

Request for Additional Information No. 39, Revision 0

8/01/2008

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 18 - Human Factors Engineering
Application Sections:
COLP Branch

QUESTIONS

18-2

NUREG 0711 Criterion 1, General Process and Procedures states:

The applicant should identify the process through which the team will execute its responsibilities, including procedures for the following:

- assigning HFE activities to individual team members (a)
- governing the internal management of the team (b)
- making management decisions regarding HFE (c)
- making HFE design decisions (d)
- governing equipment design changes (e)
- conducting design team review of HFE products (f)

The staff reviewed the DC FSAR section 8.1.3 and the QAP and topical report sections that were referenced. The design control process is not presented in sufficient detail to satisfy review criteria a through d outlined above. Please provide additional information describing how these decision making processes (items a through d) within the HFE design team are managed.

This is related to RAI 21 from topical report ANP-10279.

18-3

NUREG 0711 criteria (5) states:

HFE documentation items should be identified and briefly described, along with the procedures for retention and access.

In the DC FSAR Tier 2, Section 18.1.3.4, the applicant addresses HFE documentation. No specific criteria are provided other than "procedures establish requirements, methods, and responsibilities for preparing, reviewing, and approving initial design documents as well as for changing previously released documentation." Also, there is a brief description of how system descriptions document how design requirement bases are met. While not referenced in this DC FSAR section, the staff identified additional pertinent documentation information in the topical report Section 5.3.

Please provide a description of the procedures for retention and access.
Please explain why topical report ANP-10279 section 5.3 is not referenced.

RAIs 24, 25, and 26 from the topical report are related to this RAI.

18-4

NUREG 0711 section 4.4 criteria 6 states:

The applicant should document a technical basis for all function allocations, including the allocation criteria, rationale, and analyses methods.

DC FSAR Sections 8.3.2 and 8.3.3 refer to a Functional Requirements analysis (FRA) report and a Functional Allocation (FR) report. The description of these reports suggests they contain all the information required by this criterion. Both reports are stated as being "...included with the US-EPR V&V documentation...." but the V&V section of the DCD does not contain any similar material.

1. Please submit these documents for staff review or provide a description of how the technical basis for function allocation is being accomplished.
2. In the standard HFE Program the FRA/FA provide input into the HSI design. The design is implemented and then verified and validated. Are there additional relationships between the FRA/FA and V&V in the US-EPR HFE program? Please explain why the FRA/FA documentation would be associated with V&V other than as basis documentation for the design.
3. The response to RAI 7 from topical report ANP-10279 is inconsistent with information that the DC FSAR states is documented in these two reports. Are these reports intended to provide the documentation requested in RAI 7?

18-5

NUREG 0711 section 4.4 criterion 7 states:

The OER should be used to identify modifications to function allocations; if necessary. If problematic OER issues are identified, then an analysis should be performed to (a) justify the original analysis of the function, (b) justify the original human-machine allocation, and (c) identify solutions such as training, personnel selection, and procedure design that will be implemented to address the OER issues.

There is no information provided on how OER is used as part of the continuing functional allocation process.

Please describe how criterion 7 will be implemented.

18-6

NUREG 0711 section 8.4.2 criterion 2 states:

A concept of operations should be developed indicating crew composition and the roles and responsibilities of individual crew members based on anticipated staffing levels. The concept of operations should:

1. Identify the relationship between personnel and plant automation by specifying the responsibilities of the crew for monitoring, interacting, and overriding automatic systems and for interacting with computerized procedures systems and other computerized operator support systems.
2. Provide a high-level description of how personnel will work with HSI resources. Examples of the types of information that should be identified is the allocation of task to the main control room or local control stations, whether personnel will work at a single large workstation or individual workstations, what types of information each crew member will have access to, and what types of information should be displayed to the entire crew.
3. Address the coordination of crew member activities, such as the interaction with auxiliary operators and coordination of maintenance and operations should be addressed.

DC section 18.7.2 presents the design basis for manning levels and an appropriate level of detail describing crew composition and the roles and responsibilities of individual crew members based on anticipated staffing levels. Information addressing the bullets contained in this criterion was not provided. Of specific interest to the staff is the policy on over-riding automatic equipment given the predominance of automatic controls, the use of video displays and large screen plant status display, interfaces with computerized alarm and procedure systems, and the use of Human-System Interfaces to facilitate coordination of plant activities (in addition to what has been provided on communications between the crew members).

Please address this criterion to the level of detail outlined within NUREG 0711.