

KHNPDCDRAIsPEm Resource

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Sent: Monday, March 28, 2016 8:08 AM
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Cc: Otto, Ngola; Zimmerman, Jacob; Wunder, George; Williams, Donna
Subject: APR1400 Design Certification Application RAI 451-8560 (08.01 - Electric Power - Introduction)
Attachments: APR1400 DC RAI 451 EEB 8560.pdf

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 451-8560

Issue Date: 03/28/2016

Application Title: APR1400 Design Certification Review – 52-046

Operating Company: Korea Hydro & Nuclear Power Co. Ltd.

Docket No. 52-046

Review Section: 08.01 - Electric Power - Introduction

Application Section: 08.01, 08.02

QUESTIONS

08.01-20

In response to **RAI 8166, Question 08.01-5**, dated January 26, 2016, ADAMS Accession ML16026A461, related to the applicability of GDC 2, the applicant stated the following:

- APR1400 offsite power system does not perform any safety function(s) and is classified as non-Class 1E and non-safety related.
- In DCD Tier 2, Section 3.2 and Table 17.4-1, the standby auxiliary transformers (SATs) have been determined to be a risk significant component as a result of the design reliability assurance program (RAP), and consequently classified as “non-safety related but important to safety.”
- The SATs are considered to be important to safety with regard to compliance of GDC 2 and designed to withstand the effects of natural phenomena such as high and low atmospheric temperatures, high wind, rain, ice and snow conditions, and weather events as specified in DCD Tier 2, Table 2.0-1 and Section 2.3.
- The description of the conformance with GDC 2 in Subsection 8.2.2.1 is somewhat different from that of Subsections 8.3.1.2.1 and 8.3.2.2.1 since the offsite power system is a non-Class 1E system, and thus, it is not subject to withstanding the effects of design basis natural phenomena such as earthquakes, tornadoes, hurricanes, and floods and is supported by SRP Subsection 8.2.II.
- The conformance with GDC 2 against earthquakes, tornadoes, hurricanes, and floods, considered as design bases for the Class 1E onsite ac, 125 Vdc, and 120 Vac instrumentation and control (I&C) power systems, is addressed in DCD Tier 2, Sections 3.3, 3.4, 3.5, and 3.7, respectively.

The staff reviewed the response and found that the proposed changes associated with DCD section 8.2.2.1, Criterion 2, “Design Bases for Protection Against Natural Phenomena,” are not consistent with GDC 17, which states that an onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. 10 CFR Part 50, Appendix A, (Introduction) states, in part that the principal design criteria establish the necessary design, fabrication, construction, testing, and performance requirements for structures, systems, and components important to safety; that is, structures, systems, and components that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. The staff acknowledges that the offsite power system should be designed to withstand the effects of natural phenomena such as high and low atmospheric temperatures, high wind, rain, ice and snow conditions, and weather events. However, the offsite power system is not designed to withstand earthquakes, tornadoes, hurricanes, and floods, which is consistent with the guidance in SRP Subsection 8.2.II. SRP Section 8.1, Table 8-2, “NRC Staff Interpretation of the Requirements of GDC 17,” states that the offsite system shall be comprised of two physically independent circuits connecting the transmission network (grid) to the onsite distribution system (safety buses) and provides the scope for the offsite power system. As defined in GDC 17, the offsite power system includes other components such as unit auxiliary transformers (UATs), main step up transformer (MSUT), and connecting systems in addition to the SATs.

Therefore, the staff requests that the applicant provide discussion related to GDC 2 applicability in the DCD section 8.2 to include important to safety components of the offsite power system based on the guidance in the SRP and to meet the requirements of the regulations in 10 CFR Part 50, Appendix A, and GDC 17.



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