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## 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.: 202-8206  
SRP Section: 08.01 – Electric Power – Introduction  
Application Section: 8.01  
Date of RAI Issue: 09/08/2015

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### **Question No. 08.01-12**

APR1400 DCD Figure 8.1-1, “Electric Power System Single-Line Diagram,” identifies “DIMMY” breakers in the Class 1E 480V load center (LC) 1A and LC 2. However, DCD Figure 8.3.1-1, “Onsite AC Electrical Power System,” identifies “DUMMY” circuit breakers. DCD section 8.3.1.1.2, “Class 1E Onsite AC Power System,” also states in part that in case of a loss of power from LC01A, LC02 is manually transferred to the train B load center (LC01B) through a dummy breaker. Please clarify the discrepancy between Figures 8.1-1, Figure 8.3.1-1 and section 8.3.1.1.2 related to the type of breaker used.

### **Response**

“DIMMY BKR” is a typographical error and should be “DUMMY BRK.” KHNP will change the term “DIMMY BKR” to “DUMMY BRK” in DCD Tier 2, Figure 8.1-1 (1 of 2).

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#### **Impact on DCD**

DCD Tier 2, Figure 8.1-1 (1 of 2) will be revised as shown in the Attachment.

#### **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**

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

APR1400 DCD TIER 2

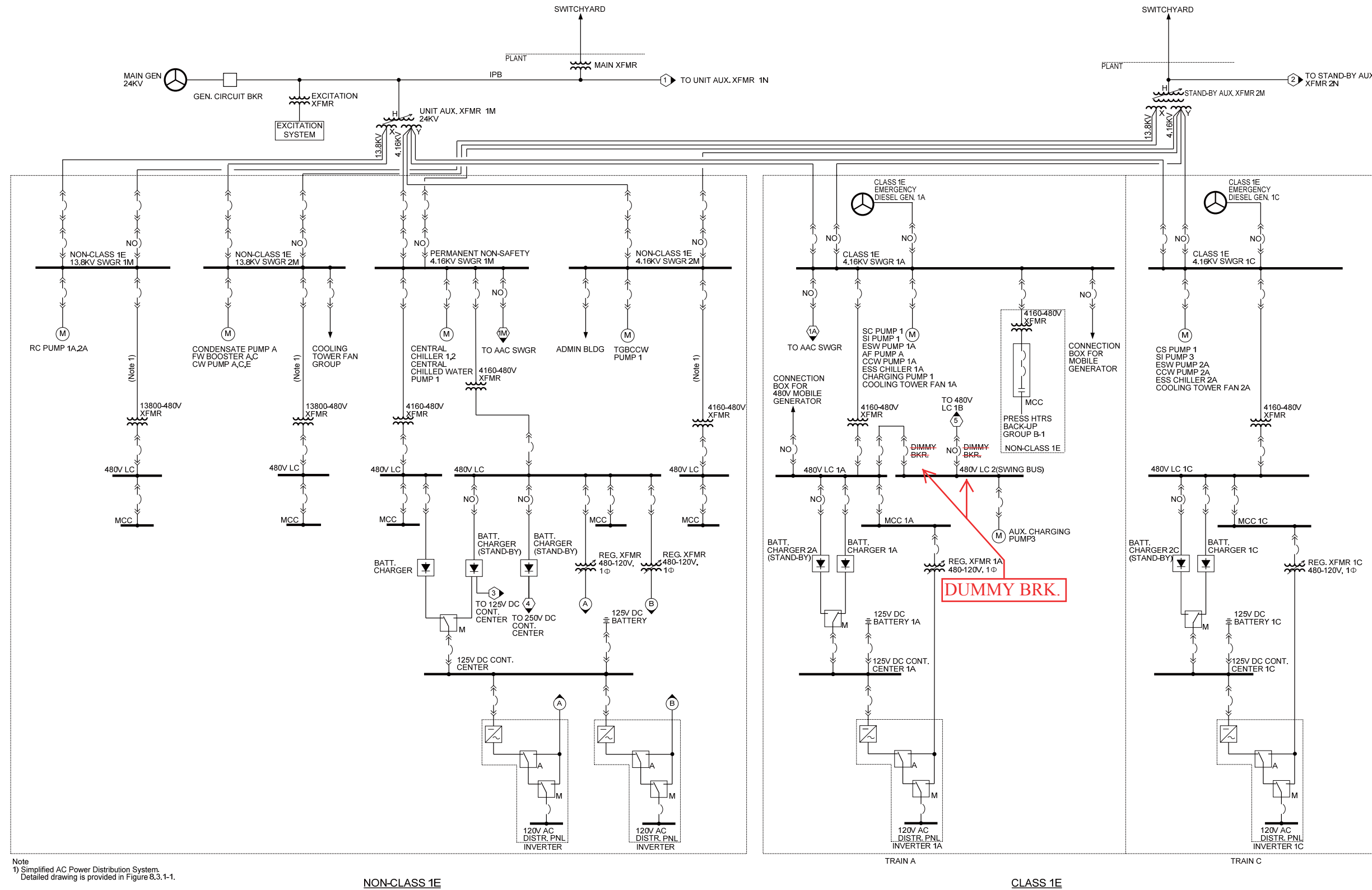


Figure 8.1-1 Electric Power System Single Line Diagram (Division I) (1 of 2)

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### **Question No. 08.01-13**

RG 1.210 and RG 1.213 state in part that Title 10, Part 50, “Domestic Licensing of Production and Utilization Facilities,” of the Code of Federal Regulations (10 CFR Part 50) requires that structures, systems, and components that are important to safety in a nuclear power plant must be designed to accommodate the effects of environmental conditions (i.e., remain functional under postulated design-basis events).

APR1400 DCD section 8.1.3.3, “General Design Criteria, NRC Regulatory Guides, Branch Technical Positions, Generic Letters, and Industry Standards,” lists regulatory guides (RGs) applicable to the APR1400 design. Please explain why the following RGs are not included in those listed in the section:

RG 1.210, “Qualification of Safety-Related Battery Chargers and Inverters”

RG 1.213, “Qualification of Safety-Related Motor Control Centers”

### **Response**

The APR 1400 approach for environmental qualification of mechanical and electrical equipment is described in DCD, Tier 2, Section 3.11. Subsection 3.11.2.2 provides the references to applicable Regulatory Guides and codes, which include RG 1.210 and RG 1.213.

