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.: **491-8613**

SRP Section: **09.05.02 – Communication Systems**

Application Section:

Date of RAI Issue: **05/26/2016**

Question No. 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 GDC4.

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-SALT-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.

Response

It will be reviewed in the next RAP expert panel meeting. The RAP (Reliability Assurance Program) expert panel meeting will be conducted after CAFTA PRA model develop. The next RAP expert panel meeting schedule is not decided yet, but it will be conducted within this year. If communication system is identified as a risk-significant SSC by RAP panel, it will be added in DCD Tier 2, Table 17.1-1 (Risk-significant Within-Scope RAP SSCs).

Impact on DCD

There is no impact on the DCD.

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 on impact on any Technical, Topical, or Environmental Report.