
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.: 445-8537
SRP Section: SRP 19
Application Section: 19.1
Date of RAI Issue: 03/16/2016

Question No. 19-97

10 CFR 52.47(a)(27) requires that a standard design certification applicant provide a description of the design specific PRA.

SRP Chapter 19.0, Revision 3, Section II, "Acceptance Criteria," states that the staff determines whether, "...the technical adequacy of the PRA is sufficient to justify the specific results and risk insights that are used to support the DC or COL application. Toward this end, the applicant's PRA submittal should be consistent with prevailing PRA standards, guidance, and good practices as needed to support its uses and applications and as endorsed by the NRC (e.g., RG 1.200)."

To allow the staff to reach a reasonable assurance finding on APR1400 PRA technical adequacy and to confirm the assumptions used in the LPSD internal flooding PRA, please clarify the following potential inconsistency and revise the DCD and/or the underlying PRA documentation as necessary.

During the audit of the LPSD flooding analysis, the staff reviewed information in the underlying PRA documentation and found that the assumed volume of water required to submerge both divisions of SC pumps may be different from that provided in the DCD. The DCD Page 19.1-167 states, "The lowest flood areas in each quadrant of the auxiliary building are designed to contain over 2,271 m³ (600,000 gal) of water without impacting equipment in adjoining quadrants." Please clarify this potential inconsistency.

Response

The statement cited in the RAI is correct as stated in that over 2,271 m³ (600,000 gal) of water can be contained within a quadrant. For the at-power flooding PRA, flooding within one quadrant, in general, does not cause or require a reactor trip or shutdown. Flooding within one

quadrant would fail one shutdown cooling (SC) pump, but that would not require a reactor trip or Technical Specification shutdown.

Initiating events for the shutdown PSA (e.g., Mode 5) consider a loss of shutdown cooling as an initiating event. Flooding of the running SC pump is assumed to result in a loss of SC. Thus, spray events in the SC pump room are considered initiating events as well as flooding from other rooms that propagates to the running SC pump room and submerges the pump motor. The volume of water needed to submerge the running SC pump motor is approximately 662 m³ (175,000 gal). The volume is the same for either the A or B quadrant. That volume, however, would not propagate across quadrants and the standby train would be unaffected by submergence of the running pump.

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 Report.