

KHNPDCDRAIsPEm Resource

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Sent: Wednesday, July 22, 2015 1:03 PM
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Cc: Som, Swagata; Wunder, George; Lee, Samuel
Subject: APR1400 Design Certification Application RAI 95-8080 (08.03.01 - AC Power Systems (Onsite))
Attachments: APR1400 DC RAI 95 EEB 8080.pdf; image001.jpg

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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REQUEST FOR ADDITIONAL INFORMATION 95-8080

Issue Date: 07/22/2015

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:

QUESTIONS

08.03.01-8

GDC 17 requires 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 8.3.1.1.2.2 states that “The Class 1E onsite ac power system consists of two redundant load groups (division I and division II), with four independent trains (A, B, C, and D), as shown in Figure 8.3.1-1. One of the two divisions (trains A and C or trains B and D), including associated Class 1E EDGs and electrical distribution systems, is required to supply the loads for safe shutdown during a LOCA concurrent with a LOOP.” It further states that “The four independent Class 1E buses of the onsite power system and the connection between the onsite and offsite power systems are provided with physical separation and electrical isolation.”

Please explain how the four Class 1E buses (trains) are functionally independent. It is noted that loading of safety buses, train A and C and train B and D, are not identical. Explain how these are not identical, and clarify if the minor variation of loading for four DGs is evaluated as acceptable for shutdown of the plant, when a divisional pair is considered for safety function/safe shut-down. Under the worst case scenario, if an EDG of the Division II is under maintenance/out of service, explain how the single failure (1 EDG fail to start) in Division I can perform the required safety functions or bring the plant to a safe shutdown.

In Section 8.3.1.1.1, it is noted that a non-Class 1E gas turbine generator AAC source (Alternate alternating current) is connected to Class 1E safety bus 1A of Division I (one train of one division), and Safety bus 1B (one train of other division) of Division 2. Explain why the AAC source is not connected to safety buses 1C of Division I and 1D of Division II.

DCD Tier 2, Section 8.3.1.1.2.3 states that “The onsite power system is designed with the physical and electrical independence from an offsite power system so that single failure does not prevent separation of the redundant portions of the onsite power system from the offsite power system.” Please explain what is meant by redundant portions of the onsite power system.

