
REVISED 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.: ER 1-8428
SRP Section: Environmental Report
Application Section: APR1400 Environmental Report
Date of RAI Issue: 03/22/2016

Question No. EIS ACC/SA-15

10 CFR 51.55(a) requires each applicant for a standard design certification under subpart B of 10 CFR Part 52 (i.e., 10 CFR 52.47(b)(2)) to submit with its application a separate document entitled, "Applicant's Environmental Report—Standard Design Certification." The environmental report must address the costs and benefits of severe accident mitigation design alternatives, and the bases for not incorporating severe accident mitigation design alternatives in the design to be certified.

The environmental standard review plan (ESRP) Section 7.2, Severe Accidents, of NUREG 1555 directs the staff to evaluate and independently confirm severe accident risks and analyses presented in an Environmental Report (ER) (i.e., the APR1400 ER, "Applicant's Environmental Report – Standard Design Certification," found under ML15006A038 and the proprietary technical report, "Severe Accident Mitigation Design Alternatives (SAMDAs) for the APR1400," under ML15012A105) of accidents involving radioactive material that can be postulated for the plant under review. The scope of this review should include probability-weighted consequence (i.e., risks) analysis for severe accidents, including dose and socioeconomic risk impacts based on plant specific data in sufficient detail to appropriately evaluate the risks for severe accidents.

The staff requires the following additional information in order to complete its review of the environmental impacts of severe accidents and to ensure appropriate documentation of the applicant's assessment in the APR1400 Environmental Report.

Provide a revised base case analysis by adding modeling of a non-evacuating cohort with appropriate justification and supporting references. As stated in Section 4.6.3, Cohort Modeling, of NUREG/CR-7009, MACCS Best Practices as Applied in the State-of-the-Art Reactor Consequence Analyses (SOARCA) Project, "...only two cohorts were used in Sample Problem A with percentages of 95 percent for the general public and 5 percent for the non-evacuating public. The percentages were adjusted to 99.5% and 0.5%, respectively, in the final NUREG-1150 report. In SOARCA the population fractions were developed based on the

actual site population data [shown in Table 4-21].” Note that the evacuation cohort population fraction in the final NUREG-1150 (Cohort 2) and in SOARCA (Cohort 6) were set to 0.005, or 0.5 percent. The staff does not consider that assuming 100 percent evacuation (i.e., not having an evacuation cohort specified in the MACCS calculations) is reasonable to apply for the base case analysis.

The NRC staff request that any revisions to the ER or supporting technical reports be provided as a markup as part of the response to this RAI.

Response – (Rev.2)

Using the recently-updated PRA results, the SAMDA report was revised, including Level 3 analysis. The revised Level 3 analysis (Appendix A of APR1400-E-P-NR-14006-P, Rev. 1) uses 99.5% evacuation / 0.5% non-evacuation parameters to establish the base case. The base case population dose and offsite economic cost results were applied the SAMDA cost benefit analysis. The base case mode is also used as the starting point of all Level 3 sensitivity cases.

Impact on DCD

DCD Section 19.2.6.5 will be updated to reflect the latest costs as determined in the SAMDA analysis.

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

The SAMDA Report is revised as discussed above.