

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.: 484-8598

SRP Section: 09.01.01 - Criticality Safety of Fresh and Spent Fuel Storage and Handling

Application Section: DCD Tier 2, Section 9.1.1

Date of RAI Issue: 05/16/2016

Question No. 09.01.01-42

NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 9.1.1, guides the reviewer to verify that the computational method validation study is thorough and uses benchmark critical experiments that are similar to the normal-conditions and abnormal-conditions models and to verify that the keff bias and bias uncertainty values are conservatively determined. RAI 179-8190, Question 09.01.01-20 asked the applicant, in part, to either capture essential design and analysis details from the criticality code validation report WCAP-17889-P in the DCD or incorporate the report into DCD Tier 2 by reference. The staff notes that the applicant's April 22, 2016, response did not adequately address this issue. Because the code validation report is an area of review per NUREG-0800, the report or a thorough description of its contents must be on the docket.

Therefore, please either:

(1) Submit WCAP-17889-P on the docket and incorporate it by reference into DCD Tier 2

or

(2) Provide a thorough description of the methodology used for and the results from the code validation in DCD Tier 2 or the criticality analysis technical report, APR1400-Z-A-NR-14011-P. Such a description should include, at a minimum:

- a. A high-level description of the methodology, including steps in the data analysis
- b. How the area of applicability was determined
- c. A summary explanation of the experiments selected for each of the three sets (fresh fuel with no absorber, fresh fuel with absorber, and fresh and burned fuel)

- with absorber), including characteristics such as enrichment, pin pitch, and absorbers; and how the experiments were chosen
- d. The number of experiments in each of the three sets of experiments
- e. A listing of the trending parameters considered for each set of experiments and which showed statistically significant trends
- f. Validation results for each set of experiments and a description of how the final biases/uncertainties were chosen (best estimate vs. trended analyses, e.g.)

Response

The criticality code validation report (WCAP-17889-P) will be submitted on the docket and incorporated as a reference into DCD Tier 2.

Impact on DCD

Table 1.6-2 in the DCD Tier 2 will be revised as indicated in the attachment.

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 the Technical/Topical/Environmental Report.

APR1400 DCD TIER 2

Table 1.6-2 (2 of 2)

Report Number ⁽¹⁾	Title	DCD Tier 2 Section
APR1400-F-A-NR-14002-P APR1400-F-A-NR-14002-NP	The Effect of Thermal Conductivity Degradation on APR1400 Design and Safety Analyses	15.4 15.6
APR1400-F-A-NR-14003-P APR1400-F-A-NR-14003-NP	Post-LOCA Long Term Cooling Evaluation Model	15.6
APR1400-H-N-NR-14012-P APR1400-H-N-NR-14012-NP	Mechanical Analysis for New and Spent Fuel Storage Racks	9.1.2
APR1400-K-I-NR-14005-P APR1400-K-I-NR-14005-NP	Staffing and Qualifications Implementation Plan	18.5
APR1400-K-I-NR-14009-P APR1400-K-I-NR-14009-NP	Design Implementation Plan	18.11
APR1400-Z-A-NR-14006-P APR1400-Z-A-NR-14006-NP	Non-LOCA Safety Analysis Methodology	15.0.2
APR1400-Z-A-NR-14007-P APR1400-Z-A-NR-14007-NP	LOCA Mass and Energy Release Methodology	6.2.1.3
APR1400-Z-J-NR-14001-P APR1400-Z-J-NR-14001-NP	Safety I&C System	7.1, 7.2, 7.3, 7.4, 7.5, 7.8, 7.9
APR1400-Z-J-NR-14003-P APR1400-Z-J-NR-14003-NP	Software Program Manual	7.1.4, 7.2.2.2, 7.3.1
APR1400-Z-J-NR-14004-P APR1400-Z-J-NR-14004-NP	Uncertainty Methodology and Application for Instrumentation	7.2.2.7, 7.3.2.7
APR1400-Z-J-NR-14005-P APR1400-Z-J-NR-14005-NP	Setpoint Methodology for Plant Protection System	7.2.2.7, 7.3.2.7
APR1400-Z-M-NR-14008-P APR1400-Z-M-NR-14008-NP	Pressure-Temperature Limits Methodology for RCS Heatup and Cooldown	5.2, 5.3
APR1400-Z-A-NR-14011-P APR1400-Z-A-NR-14011-NP	Criticality Analysis of New and Spent Fuel Storage Racks	9.1.1
WCAP-17889-P WCAP-17889-NP	Validation of SCALE 6.1.2 with 238-Group ENDF/B-VII.0 Cross Section Library for APR1400 Design Certification	9.1.1