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.:	**356-7881**
SRP Section:	**Section: 07 - Instrumentation and Controls - Overview of Review Process**
Application Section:	**Section 7.0**
Date of RAI Issue:	**01/04/2016**

Question No. 07-4

Provide clarification on the term “Non-DCS” on Table 4.5-2 of Technical Report APR1400-Z-JNR-14012-P, Rev.0, “Control System CCF Analysis.”

10 CFR 50.55a(h)(3) requires compliance to IEEE Std 603-1991. IEEE Std 603-1991, Clause 5.6.3, states, in part, the safety system design shall be such that credible failure in and consequential actions by other systems, as documented in Clause 4.8 of the design basis section of this standard, shall not prevent the safety systems from meeting the requirements of this standard. Table 4.5-2 of Technical Report APR1400-Z-J-NR-14012-P, describes the control groups of the non-safety I&C architecture that were arranged through functional and component segmentation. The turbine bypass system is described as being part of the nonsafety I&C distributed control system (DCS) platform. The turbine control system is designated as non-DCS. This designation is consistent with Table 5.2-1 of Technical Report APR1400-Z-JNR-14012-P. In addition, for the control group, “Miscellaneous BOP control”, the platform is designated as DCS/Non-DCS. The applicant does not appear to define the term “non-DCS” in this technical report or in Chapter 7 of the APR1400 DCD.

1. Define the term “Non-DCS” and what it means in terms of control system implementation.

2. Explain what miscellaneous BOP controls are implemented through the DCS and which BOP controls are non-DCS.

3. Identify the miscellaneous BOP controls.

4. Are there any control groups that do not have separate controllers, as shown on Table 5.2-1?

Response

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[ ]

Impact on DCD

There is no impact on the DCD.

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

Table 5.2-1 of technical report APR1400-Z-J-NR-14012-NP, Rev. 0, “Control System CCF Analysis” Will be revised as indicated in the attachment associated with this response.

Table 5.2-1 Control Group Segmentation (Continued)

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Application Section:	**7.0**
Date of RAI Issue:	**01/04/2016**

Question No. 07-9

Clarify how systems are selected to be within the scope of Technical Report APR1400-Z-J-NR-14012-P, Rev. 0, “Control System CCF Analysis Technical Report.”

10 CFR 50.55a(h)(3) requires compliance to IEEE Std 603-1991. IEEE Std. 603-1991, Clause 5.6.3, states, in part, the safety system design shall be such that credible failure in and consequential actions by other systems, as documented in Clause 4.8 of the design basis section of this standard, shall not prevent the safety systems from meeting the requirements of this standard. In Section 4.1, second to last paragraph, of Technical Report APR1400-Z-J-NR-14012-P, the applicant makes a statement with regard to monitoring systems such as NIMS [NSSS integrity monitoring system] and RMS [radiation monitoring system].

The applicant does not specifically call out the exact number and/or types of systems that are considered for this evaluation. It must be assumed that, based upon this quote, the only criterion used to determine whether a system is included in the scope of this evaluation is if the system is responsible for controlling variables within pre-defined operational ranges. This criterion would appear to be arbitrary as the applicant does not provide any further evidence to support this criterion. The applicant also states, in part, in Section 4.1 of the technical report that control systems under the scope of evaluation are included because they can affect critical safety functions. The applicant does not concisely identify the criterion or methodology that determines which systems can affect critical safety functions.

What is the criterion or methodology used to determine what systems and components are included within the scope of the control system CCF analysis? Provide information to support why this criterion is the most appropriate way to determine the scope of systems included.

Response

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Table 1 Results of Screening Process for All Control System in the APR1400 Plant TS

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Impact on DCD

There is no impact on the DCD.

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

Table 5.2-1 of technical report APR1400-Z-J-NR-14012, Rev. 0, “Control System CCF Analysis” will be revised, as indicated in the attachment associated with this response.

Table 5.2-1 Control Group Segmentation

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Table 5.2-1 Control Group Segmentation (Continued)

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