

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.: 404-8488

SRP Section: 15.06.05 – Loss of Coolant Accidents Resulting From Spectrum of Postulated Pining Breaks Within the Reactor Coolant Pressure Boundary

Application Section: 15.6.5.2.2

Date of RAI Issue: 02/10/2016

Question No. 15.06.05-12

Title 10 of the Code of Federal Regulations, Part 50.55a(h), "Protection and Safety Systems," requires compliance with IEEE Std. 603-1991, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations," and the correction sheet dated January 30, 1995. Clause 6.8.1 of IEEE Std. 603-1991 requires that allowances for uncertainties between the analytical limit and device setpoint be determined using a documented methodology such as ISA S67.040-1987(updated as ISA S67.04-1994). Regulatory Guide 1.105, Rev. 3 describes a method acceptable to the NRC staff for complying with the NRC's regulations for ensuring that setpoints for safety-related instrumentation are initially within and remain within the technical specification limits, and endorses ISA-S67.04-1994 Part I. DCD Tier 2 Sections 7.1, 7.2 and 7.3 cite compliance with Regulatory Guide 1.105, Rev.3. Technical Report APR1400-Z-J-NR-14004-P, Rev.0, "Uncertainty Methodology and Application for Instrumentation" cites ISA-RP67.04-1994 PartII, which is not endorsed or approved by Regulatory Guide 1.105 Rev.3, as the standard that "provides the systematic method to identify the definition, classification, sources, and calculation method of uncertainties." Part II of ISA-RP67.04-1994 provides recommended practices and guidance for implementing Part of ISA-S67.04-1994.

Response

Technical Report APR1400-Z-J-NR-14004-P, Rev. 0, "Uncertainty Methodology and Application for Instrumentation" provides the method to identify the definition, classification, sources, and calculation method of instrument uncertainties in accordance with the requirements of Part I of ISA-S67.04-1994 and Part II of ISA-RP67.04-1994 is only used for guidance to implement the methods of instrument uncertainties

But, Part I of ISA-S67.04-1994 is not referenced in the Technical Report APR1400-Z-J-NR-14004-P, Rev. 0 and the report will be revised to incorporate Part I of ISA-S67.04-1994 as a reference document.

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-14004, Rev. 0., "Uncertainty Methodology and Application for Instrumentation" will be revised as indicated on the attached markup.

2. SCOPE

This report provides the systematic method to identify the definition, classification, sources, and calculation method of uncertainties in accordance with ISA-RP67.04, Part II (Reference 1). Setpoint calculation and analysis are covered by a separate technical report (Reference 2).

This report provides the systematic method to identify the definition, classification, sources, and calculation method of uncertainties in accordance with ISA-S67.04, Part I (Reference 1) and utilizes ISA-RP67.04, Part II (Reference 2) for guidance for the implementation of Reference 1.

8. REFERENCES

1. ISA-RP67.04-1994, Part II, Methodologies for the determination of Setpoints for Nuclear Safety-Related Instrumentation
3. APR1400-Z-J-NR-14005-P, "Setpoint Methodology for Plant Protection System, November, 2014
4. ASME Fluid Meters, 6th Edition (Equations for Rates of Flow)
5. IEEE 498-1985, Standard Requirements for the Calibration and Control of Measuring and Test Equipment Used in Nuclear Facilities
6. ANSI/ISA 51.1-1979 (R1993), Process Instrumentation Terminology, ISA

1. ISA-S67.04-1994, Part I, Setpoint for Nuclear Safety-Related Instrumentation
2. ISA-RP67.04-1994, Part II, Methodologies for the determination of Setpoints for Nuclear Safety-Related Instrumentation