RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.:	**225-8254**
SRP Section:	**12.03 -12.04 – Radiation Protection Design Features**
Application Section:	**12.3 – 12.4**
Date of RAI Issue:	**09/24/2015**

Question No. 12.03-12

10 CFR 20.1406(b) requires that, “Applicants for standard design certifications, standard design approvals, and manufacturing licenses under part 52 of this chapter, whose applications are submitted after August 20, 1997, shall describe in the application how facility design will minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste.”

FSAR Section 12.2.1.6 indicates that the holdup tanks, reactor makeup water tanks, and boric acid storage tanks are located outdoors. FSAR Section 9.3.4 indicates that these tanks are located outside in a tank house designed to prevent the infiltration of rainwater and the spread of contamination. It also discusses other design features related to minimizing contamination including that any leakage will be collected in a sump with level instrumentation that sends a signal to the main control room on high sump level. However, it does not discuss where fluid collected in the sump is routed. Please update the FSAR to provide this information, considering the requirements of 10 CFR 20.1406 in the response.

Response

Section 9.3.4.2.10 will be revised to address where fluid collected in the sump is routed.

Impact on DCD

DCD Tier 2 Section 9.3.4.2.10 will be revised as indicated in the attached markup.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical, or Environmental Report.

Reduction of Cross-Contamination, Decontamination, and Waste Generation

a. The SSCs are designed with life-cycle planning through the use of nuclear industry-proven materials compatible with the chemical, physical, and radiological environment, thus minimizing waste generation.

b. The primary coolant purity is maintained with chemical injection for optimal reactor operation. Boric acid is added to compensate for reactivity changes, fuel burnup, and xenon variations, and to provide shutdown margin. Lithium hydroxide is added for pH control, and hydrogen is added to minimize the occurrence of radiolysis. The addition of chemicals helps to minimize the generation of contaminated waste.

c Boric acid in the letdown flow is recovered for reuse to the maximum extent possible. In the event that the boric acid concentrate contains an abnormal quantity of radioactivity, the concentrate is sent to the liquid waste management system (LWMS) for neutralization, treatment, and release. The boric acid concentrator operates automatically to the desired boron concentration and sends the concentrate to the BAST for reuse. This design approach minimizes waste generation.

d. The holdup tank, BAST, and the RMWT are located outside in a tank house designed to prevent the infiltration of rainwater and the spread of contamination. The tank house is designed with a sloped floor that is coated with epoxy to facilitate draining and cleaning, and is equipped with a sump that has level switch instrumentation to detect leakage and overflows

In the event that leakage is detected, the level switch sends a signal to the MCR for operator actions. This design approach minimizes the spread of contamination and waste generation. The fluid collected in the sump is routed to a auxiliary building equipment drain sump, and transfered to the LWMS.

e. The process piping containing contaminated fluids is properly sized to facilitate flow with sufficient velocities to prevent the settling of solids. The piping is designed to reduce fluid traps, thus reducing decontamination needs and waste generation. Decontamination fluid is collected and routed to the LWMS for processing and release.