

## 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.: 43-7887  
SRP Section: 7.1 - Instrumentation and Controls  
Application Section: Section 7.1.2.3  
Date of RAI Issued: 06/22/2015

---

### Question No. 07.01-22

Remove from the APR1400 FSAR, Tier 2, Section 7.1.2.3, the statement "The I&C systems that are applicable to 10 CFR 50.55a(h)(2) (Reference 10), as shown in Table 7.1-1, are designed in accordance with 10 CFR 50.55a(h)(2) except that the CPCS [Core Protection Calculator System] has two channels of a reed switch position transmitter (RSPT) for each control element assembly."

10 CFR 50.55a(h)(2) states "For nuclear power plants with construction permits issued after January 1, 1971, but before May 13, 1999, protection systems must meet the requirements stated in either IEEE Std. 279, "Criteria for Protection Systems for Nuclear Power Generating Stations," or in IEEE Std. 603–1991, "Criteria for Safety Systems for Nuclear Power Generating Stations," and the correction sheet dated January 30, 1995. For nuclear power plants with construction permits issued before January 1, 1971, protection systems must be consistent with their licensing basis or may meet the requirements of IEEE Std. 603–1991 and the correction sheet dated January 30, 1995." 10 CFR 50.55a(h)(2) does not apply to current applications. Therefore, remove the reference to this requirement from the FSAR and modify the discussion on CPCS to the discussion on compliance to 10 CFR 50.55a(h)(3).

### Response

In accordance with the requirements of 10 CFR 50.55a(h)(2) and 10 CFR 50.55a(h)(3), DCD Section 7.1.2.3 will be deleted since 10 CFR 50.55a(h)(2) does not apply to the APR1400 DCA.

DCD Section 7.1.2.4 will be revised to include discussion regarding the CPCS which was previously contained in Section 7.1.2.3. Table 7.1-1 will be revised to indicate 10 CFR

50.55a(h)(2) does not apply to the APR1400 DCA. A markup which shows these changes has been attached to this response.

---

**Impact on DCD**

DCD Section 7.1.2.3 will be deleted. DCD Section 7.1.2.4 and Table 7.1-1 will be revised as indicated on the attached markup.

**Impact on PRA**

There is no impact on the PRA.

**Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical or Environmental Reports.

**Impact on Technical Specifications**

There is no impact on the Technical Specifications.

**APR1400 DCD TIER 2****7.1.2.1.4 All Other Systems Required for Safety**

The design bases for all other systems required for safety are described in Section 7.6.

**7.1.2.1.5 Interlocks**

The interlocks for safety instrumentation are described in Subsections 7.2.1.7 and 7.3.1.6 and Section 7.6.

**7.1.2.1.6 Bypasses**

The bypasses for safety instrumentation are described in Subsections 7.2.1.6 and 7.3.1.5.

**7.1.2.1.7 Diversity**

The diversity for safety instrumentation is described in Subsections 7.2.1.9, 7.2.2.4, and 7.3.2.4.

**7.1.2.1.8 Instrumentation Protection**

The safety instrumentation protection is described in Chapter 3.

**7.1.2.2 Conformance with 10 CFR 50.55a(a)(1)**

The I&C systems that are applicable to 10 CFR 50.55a(a)(1) (Reference 8), as shown in Table 7.1-1, are designed in accordance with 10 CFR 50.55a(a)(1) by complying with IEEE Std. 603 (Reference 9), Clause 5.3.

**7.1.2.3 Conformance with 10 CFR 50.55a(h)(2)**

~~The I&C systems that are applicable to 10 CFR 50.55a(h)(2) (Reference 10), as shown in Table 7.1-1, are designed in accordance with 10 CFR 50.55a(h)(2) except that the CPCS has two channels of a reed switch position transmitter (RSPT) for each control element assembly. The alternative to Clause 5.6 of IEEE Std. 603 is described in the Safety I&C System Technical Report.~~

Not Applicable

**APR1400 DCD TIER 2****7.1.2.4 Conformance with 10 CFR 50.55a(h)(3)**

The I&C systems that are applicable to 10 CFR 50.55a(h)(3) (Reference 11), as shown in Table 7.1-1, are designed in accordance with 10 CFR 50.55a(h)(3).

