6.1-2, the assigned ITAAC to confirm the filter efficiency and demineralizer media.

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

11.02-4

In the description of the Inspection, Test Analysis for the following design commitments in Table 2.7.6.1-2 the applicant states the following:

- In design commitment 2 the applicant states “Test of the as-built LWMS discharge valves will be performed using a simulated test signal.”

## REQUEST FOR ADDITIONAL INFORMATION 218-8183

- In design commitment 4, the applicant states: “Tests of the radiation monitor alarm signal will be performed to verify that signal is annunciated in the MCR and radwaste control room using simulated test signals at the required setpoint.”
- In design commitment 6, the applicant states: “...and signal tests will be conducted to verify alarm, pump shut-off, and valve closure.

In review of “simulated test signal” and “simulated tests,” the NRC staff believes that this implies that an electric signal will be used in place of a radiation source. NRC staff finds that this method does not test the system as a whole as it does not functionally test the radiation detector which is an essential component. Testing of this component is essential in verifying information that would be used to justify compliance with 10 CFR 50 Appendix I Dose Objectives, 10 CFR 20 Appendix B Table 2 limits, and 10 CFR 20.1301 and 1302 dose limits to a member of the public.

NRC staff requests that the applicant address the use of a radiation source in testing the LWMS in place of the currently cited simulated test signal.