

---

---

## 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.: 219-8199  
SRP Section: 11.03 - Gaseous Waste Management System  
Application Section: 11.3  
Date of RAI Issue: 09/21/2015

---

### **Question No. 11.03-7**

In the description of the Inspection, Test Analysis for the following design commitments in Table 2.7.6.2-4 the applicant states the following:

- In design commitment 3 the applicant states “Tests will be conducted for the GRS discharge valve using simulated test signal.”

In review of “simulated test signal” 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 GWMS in place of the currently cited simulated test signal.

### **Response**

The gaseous radiation monitors, PR-RE-080/083, are included in Process and Effluent Radiation Monitoring and Sampling System (PERMSS) which is described in DCD Tier 1, subsection 2.7.6.4 and functional test information for the radiation detectors is provided in that Section above. The subsection 2.7.6.2 describes the verification for GRS discharge valve operation upon receipt of a high radiation signal from the radiation detector.

An integral activated check source is used to test each radiation monitor as described in DCD Tier 1, Table 2.7.6.4-3. The DCD Tier 1, subsection 2.7.6.4 will be revised to include GWMS radiation monitors are tested using an integral activated check source, as well.

---

**Impact on DCD**

DCD Tier 1, subsection 2.7.6.4.1 and Table 2.7.6.4-3 (1 of 2) 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.

**APR1400 DCD TIER 1**2.7.6.4 Process and Effluent Radiation Monitoring and Sampling System2.7.6.4.1 Design Description

The process and effluent radiation monitoring and sampling system (PERMSS) provide components to monitor liquid and gaseous effluents prior to release to unrestricted areas, and to monitor in-plant radioactivity.

The PERMSS is non safety-related with the exception of the following, each of which is safety-related and Class 1E:

- a. Main control room (MCR) air intake radiation monitors
- b. Containment building operating area and upper operating area radiation monitors
- c. Fuel handling area monitors
- d. Containment air radiation monitors

Components of the PERMSS are located in the containment building, the auxiliary building, the compound building, and the turbine building.

1. The functional arrangement of the PERMSS is as described in the Design Description of Subsection 2.7.6.4.1 and in Table 2.7.6.4-1.
2. The PERMSS has components that provide radiation monitoring of gaseous and liquid processing systems.
3. All displays and alarms required by the design exist in the MCR and RSR as defined in Table 2.7.6.4-1.
4. Each ~~safety-related~~ radiation monitor channel monitors the radiation level in its assigned area, and indicates its respective MCR alarm and local audible and visual alarm when the radiation level reaches a preset level.

## APR1400 DCD TIER 1

Table 2.7.6.4-3 (1 of 2)

Process and Effluent Radiation Monitoring and Sampling System ITAAC

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The functional arrangement of the PERMSS is as described in the Design Description of Subsection 2.7.6.4.1 and in Table 2.7.6.4-1.	1. Inspection of the as-built PERMSS will be conducted.	1. The as-built PERMSS conforms with the functional arrangement as described in the Design Description of Subsection 2.7.6.4.1 and in Table 2.7.6.4-1.
2. The PERMSS has components that provide radiation monitoring of gaseous and liquid processing systems.	2. Inspections will be performed to verify that the as-built gaseous and liquid processing systems are provided with radiation monitoring.	2. The components of radiation monitoring exist in gaseous and liquid processing systems of the as-built PERMSS.
3. All displays and alarms required by the design exist in the MCR and RSR as defined in Table 2.7.6.4-1.	3. Tests will be performed on the displays and alarms in the MCR and RSR.	3. All displays and alarms exist and can be retrieved in the as-built MCR and RSR as defined in Table 2.7.6.4-1.
4. Each safety-related radiation monitor channel monitors the radiation level in its assigned area, and indicates its respective MCR alarm and local audible and visual alarm when the radiation level reaches a preset level.	4. Testing of each channel of the safety-related radiation monitors will be conducted using an integral activated check source.	4. MCR and local alarms are initiated when the radiation level of integral activated check source reaches a preset limit.
5. The safety-related divisional cabinet (SRDC) of the PERMSS provides an automatic ESF initiation signals, as shown on Table 2.7.6.4-2.	5. A testing of the as-built SRDC will be performed using an integral activated check source.	5. Each as-built ESF initiation signals are sent to ESF-CCS group control cabinet upon detection of high radiation of the MCR intake defined in Table 2.7.6.4-2, if plant's radiation monitors exceed predetermined setpoints for control room emergency ventilation actuation signal (CREVAS).