

## REVISED 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.: 235-8275  
SRP Section: 12.03-12.04 – Radiation Protection Design Features  
Application Section: 12.3-12.4  
Date of RAI Issue: 10/07/2015

### **Question No. 12.03-40**

The accident monitoring instrumentation is needed so that response to corrective actions can be observed and the need for further actions can be determined in accordance with NUREG-0737.

In Technical Specification 3.3.11, Table 3.3.11-1, the containment upper operating area radiation monitors are provided with the designation “F,” indicating that if the monitors are not restored to operable status within 7 days, that a report has to be issued, instead of being required to be in MODE 3 in 6 hours and MODE 4 in 12 hours, as is required for most other accident monitoring instrumentation, which are provided with a designation of “E.”

Please explain why it is acceptable for the containment upper operating area monitors to have the designation of “F” instead of “E,” in Technical Specification 3.3.11, Table 3.3.11-1.

### **Response – Rev. 1**

The containment upper operating area monitors, Item 10 of Table 3.3.11-1 provides measurement of significant radiation releases. These two monitors are alternate means to the containment operating area monitors, Item 25 of the same table. The containment operating area monitors are the primary monitors that monitor the significant radiation releases from an event occurring in containment (e.g., fuel handling accident) and provides this information for use by operators in determining the need to invoke the site emergency plan. For a fuel handling accident, the primary monitors are the lower monitors and they have been designated as “E” accordingly. For this accident the upper monitors perform the secondary role of providing the second set of signals into the second one-out-of-two coincidence logic. The upper monitors have been, therefore, designated as “F” for this accident.

The role of the monitors change if one focuses on the design basis accidents of the NSSS ESFAS and the upper monitors, required by RG 1.97, become the primary monitors with designation “E” and the lower monitors become the alternative monitors with designation “F”.

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Because of these dual roles, the applicant has decided to revise the designation of the containment upper operating area monitors to “E” and add a note for the containment operating area monitors.

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**Impact on DCD**

DCD Tier 2, Table 3.3.11-1 of Technical Specification will be revised.

**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.

Table 3.3.11-1 (Page 1 of 2)  
Accident Monitoring Instrumentation

FUNCTION	REQUIRED MEASUREMENT CHANNELS	CONDITIONS REFERENCED from REQUIRED ACTION D.1
1. Logarithmic Reactor Power	2	E
2. Reactor Coolant Hot Leg Temperature (Wide Range)	2 per loop	E
3. Reactor Coolant Cold Leg Temperature (Wide Range)	2 per loop	E
4. Reactor Coolant System Pressure (Wide Range)	2	E
5. Reactor Vessel Coolant Level	2	F
6. Reactor Cavity Level	4	E
7. Containment Pressure (Wide Range)	2	E
8. Containment Pressure (Extended Wide Range)	2	E
9. Containment Isolation Valve Position	1 per valve <sup>(a),(b)</sup>	E 
10. Containment Upper Operating Area Radiation	2	F
11. Pressurizer Level	2	E
12. Steam Generator Level (Wide Range)	2 per Steam Generator	E
13. Holdup Volume Tank Level	4	E

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed main control room indication channel.

Table 3.3.11-1 (Page 2 of 2)  
Accident Monitoring Instrumentation

FUNCTION	REQUIRED MEASUREMENT CHANNELS	CONDITIONS REFERENCED from REQUIRED ACTION D.1
14. Core Exit Temperature – Quadrant 1	2 <sup>(c)</sup>	E
15. Core Exit Temperature – Quadrant 2	2 <sup>(c)</sup>	E
16. Core Exit Temperature – Quadrant 3	2 <sup>(c)</sup>	E
17. Core Exit Temperature – Quadrant 4	2 <sup>(c)</sup>	E
18. Steam Generator Pressure	2 per Steam Generator	E
19. Degree of Subcooling	2 <sup>(d)</sup>	E
20. Pressurizer Pressure (Wide Range)	2	E
21. IRWST Level	4	E
22. IRWST Temperature	4	E
23. Containment Level	2	E
24. Control Rod Position	1/rod	E
25. Containment Operating Area Radiation	2	E
← (For Fuel Handling Accident)		
26. Spent Fuel Pool Radiation	2	E

(c) A measurement CHANNEL consists of four or more core exit thermocouples.

(d) A measurement CHANNEL consists of one or more Core Exit Temperature, Reactor Vessel Upper Head Temperature, Reactor Coolant Inlet Temperature (T-Cold) Wide Range, Reactor Coolant Outlet Temperature (T-Hot) Wide Range, and Pressurizer Pressure (Wide Range).