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.:	**256-8321**
SRP Section:	**09.02.02 - Reactor Auxiliary Cooling Water Systems**
Application Section:	**9.2.2**
Date of RAI Issue:	**10/19/2015**

Question No. 09.02.02-10

10 CFR 52.47(a)(2) requires that a standard design certification applicant provide a description and analysis of the structures, systems, and components (SSCs) of the facility, with emphasis upon performance requirements, the bases, with technical justification therefore, upon which these requirements have been established, and the evaluations required to show that safety functions will be accomplished.

DCD Tier 2, Section 9.2.2.2.3, “Electric Power,” states that “each division of safety-related equipment receives power from its associated division of the Class 1E ac power distribution system with the exception of the containment isolation valves (CIVs) and associated instrumentation and controls (I&C).” The staff finds that the DCD has no discussion on how ac power is supplied to the CIVs and associated I&C. Since the CIVs are safety related and are require to be powered by a class 1E power system, the applicant is requested to revise the DCD by providing additional information on the power supply for the CIVs and associated I&C. The DCD should also include the identification of the normal and backup power supply for the CIVs.

Response

Two power-operated CIVs and associated I&C on the same penetration are powered from separate Class 1E electrical trains to provide containment isolation in the event of a single active failure in the electrical system.

The backup power sources for the CIVs are the EDGs and the emergency power train designations for the CIVs are included in Table 9.2.2-6, as described in Section 9.2.2.2.3.

DCD Section 9.2.2.2.3 will be revised to provide additional information for the power supply and the backup power for the CIVs and associated I&C.

Impact on DCD

The DCD Section 9.2.2.2.3 will be revised as shown 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.

9.2.2.2.2.5 CCW Makeup Pumps

One horizontal-centrifugal CCW makeup pump is provided per division. The pump supplies makeup water to the surge tank from the AFWST. The pump automatically starts at low level of the surge tank and stops at high level.

9.2.2.2.2.6 CCW Chemical Addition Tank

The CCW chemical addition tanks store corrosion-inhibiting chemicals, which are injected into the CCW pump suction via a manual valve.

9.2.2.2.2.7 CCW Radiation Monitors

One radiation monitor per division is installed in the CCW pumps discharge header to detect in-leakage that contains radioactivity.

9.2.2.2.3 Electric Power Supply

Each division of safety-related equipment receives power from its associated division of the Class 1E ac power distribution system with the exception of the CIVs and associated instrumentation and controls (I&C). In the event of a LOOP, the ac power distribution system is supplied by the two divisions of EDGs. Each division of EDGs is capable of supplying one division of the Class 1E ac power distribution system for the operation of the necessary safety-related equipment of one division. Division I safety-related components are connected to Class 1E buses 1A or 1C, and Division II safety-related components are connected to Class 1E buses 1B or 1D.

The emergency power train designations for the CCW pumps, valves, and controls are given in Table 9.2.2-6. (Each pump start/stop is controlled by a different control channel.)

9.2.2.2.4 System Operation and Control

The CCWS consists of two divisions. All safety-related components are redundant and equally distributed on both divisions. One CCWS division is adequate to accomplish all safety-related functions and mitigate consequences of an accident. Each division is connected to its corresponding ESWS division through the CCW heat exchangers. The

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