

KHNPDCDRAIsPEm Resource

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Sent: Thursday, May 26, 2016 1:00 PM
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Cc: Kalathiveetil, Dawnmathews; Curtis, David; Wunder, George; Williams, Donna
Subject: APR1400 Design Certification Application RAI 491-8613 (09.05.02 - Communications Systems)
Attachments: APR1400 DC RAI 491 ICE 8613.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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Subject: APR1400 Design Certification Application RAI 491-8613 (09.05.02 - Communications Systems)
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REQUEST FOR ADDITIONAL INFORMATION 491-8613

Issue Date: 05/26/2016

Application Title: APR1400 Design Certification Review – 52-046

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

Docket No. 52-046

Review Section: 09.05.02 - Communications Systems

Application Section:

QUESTIONS

09.05.02-4

Justify why none of the communication system SSCs are classified as a risk-significant SSC and hence not needed to comply with the requirements of 10 CFR Part 50, Appendix A, General Design Criteria (GDC) 2, GDC 3, and GDC 4.

10 CFR Part 50, Appendix A, GDC 2, states, in part, "Structures, systems and components important to safety are designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions." GDC 3, states, "Structures, systems and components important to safety to be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room." GDC 4, states, "Structures, systems and components important to safety to accommodate the effects of and to be compatible with the environmental conditions associate with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant-accidents."

In RAI 8292, Question 09.05.02-02, the staff had asked KHNP to clarify how the communication system complies with the requirements of 10 CFR Part 50, Appendix A, General Design Criteria (GDC) 2, GDC 3, and GDC 4. In response, KHNP stated in part that, "The APR1400 communication systems do not perform safety function(s), so they are classified as non-Class 1E and non-safety related (NSR) ... none of the communication system SSCs are classified as a risk-significant SSC. Therefore, the communication systems are not necessarily required to comply with 10 CFR Part 50, Appendix A, GDC1, GDC 2, GDC 3, GDC 4, and GDC 19." The applicant also decided to remove a portion of APR1400, Tier 2, Rev 0, subsection 9.5.2.1 which stated, "However, communication systems are selected and designed in accordance with the guidance provided in 10 CFR Part 50 Appendix A, GDC 1, GDC 2, GDC 3, GDC 4, and GDC 19 (Reference 38) to provide reasonable assurance that the facility can operate without undue risk to the health and safety of the public."

However, the staff needs to understand the applicant's basis for not classifying the communication systems as risk-significant SSC. The availability of the communication systems is an implicit assumption in the PRA. When the PRA branch reviewed the human reliability analysis, they found some risk important human actions that require an operator outside of the control room performing actions. This would implicitly assume the availability of the communication systems. The applicant provided a list of human failure events (HFEs), including risk important human actions (RIHAs) in response to RAI 8343 Question 19-17. An example would be operator action "AFOPH-S-ALT-LT" described as "Operator Fails to Transfer AFW Source From AFWST to RWT/CST" and is described in the RAI response as requiring a turbine operator to instruct the action to a local operator and requiring a local operator to align manual valves. This information is also available in the updated HRA notebook provided by KHNP in the electronic reading room. Other RIHAs require a local operator going into various parts of the plant (switchgear room, aux building, etc.) to perform an action. Based on a proprietary table provided to the human factors branch in response to their RAI 7980, Question 18-13, there are at least seven RIHAs requiring a local operator.

The applicant needs to justify why the communication systems are not considered as risk significant SSC. If the applicant cannot justify this, then the communication systems need to comply with the requirements of 10 CFR Part 50, Appendix A, GDC1, GDC 2, GDC 3, and GDC 4 and the applicant needs to describe how the communication systems comply with the requirements of 10 CFR Part 50, Appendix A, GDC 2, GDC 3, and GDC 4. Update the FSAR documents accordingly.

REQUEST FOR ADDITIONAL INFORMATION 491-8613

09.05.02-5

Clarify what the applicant means by "Functional Arrangement of Communication Systems" in APR1400 FSAR, Tier 1, Rev 0, Table 2.6.9-1, "Communication System ITAAC".

10 CFR 52.47(b)(1) requires that a design certification application contain the proposed ITAAC that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the plant that incorporates the design certification has been constructed and will be operated in conformance with the design certification, the provisions of the Atomic Energy Act of 1954, and NRC rules and regulations.

APR1400 FSAR, Tier1, Rev 0, Table 2.6.9-1 states in part that, "The functional arrangement of communication systems are as described in the Design Description of Subsection 2.6.9.1". Similarly, APR1400 FSAR, Tier1, Rev 0, Section 2.6.9.1.g, "Wireless Communication System" states in part, "The functional arrangement of the communication systems are as described in the Design Description of Subsection 2.6.9.1". However, there is no such description in Subsection 2.6.9.1.

(a) The applicant needs to clarify what they mean by functional arrangement of communication systems. A definition for functional arrangement of communication systems in APR1400 FSAR Tier 1, Section 2.6.9 is needed. Update FSAR documents accordingly.

(b) The ITTAC and Acceptance Criteria provided in APR1400 FSAR Tier 1, Table 2.6.9-1 are not clear as to what particular procedures would be followed to ensure that each communication system is capable of performing its intended function. The applicant needs to mention applicable COL Items in their response and why the COL Items are sufficient to meet the requirements of 10 CFR 52.47(b)(1). In case there are no applicable COL Items, more detail is required within the communication systems ITAAC and acceptance criteria descriptions in Table 2.6.9-1 for the staff to ensure compliance with the requirements of 10 CFR 52.47(b)(1). Update FSAR documents accordingly.

(c) There is a inconsistency between the items in the list provided in APR1400 FSAR, Tier1, Rev 0, Section 2.6.9.1, "Design Description" and APR1400 FSAR, Tier2, Rev 0, Section 9.5.2.2, "System Description." These sections describe in part, the buildings within the APR1400 facility which contain communication systems. APR1400 FSAR, Tier1, Rev 0, Section 2.6.9.1 needs to include all the buildings provided in APR1400 FSAR, Tier2, Rev 0, Section 9.5.2.2. Similarly Section 2.6.9.1 mentions "Page Phone System" while Section 9.5.2.2 mentions "Paging phone system." APR1400 FSAR, Tier1, Rev 0 information needs to be corrected and updated in both these instances such that information is consistent between Tier 1 and Tier 2 of the FSAR.