Since RG 1.210 and RG 1.213 are related to the electrical equipment included in Chapter 8, these Regulatory Guides will be added to DCD Tier 2, Subsection 8.1.3.3.

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### **Impact on DCD**

DCD Tier 2, Table 1.9-1 and Subsection 8.1.3.3 will be revised as shown in the Attachment.

**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**

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

## APR1400 DCD TIER 2

Table 1.9-1 (27 of 38)

NRC Regulatory Guide	Revision / Issue Date	Conformance or Summary Description of Deviation	DCD Tier 2 Section
1.207 Guidelines for Evaluating Fatigue Analyses Incorporating the Life Reduction of Metal Components Due to the Effects of the Light-Water Reactor Environment for New Reactors	03/2007	The APR1400 conforms with this NRC RG.	3.9.1.1, 3.9.1.2.1.12, 3.9.3.1, 3.12.5.7, 3.12.5.19
1.208 A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion	03/2007	Not applicable (COL)	N/A
1.209 Guidelines for Environmental Qualification of Safety-Related Computer-Based Instrumentation and Control Systems in Nuclear Power Plants	03/2007	The APR1400 conforms with this NRC RG.	7.2.2.8
1.210 Qualification of Safety-Related Battery Chargers and Inverters for Nuclear Power Plants	06/2008	The APR1400 conforms with this NRC RG.	3.11 <span style="border: 1px solid red; padding: 2px;">add</span>
1.211 Qualification of Safety-Related Cables and Field Splices for Nuclear Power Plants	04/2009	The APR1400 conforms with this NRC RG.	3.11.2, 8.1.3.3 <span style="border: 1px solid red; padding: 2px;">, 8.1.3.3</span>
1.212 Sizing of Large Lead-Acid Storage Batteries	11/2008	The APR1400 conforms with this NRC RG except for the following. <ul style="list-style-type: none"> <li>IEEE Standard 485-2010 is applied instead of IEEE Standard 485-1997 because NRC RG 1.129 endorses the current standard (IEEE Standard 485-2010).</li> </ul>	8.1.3.3, 8.3.2.2.2
1.213 Qualification of Safety-Related Motor Control Centers for Nuclear Power Plants	05/2009	The APR1400 conforms with this NRC RG.	3.11 <span style="border: 1px solid red; padding: 2px;">add</span>
1.215 Guidance for ITAAC Closure Under 10 CFR 52	Rev. 1 05/2012	The APR1400 conforms with this NRC RG.	14.3.2.3, 14.3.5 <span style="border: 1px solid red; padding: 2px;">, 8.1.3.3</span>
1.216 Containment Structural Integrity Evaluation for Internal Pressure Loadings Above Design-Basis Pressure	08/2010	The APR1400 conforms with this NRC RG.	19.2.1, 19.2.4.2.2

