
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.: 260-8283
SRP Section: 18 – Human Factors Engineering
Application Section: 18.6
Date of RAI Issue: 10/19/2015

Question No. 18-34

Section 5.4 (2), “Review Criteria,” of NUREG-0711 states that “the applicant should describe the screening methodology used to select the tasks for analysis, based on criteria specifically established to determine whether analyzing a particular task is necessary.” Additionally, Section 1.2.2, “Review Elements,” of NUREG-0711 states in part, “To determine whether an implementation plan (IP) is acceptable, the NRC staff evaluates whether the IP is:... detailed, i.e., the IP describes the methodology in a step-by-step format to ensure that the applicant’s design personnel can reliably use the IP, and that knowledgeable engineers will obtain consistent results from executing the methodology...”

DCD Tier 2 Section 18.4.1, “Objectives and Scope,” and Section 2, “Scope,” of the TA IP, and Section 4.1.3, “Subject Matter Expert Experience,” of the TA IP state that SMEs will use their experience and training to add additional tasks to the TA database that have challenged predecessor plant operating crews. Section 4.1.3 goes on to list specific areas where SME judgments are applied.

SME judgment is not quantitative, and results obtained from only using SME judgment would not be verifiable.

1. In order to obtain consistent results, provide a minimum amount of criteria that will be used by the SMEs to identify tasks from these areas for task analysis.
2. Additionally, specify any documentation that the SMEs will need to use from the predecessor plants or reference plants.
3. Revise the submittal as necessary.

Response

Section 4.1.3 of the TA IP will be revised to describe the process to be used by the subject matter experts (SMEs), including the criteria and documentation to be used, to identify additional tasks, as indicated in the attachment associated with this response.

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

Technical report APR1400-E-I-NR-14004-NP, Rev.0, "Task Analysis Implementation Plan," Section 4.1.3 will be revised, as indicated in the attachment associated with this response.

4.2. Basic Task Analysis

TS

4.2.1. Task Narrative

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Question No. 18-38

Section 5.4(5), "Review Criteria," of NUREG-0711 states that "the applicant should estimate the time required to perform each task."

Section 18.4.2.2, "Task Timing Analysis," in DCD Chapter 18 and Section 4.3, "Task Timing Analysis," in the TA IP state that an estimate of the time required to perform the task is part of the task timing analysis (TTA); however, a TTA is not performed for all tasks.

The staff requests that the submittal be updated to state that an estimate of the time required to perform the task will be provided for each task to satisfy Criterion 5.4(5) of NUREG-0711, Revision 3. If the estimate of the time required will be developed differently for tasks that are not selected for a TTA, describe any techniques or tools the SMEs can use to make an estimate of the time required.

Response

As stated in Item 4, Section 4.2.3 of the TA IP, a detail TTA is conducted for all tasks that have a Timing Constraint, as identified in Task Narrative Item 17 which states that "Time Available constraints are extracted from the D3CA, TAA, or PRA in the APR1400 DCD Tier 2 Chapters 7, 15, and 19, respectively. Other time available constraints may be identified in other APR1400 plant documentation. Time available can also be defined for other tasks based on SME judgment." If there is no Time Available constraint, there is no evaluation of Time Required in the TA or in any other HFE program element. Therefore, there is no value to estimating the time required to perform the task.

However, for compliance to Criterion 5.4(5) of NUREG-0711, Revision 3, Item 29 will be added to the Task Narrative in Section 4.2.1, as follows:

- 29. Time Required: For tasks that have a Time Available constraint (Item 17), the time required to conduct the task is estimated through the Task Timing Analysis, Section 4.3;

therefore, for these tasks, this field is left blank. For tasks that have no Time Available constraint, the time required to conduct the task is estimated using SME judgment and the information sources identified at the beginning of this section (Items 1 thru 7).

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

Technical report APR1400-E-I-NR-14004-NP, Rev.0, "Task Analysis Implementation Plan," Section 4.2.1 will be revised, as indicated in the attachment associated with this response.



4.2.2. Human-System Interface Inventory



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