

## KHNPDCDRAIsPEm Resource

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**From:** Ciocco, Jeff  
**Sent:** Wednesday, July 08, 2015 11:42 AM  
**To:** KHNPDCDRAIsPEm Resource  
**Subject:** FW: APR1400 Design Certification Application RAI 57-7965 (08.03.01 - AC Power Systems (Onsite))  
**Attachments:** APR1400 DC RAI 57 EEB 7965.pdf; image001.jpg

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**From:** Ciocco, Jeff  
**Sent:** Wednesday, July 01, 2015 6:42 AM  
**To:** apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Harry (Hyun Seung) Chang; Yunho Kim; Steven Mannon  
**Cc:** Som, Swagata; Zimmerman, Jacob; Lee, Samuel; Steckel, James  
**Subject:** APR1400 Design Certification Application RAI 57-7965 (08.03.01 - AC Power Systems (Onsite))

KHNP

The attachment contains the subject request for additional information (RAI). This RAI was sent to you in draft form. Your licensing review schedule assumes technically correct and complete responses within 30 days of receipt of RAIs. However, KHNP requests, and we grant, 45 days to respond to this RAI. We may adjust the schedule accordingly.

Please submit your RAI response to the NRC Document Control Desk.

Thank you,

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**Hearing Identifier:** KHNP\_APR1400\_DCD\_RAI\_Public  
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**Sent Date:** 7/8/2015 11:42:13 AM  
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**From:** Ciocco, Jeff

**Created By:** Jeff.Ciocco@nrc.gov

**Recipients:**  
"KHNPDCDRAIsPEm Resource" <KHNPDCDRAIsPEm.Resource@nrc.gov>  
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## REQUEST FOR ADDITIONAL INFORMATION 57-7965

Issue Date: 07/01/2015  
Application Title: APR1400 Design Certification Review – 52-046  
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.  
Docket No. 52-046  
Review Section: 08.03.01 - AC Power Systems (Onsite)  
Application Section: 8.3.1

### QUESTIONS

08.03.01-2

DCD Tier 2, Section 8.3.1.1.2.4, page 8.3-8, states that “The Class 1E EDG rating shown in Tables 8.3.1-2 and 8.3.1-3 is based on the characteristics of each load and the combined bus load demand connected to each diesel generator during the worst-case operating condition. Trains A and B EDGs are rated at 9,100 kW continuous rating and 10,010 kW short-time rating (2 hours), and trains C and D EDGs are rated at 7,500 kW continuous rating and 8,250 kW short-time rating.”

The staff noticed that the EDG output values provided in DCD Section 8.3 are different from that of Technical Specification (TS) Section B3.8, namely, the continuous service rating of trains A and B EDGs is 8,700 kW, and the rating for trains C and D EDGs is 7,000 kW with 10% overload permissible for up to 2 hours in any 24-hour period.

Explain the differences of EDG ratings provided in DCD vs. TS and provide the correct continuous and short-time ratings for the EDGs.

08.03.01-3

GDC 17 states that “the onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.”

DCD Tier 2, Section 8.3.1.1.4, describes the Class 1E electrical equipment (switchgear, EDG, battery & DC system equipment) layout in the auxiliary building and the EDG building.

However, in this section, the Class 1E system equipment layout in other areas (such as in reactor building, safeguards building, Turbine Island, Fuel building, Circulating Water and Essential Service Water building, Ultimate Heat Sink (Building/area), and Radwaste Building) are not discussed. The following needs to be provided:

1. Discuss the Class 1E equipment layout in other areas where Class 1E equipment items are to be located. Discuss how the independence and the physical separation for this equipment is achieved.
2. Discuss whether these Class 1E equipment pieces are interface and/or COL items.
3. Discuss the seismic category where each of the above pieces of equipment are located.
4. Revise the DCD with Class 1E equipment location information for other locations, as applicable.

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08.03.01-4

DCD, Tier 2, Section 8.3.1.1.7, states that “The heat tracing system is provided with non-Class 1E power to prevent freezing of fluid in pipes and equipment and to maintain the required temperature in critical process control systems. The heater is energized by a signal from the temperature sensor attached to each system. The heat tracing system is operated by an automatic control device in the heat tracing panel when the temperature is below the required setpoint.”

Identify Class 1E systems and processes that require heat tracing and freeze protection to maintain process temperatures. If there are Class 1E systems that need to be heat traced, justify why non-Class 1E power is used for the heat tracing circuits. Describe equipment associated with the heat tracing/freeze protection system.

RG 1.68, Appendix A-1.o, “Auxiliary and Miscellaneous Systems,” states that the applicant should conduct appropriate tests to demonstrate the operability of auxiliary and miscellaneous systems. Tests should be conducted, as appropriate, to verify redundancy and electrical independence. DCD Tier 2, Section 14.2.12.1.84, Heat Tracing System Test, does not specifically mention verification of redundancy and electrical independence as acceptance criteria for Heat Tracing System Test. Describe how the redundancy and electrical independence will be verified for Class 1E equipment/systems during initial testing phase.

