

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.: 104-7961
SRP Section: 8 – Electric Power
Application Section: 08.02 – Offsite Power System
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Question No. 08.02-4

The Maintenance Rule, 10 CFR 50.65(a)(4), is applicable to all electrical maintenance activities (offsite, onsite, and SBO equipment, and specifies that COL applicants assess and manage the increase in risk that may result from proposed maintenance activities before performing maintenance activities in general, and this includes the offsite power transmission lines. For instance, grid stability and offsite power availability are examples of emergent conditions that may result in the need for assessment or that could change the conditions of a previously performed assessment. Accordingly, COL applicants should perform grid reliability evaluations as part of the maintenance risk assessment before performing “grid-risk-sensitive” maintenance activities (such as surveillances, post-maintenance testing, and preventive and corrective maintenance).

SRP 8.2 states that compliance with 10 CFR 50.65(a)(4) includes that applicants assess and manage the increase in risk that may result from proposed maintenance activities before performing the maintenance activities.

Provide a discussion on how APR1400 meets the requirements of 10 CFR 50.65(a)(4), pertaining to the offsite power transmission lines.

Response

The transmission network design includes at least two preferred offsite power supplies, each one has sufficient capacity and capability to supply power to the APR1400 safety-related and non-safety-related systems during all design modes. In accordance with GDC 17, these two offsite power transmission lines will be physically independent, designed and located so as to minimize the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. The two circuits of the offsite preferred power sources are designed in accordance with IEEE Std. 765 so that a failure of one offsite preferred power source does not affect the capacity and capability of the other offsite preferred power source.

Provisions will be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power from the transmission network. Onsite emergency power is provided in the design to provide safe shutdown capabilities for the loss of offsite power.

For the DC stage, design of the transmission line network and associated switchyard components such as PCBs are not within the scope of DCD chapter 8.2. Therefore, the PRA developed in accordance with chapter 19.1 does not include transmission lines or associated switchyard components. The PRA includes their failure frequency in the overall LOOP frequency. The establishment and implementation of Maintenance Rule (10 CFR 50.65) is currently included as COL item 17.6(1).

For the COL stage, the COL applicant is to include the transmission lines and their associated components into their design, refer to COL 8.2(1). The COL applicant will reflect the transmission line and its associated components into their PRA model including full power and low power shutdown in accordance with chapter 19.1.2.3 statements to maintain and upgrade the PRA to be consistent with the design. In order to implement 10 CFR 50.65(a)(4), the COL applicant will develop or introduce risk monitor programs (such as EOOS, ORAMSENTINALS, etc.) using their PRA model. Implementing the developed risk monitor programs will enable the licensee to perform an appropriate risk assessment before maintenance on the transmission lines and associated components.

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 no impact on any Technical, Topical, or Environmental Reports.