**APR1400 DCD TIER 2**

- NRC RG 1.128, “Installation Design and Installation of Vented Lead-Acid Storage Batteries for Nuclear Power Plants,” Rev. 2, February 2007.
- NRC RG 1.129, “Maintenance, Testing, and Replacement of Vented Lead-Acid Storage Batteries for Nuclear Power Plants,” Rev. 3, September 2013.
- NRC RG 1.137, “Fuel Oil Systems for Emergency Power Supplies,” Rev. 2, June 2013.
- NRC RG 1.153, “Criteria for Safety Systems,” Rev. 1, June 1996.
- NRC RG 1.155, “Station Blackout,” August 1988.
- NRC RG 1.156, “Qualification of Connection Assemblies for Nuclear Power Plants,” Rev. 1, July 2011.
- NRC RG 1.158, “Qualification of Safety-Related Lead Storage Batteries for Nuclear Power Plants,” February 1989.
- NRC RG 1.160, “Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” Rev. 3, May 2012.
- NRC RG 1.180, “Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems,” Rev. 1, October 2003.
- NRC RG 1.189, “Fire Protection for Nuclear Power Plants,” Rev. 2, October 2009.
- NRC RG 1.204, “Guidelines for Lightning Protection of Nuclear Power Plants,” November 2005.
- NRC RG 1.206, “Combined License Applications for Nuclear Power Plants” (LWR Edition), June 2007.
- NRC RG 1.211, “Qualification of Safety-Related Cables and Field Splices for Nuclear Power Plants,” April 2009.



add

NRC RG 1.210, “Qualification of Safety-Related Battery Chargers and Inverters for Nuclear Power Plants,” June 2008.

**APR1400 DCD TIER 2**

- NRC RG 1.212, “Sizing of Large Lead-Acid Storage Batteries,” November 2008.
- NRC RG 1.218, “Condition-Monitoring Techniques for Electric Cables Used in Nuclear Power Plants,” April 2012.

add

Branch Technical Positions

- BTP 8-1, “Requirements for Motor-Operated Valves in the ECCS Accumulator Lines,” Rev. 3, March 2007.
- BTP 8-2, “Use of Diesel Generator Sets for Peaking,” Rev. 3, March 2007.
- BTP 8-3, “Stability of Offsite Power Systems,” Rev. 3, March 2007.
- BTP 8-4, “Application of Single Failure Criterion to Manually Controlled Electrically Operated Valves,” Rev. 3, March 2007.
- BTP 8-5, “Supplemental Guidance for Bypass and Inoperable Status Indication for Engineered Safety Features Systems,” Rev. 3, March 2007.
- BTP 8-6, “Adequacy of Station Electric Distribution System Voltages,” Rev. 3, March 2007.
- BTP 8-7, “Criteria for Alarms and Indications Associated with Diesel Generator Unit Bypassed and Inoperable Status,” Rev. 3, March 2007.
- BTP 8-8, “Onsite (Emergency Diesel Generators) and Offsite Power Sources Allowed Outage Time Extensions,” February 2012.

Bulletin

- BL 2012-01, “Design Vulnerability in Electric Power System,” July 2012.

NRC RG 1.213, “Qualification of Safety-Related Motor Control Centers for Nuclear Power Plants,” May 2009.