

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.: 348-8279

SRP Section: 07.09 – Data Communication Systems

Application Section:

Date of RAI Issue: 12/24/2015

Question No. 07.09-13

Discuss how the Information Flat Panel Display (IFPD) communications to ESF-CCS Soft Control Module (ESCM) support or enhance the performance of the safety functions.

10 CFR 50.55a(h) requires compliance to IEEE Std 603-1991. IEEE Std 603-1991, Clause 5.6.1, states, in part, “Redundant portions of a safety system provided for a safety function shall be independent of and physically separated from each other to the degree necessary to retain the capability to accomplish the safety function during and following any design basis event requiring that safety function,” and Clause 5.6.3, states, in part, “The safety system design shall be such that credible failures in and consequential actions by other systems, as documented in 4.8 of the design basis, shall not prevent the safety systems from meeting the requirements of this standard.” DI&C-ISG-04 provides guidance for meeting the communications independence requirements of IEEE Std. 603-1991, Clause 5.6. Technical Report, APR1400-Z-J-NR-14001- P, Section C.5.1.5(3), states conformance to DI&C ISG-04, Section 1, Position 3, and defines the purpose of the IFPD to ESCM interdivisional communication. DI&C ISG-04, Section 1, Position 3 states, in part, “A safety channel should not receive any communication from outside its own safety division unless that communication supports or enhances the performance of the safety function.” It is not clear to the staff how the IFPD interdivisional communication as described in the technical report meets DI&C ISG-04, Section 1, Position 3. Specifically, how do the described IFPD interdivisional communications support or enhance the performance of the safety functions? The staff requests the applicant to address this portion of DI&C ISG-04 and update the FSAR accordingly.

Response – (Rev. 1)

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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

[Technical report](#) APR1400-Z-J-NR-14001-NP, Rev. 0, "Safety I&C System," [Section 4.7.1 and Section C.5.1.5](#) will be revised, as indicated in the attachment associated with this response. |

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Figure C.5-1 Operating Step When the IFPD to ESCM Interface Exists

Figure C.5-2 Operating Step When the IFPD to ESCM Interface Does Not Exist

C.5-3

4.6.2.5 MTP to IPS Network

The MTP to IPS network is used to provide data transmission to the IPS as shown in Figure 4-22. The data flow from the MTP to the IPS is unidirectional via a simplex fiber optic cable.

The communication between the MTP and IPS does not require any acknowledgment. A failure of this network does not prevent the RPS and ESFAS functions.

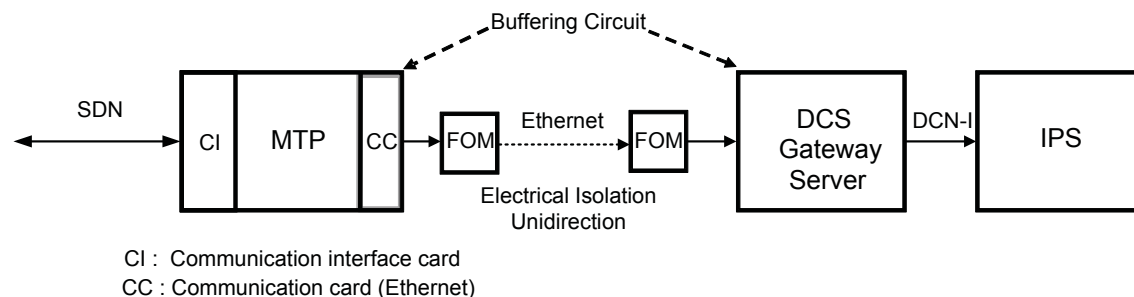


Figure 4-22 Data Communication from MTP to IPS

4.6.2.6 Communication of ESCM

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4.7 Safety HSI System

4.7.1 Safety Control HSI

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Figure 4-27 ESCM Soft Control Template – Modulation Type (Example)

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4.7.2 Qualified Indication and Alarm HSI

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4.7.3 Diverse HSI

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Figure C.5-1 ESCM Interface Diagram

C.5-3