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## 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

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### **Question No. 07.09-12**

Demonstrate how the effects of data storms are addressed for this connectivity in order to provide reliable data transmissions to support safety system 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." Digital I&C Interim Staff Guidance (DI&C-ISG)-04 provides guidance for meeting the communications independence requirements of IEEE Std. 603-1991, Clause 5.6. 10 CFR 50, Appendix A, Criterion 13, states instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems.

To comply with DI&C-ISG-04, Section 1, Position 4, in section C.5.1.5(4) of technical report APR1400-Z-J-NR-14001-P, the applicant stated "The EP [Ethernet Processor] checks the integrity of the received data by ..." This section goes on to discuss actions taken "...over a certain number of cycles,..." [Question 1] Since the ESCM is connected to 4 IFPDs, the applicant is requested to identify the "certain number of cycles" and the how much erroneous data the Ethernet Communication Module can handle.

To comply with DI&C-ISG-04, Section 1, Position 19 (section C.5.1.5(19), the applicant stated "...even if incorrect data are broadcasted or a broadcast data storm occurs on a network causing an excess of data traffic..." [Question 2] The staff also request the applicant to demonstrate how the effects of data storms are addressed for this connectivity in order to

provide reliable data transmissions to support important to safety functions as required by GDC 13.

**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**

APR1400-Z-J-NR-14001-NP, Rev.0, "Safety I&C System", Section C.5.1.5 will be revised, as indicated in the attachment associated with this response.





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