**7.1.2.5 Conformance with 10 CFR 50.34f(2)(v)**

The I&C systems that are applicable to 10 CFR 50.34f(2)(v) (Reference 12), as shown in Table 7.1-1, are designed in accordance with 10 CFR 50.34(f)(2)(v). Display instrumentation provides accurate, complete, and timely information to safety system status by compliance to Clause 5.8.2 (system status indication) and Clause 5.8.3 (indication of except that the CPCS has two channels of a reed switch position transmitter (RSPT) for each control element assembly. The alternative to Clause 5.6 of IEEE Std. 603 is provided in the Safety I&C System Technical Report in the Safety able status is

**7.1.2.6 Conformance with 10 CFR 50.34f(2)(xi)**

The I&C systems that are applicable to 10 CFR 50.34f(2)(xi) (Reference 13), as shown in Table 7.1-1, are designed in accordance with 10 CFR 50.34(f)(2)(xi), as described in Subsection 7.5.1.1.

**7.1.2.7 Conformance with 10 CFR 50.34f(2)(xii)**

The I&C systems that are applicable to 10 CFR 50.34f(2)(xii) (Reference 14), as shown in Table 7.1-1, are designed in accordance with 10 CFR 50.34(f)(2)(xii). The automatic and manual initiation of the auxiliary feedwater system is described in Subsection 7.3.1.9.

**7.1.2.8 Conformance with 10 CFR 50.34f(2)(xiv)**

The I&C systems that are applicable to 10 CFR 50.34f(2)(xiv) (Reference 15), as shown in Table 7.1-1, are designed in accordance with 10 CFR 50.34(f)(2)(xiv). The containment isolation function, including reset of the function, is described in Subsection 7.3.1.9.

**APR1400 DCD TIER 2**

Table 7.1-1 (1 of 6)

Not Applicable

Regulatory Requirements Applicability Matrix

Applicable Criteria		Title	I&C System							Section in APR1400 DCD
			RTS	ESF System	QIAS-P	QIAS-N	PCS	P-CCS	DAS	
10 CFR Part 50										
1	50.55a(a)(1)	Quality Standards and Records for Systems Important to Safety	×	×	×	×	×	×	×	7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9
2	50.55a(h)(2)	Protection Systems	×	×						7.2, 7.3, 7.9
3	50.55a(h)(3)	Safety Systems	×	×	×					7.2, 7.3, 7.5, 7.6, 7.9
4	50.34(f)(2)(v)	Bypass and Inoperable Status Indication	×	×	×	×				7.2, 7.3, 7.5, 7.6, 7.9
5	50.34(f)(2)(xi)	Direct Indication of Relief and Safety Valve Position			×					7.5
6	50.34(f)(2)(xii)	Auxiliary Feedwater System Automatic Initiation and Flow Indication	×	×	×					7.2, 7.3, 7.5
7	50.34(f)(2)(xiv)	Containment Isolation Systems	×	×	×					7.2, 7.3, 7.5
8	50.34(f)(2)(xvii)	Accident Monitoring Instrumentation			×	×				7.5
9	50.34(f)(2)(xviii)	Instrumentation for the Detection of Inadequate Core Cooling			×					7.5
10	50.34(f)(2)(xix)	Instruments for Monitoring Plant Conditions Following Core Damage			×					7.5
11	50.34(f)(2)(xx)	Power for Pressurizer Level Indication and Controls for Pressurizer Relief and Block Valves			×					7.4, 7.5
12	50.62	Requirements for Reduction of Risk from Anticipated Transients without Scram							×	7.8
10 CFR Part 50, Appendix A GDC										
13	GDC 1	Quality Standards and Records	×	×	×	×	×	×	×	7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9
14	GDC 2	Design Bases for Protection against Natural Phenomena	×	×	×	×	×	×	×	7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9