

## KHNPDCDRAIsPEm Resource

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**Sent:** Monday, February 06, 2017 1:18 PM  
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**Subject:** APR1400 Design Certification Application RAI 538-8720 (11.03 - Gaseous Waste Management System)  
**Attachments:** APR1400 DC RAI 538 RPAC 8720.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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## REQUEST FOR ADDITIONAL INFORMATION 538-8720

Issue Date: 02/06/2017

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

11.03-11

There are various tanks that contain liquid, gaseous, or solid wastes and are vented to the rooms in which they are located. Understanding the ways the applicant proposes to direct vented gases helps to inform the basis of the gaseous source term for compliance with 10 CFR Part 50 Appendix I. In DCD section 11.2.1.2 k., it is stated that each liquid waste management system tank is provided with vent piping that is terminated at the vicinity of the inlet duct of the heating, ventilation and air conditioning system. Radioactivity from the tank could subsequently result in transport of radionuclides to the room and other areas by the ventilation system and could increase worker exposures. Please address the following for each tank especially for the solid waste management system tanks and the spent resin storage tanks.

Describe the means used to direct the tanks gases to the ventilation system and the basis for providing this set up from a radiation protection perspective. Please provide a description and a basis of the process used to direct tank gases which are vented and provide information in section 11.3 concerning flows, condensation, contamination, and how this radioactive effluent is quantified prior to release to the environment and the public.

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

11.03-12

The applicant commits to the stipulations in NFPA 804, which are the “Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants.” NFPA 804, section 8.4.9.4 states that "Fixed water spray systems shall be provided for charcoal adsorber beds containing more than 100 lb (45.4 kg) of charcoal." Currently the staff found that the DCD section 11.3.2 only contains only a description on the use of an isolated delay bed with Nitrogen for fire suppression. The staff is seeking information on compliance with NFPA 804, and if the applicant has planned use for a fix water spray system for the charcoal delay beds. Please describe in the DCD how the design complies with NFPA 804 and provide the details of the fixed water spray systems for the charcoal adsorber beds that contain more than 100 lbs of charcoal. The staff expects DCD markups as a result of this RAI.

## REQUEST FOR ADDITIONAL INFORMATION 538-8720

11.03-13

1. The GWMS continuously releases to the ventilation system and to the environment through the charcoal filter banks. Valve number 008, in Figure 11.3-1, is the main gaseous effluent automatic termination valve that is connected to a gaseous radiation monitor that includes a high alarm set point reading to automatically close isolation Valve number 008 when it exceeds the radiation monitor high alarm setting. Therefore, if the gaseous radiation monitor reading exceeds the calculated set point of the gaseous radiation monitor, the GWMS continuous gaseous effluent release would be terminated due to Valve number 008 closing. Explain the consequences from a radiation protection perspective if the isolation valve did not close. Would the discharge limits of 10 CFR Part 20, Appendix B and 10 CFR 50, Appendix I be exceeded? How would the gaseous effluent discharge be terminated? Is there another isolation valve that could be operated remotely or locally to isolate the system? Please clarify and describe the capabilities of the system to be isolated in the DCD.

2. Valve number 008 also should automatically close on a low flow signal from the ventilation flow meter. Again, what if the valve did not close automatically when the flow meter indicated a reading below the flow meter low flow signal alarm set point? How would the gaseous discharge, if any, be terminated? Please clarify and describe in the DCD.

3. The function of the PERMSS is to generate alarm indications and, in some cases, control functions to limit the release or divert the release of the radioactivity. In Figure, 11.3-1, there is a full flow bypass line around the discharge Valve number 008 with a manual, normally closed, manual valve number V-1015. Because this is a manual valve, if that valve is open, the discharge flow cannot be isolated. When is this valve opened? When, during normal or abnormal operations, should that valve V-105 be open? Please clarify and describe in the DCD.

Please provide details to address these 3 items and provide a mark-up for the proposed DCD changes.

