
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.: 116-8054

SRP Section: 14.03.08 – Radiation Protection Inspections, Tests, Analyses, and Acceptance Criteria

Application Section: Tier 1, Various Sections

Date of RAI Issue: 07/27/2015

Question No. 14.03.08-11

10 CFR 50, GDC 61, requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

SRP Section 14.3 indicates that the purpose of inspections, tests, analysis, and acceptance criteria (ITAAC), is to verify that a facility referencing the design certification is built and operates in accordance with the design certification and applicable regulations.

In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents. The staff has the following questions regarding items 2 and 3 in Tier 1, Table 2.8-2:

1. Item 2 in Table 2.8-2, indicates that an analysis will be performed to ensure that airflow is from areas of lower potential airborne contamination to areas with higher potential airborne contamination. The acceptance criteria states, "Analysis exists and concludes that ventilation airflows are from the lower potential airborne contamination area to the higher. The concentrations of airborne radionuclides are in the limit specified in 10 CFR Part 20, Appendix B." Staff believes that the intent of the acceptance criteria is to say that an analysis exists and concludes that ventilation airflow in radiological controlled areas flows from areas of lower potential airborne contamination to areas of higher

potential airborne contamination and that the concentrations of airborne radionuclides shall not exceed the concentrations provided in 10 CFR Part 20, Appendix B. Please revise the acceptance criteria, as appropriate.

2. Item 3 in Tier 1, Table 2.8-2 refers to other ITAAC in Tier 1 Tables 2.7.6.4-3 and 2.7.6.5-3 and is confusing to staff. It does not appear to provide any new acceptance criteria or requirements beyond what is provided in Tier 1, Tables 2.7.6.4-3 and 2.7.6.5-3. Please explain why item 3 in Table 2.8-2 is necessary or delete it.

Response

1. The acceptance criteria for ventilation systems for the radiological controlled areas, ITAAC Item 2 in Table 2.8-2, will be revised to state that an analysis exists and concludes that ventilation airflow in radiological controlled areas flows from areas of lower potential airborne contamination to areas of higher potential airborne contamination. The concentrations of airborne radionuclides shall not exceed the concentrations provided in 10 CFR Part 20, Appendix B.
2. ITAAC Item 3 in Table 2.8-2 will be deleted since it is repetitive to other ITAAC in Tier 1 tables and does not provide any new acceptance criteria or requirements.

Impact on DCD

DCD Tier 1 Table 2.8-2 will be updated as indicated in the Attachment.

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

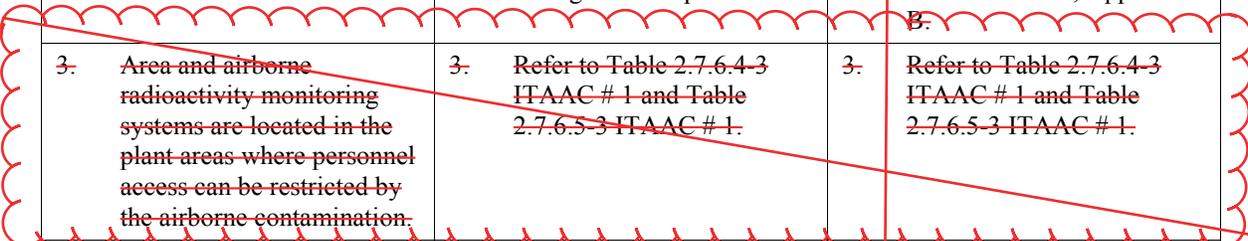
There is no impact on any Technical, Topical or Environmental Report.

APR1400 DCD TIER 1

Table 2.8-2

Radiation Protection ITAAC

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. Shielding design of rooms, corridors, cubicles, labyrinth access, and operating areas is commensurate with their access requirement and radiation levels for walls surrounding very high radiation areas and significantly high radiation areas.	1. Inspections and analysis based upon the as-built shielding structure will be conducted to verify the adequacy of the shielding design in plant area.	1. A report exists and concludes that maximum radiation levels are less than or equal to the radiation levels in the radiation zones specified in Table 2.8-1.
2. Ventilation systems for the radiological controlled areas are designed to keep the radioactivity concentration below the limits specified in 10 CFR Part 20, Appendix B.	2. Analysis will be performed to predict the airborne radioactivity concentrations and to confirm the ventilation design adequacy by considering ventilation flow rates and equipment leakages in the plant areas during normal operations.	2. Analysis exists and concludes that ventilation airflows are from the lower potential airborne contamination area to the higher. The concentrations of airborne radionuclides are in the limit specified in 10 CFR Part 20, Appendix B.
3. Area and airborne radioactivity monitoring systems are located in the plant areas where personnel access can be restricted by the airborne contamination.	3. Refer to Table 2.7.6.4-3 ITAAC # 1 and Table 2.7.6.5-3 ITAAC # 1.	3. Refer to Table 2.7.6.4-3 ITAAC # 1 and Table 2.7.6.5-3 ITAAC # 1.
4. Radiation shielding design is provided to protect the operators so that they could take actions to mitigate or recover from the design basis accidents.	4. Analysis will be performed to predict maximum radiation exposure to the operators during the design basis accidents.	4. A report exists and concludes that maximum radiation exposure dose to operators is less than the limits specified in GDC 19.



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Analysis exists and concludes that ventilation airflow in radiological controlled areas flows from areas of lower potential airborne contamination to areas of higher potential airborne contamination. The concentrations of airborne radionuclides shall not exceed the concentrations provided in 10 CFR Part 20, Appendix B.