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.: **212-8246**

SRP Section: **09.05.01 - Fire Protection Program**

Application Section:

Date of RAI Issue: **09/14/2015**

Question No. 09.05.01-37

10 CFR 52.47(a)(18) requires a DC application to contain a description and analysis of the fire protection design features for the standard plant necessary to comply with 10 CFR 50.48 and GDC 3 in 10 CFR part 50, Appendix A.

Reg Guide 1.189, Section 6.1.7, “Station Battery Rooms,” states in part:

> “Automatic fire detection should alarm and annunciate in the control room and alarm locally.”

In DCD Tier 2, Section 8.3.2.2.2, “Conformance with NRC Regulatory Guides,” the applicant states:

> “An automatic fire detection system is installed in each battery room with provision for local alarm and annunciation in the MCR.”

The staff reviewed DCD Tier 2, Appendix 9.5A, ″Fire Hazard Analysis,” and found that the battery room located in the Auxiliary Building, Division II, Fire Area F120-A35B, does not have automatic fire detection.

The applicant is requested to reconcile the above noted discrepancy. If applicable, the applicant is requested to provide justification for not having an automatic fire detection system installed in the battery room identified above.

Response

DCD Tier 2, Appendix 9.5A will be revised to include an automatic fire detector system for Fire Area F120-A35B.

Impact on DCD

DCD Tier 2, Appendix 9.5A will be revised as indicated on 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 Reports.

Radioactive Release Analysis

The filters in the ACU may contain radioactive materials only if filters have been used for radiological events for the time within the allowable limit. However, the likelihood that the radioactive smoke would be released is low because the fire would be extinguished by the water spray nozzles for the charcoal filters, which are in the filter housing. Thus, no significant release is expected; any release is below the 10 CFR Part ~~100~~ limits.

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9.5A.3.3.67 F120-A35B: Battery Room

Figure 9.5A-5 shows the location of fire area F120-A35B.

Fire Protection Adequacy Evaluation

The fire area is enclosed with 3-hour-rated concrete walls except the north wall and has 3-hour-rated fire doors. Penetrations and openings are sealed for fire confinement. HVAC ductwork that passes through barriers is equipped with a fire damper. The north wall of this area is an exterior wall that is not required to be rated, according to NRC RG 1.189.

Combustible materials in this area are listed in Table 9.5A-2. The fire loading of fire area F120-A35B is 3.95×10^5 kJ/m^2 (3.48×10^4 Btu/ft^2), and the expected duration of fire is 26 minutes. Three-hour-rated fire barriers provide adequate separation from adjacent fire areas, and the fire is contained within the fire area.

detected by a smoke detector and

A fire in this area is extinguished manually using a water hose or portable extinguisher in accordance with NFPA 14 and 10. Based on the expected fire hazards in this area, the 3-hour-rated boundaries of this area provide sufficient containment of any unsuppressed fire that can be expected to occur. On this basis, the fire protection that is provided for this fire area is adequate.

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This fire area is served by the electrical and I&C equipment area HVAC system. Any HVAC ductwork that passes into the area is provided with automatically closing fire dampers at the fire area boundaries. Smoke migration into the area is mitigated by sealed penetrations and openings in the fire area boundaries. After the fire, smoke is removed from the fire area by flexible ducting and portable fans.

Analog-type photoelectric smoke detector

Table 9.5A-2 (215 of 319)

F120-A35B: Battery Room			
Fire Area or Fire Zone Description		Protective Measures	
F120-A35B: Battery Room		Detection	~~None~~
Wall	• F120-A11B • F000-AFHU (Z120-AFHU)	Fire Extinguisher	• Dry chemical • Water hose
Floor	• F120-A11B • F000-AFHU (Z100-AFHU)	Suppression System	None
Ceiling	F000-AFHU (Z137-AFHU)	Access/Egress	Door
Major Equipment		Combustible & Fire Loading	
• 125 Vdc N1E Battery • Battery Room Exhaust Fan • Battery Room Supply Fan		Major Combustible (kJ (Btu))	Battery 2.27×10^7 (2.15×10^7)
		Floor Area (m^2 (ft^2))	59 (630)
		Fire Load (kJ/m^2 (Btu/ft^2))	3.95×10^5 (3.48×10^4)
		Fire Severity (min)	26
Fire Impact Analysis			
Suppression System Operates		Suppression System Operates	
A rapid suppressed fire in this area/zone will minimize fire damage to the safe shutdown equipment.		No safe shutdown equipment in this zone/area to be damaged.	