

## ArevaEPRDCPEm Resource

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**From:** Tesfaye, Getachew  
**Sent:** Tuesday, August 03, 2010 2:23 PM  
**To:** 'usepr@areva.com'  
**Cc:** Marble, Julie; Walker, Jacqwan; Junge, Michael; Eudy, Michael; Steckel, James; Colaccino, Joseph; ArevaEPRDCPEm Resource  
**Subject:** U.S. EPR Design Certification Application RAI No. 426 (4796, 4825), FSAR Ch. 18  
**Attachments:** RAI\_426\_COLP\_4796\_4825.doc

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on June 25, 2010, and discussed with your staff on July 8, 2010. No change is made to the draft RAI as a result of that discussion. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the published schedule.

Thanks,  
Getachew Tesfaye  
Sr. Project Manager  
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**Hearing Identifier:** AREVA\_EPR\_DC\_RAIs  
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**From:** Tesfaye, Getachew

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Request for Additional Information No. 426(4796, 4825), Revision 1

8/3/2010

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

QUESTIONS for Operating Licensing and Human Performance Branch (AP1000/EPR Projects) (COLP)

18-182

NUREG-0711 section 11.4.3.2.2(8) states:

- (8) For important actions at complex HSIs remote from the main control room, where timely and precise human actions are required, the use of a simulation or mockup should be considered to verify that human performance requirements can be achieved. (For less risk-important HAs or where the HSIs are not complex, human performance may be assessed based on analysis such as task analysis rather than simulation.)

The staff requests for the applicant to clarify where this criterion is addressed in their application.

18-183

NUREG-0711 section 11.4.3.2.3(2) states:

- (2) To properly account for human variability, a sample of participants should be used. The sample should reflect the characteristics of the population from which the sample is drawn. Those characteristics that are expected to contribute to system performance variation should be specifically identified and the sampling process should provide reasonable assurance that variation along that dimension is included in the validation. Several factors that should be considered in determining representativeness include: license and qualifications, skill/experience, age, and general demographics.

The staff requests for the applicant to reconcile the inconsistency in the FSAR of not selecting participants on the basis of license and qualifications while only using qualified operators. the staff also requests for the applicant to clarify the V&V IP statements that only licensed operators (who will not yet exist) will be used (see section 3.6.3.1; 4.3.1.13). In addition, the staff requests for the applicant to define the techniques (e.g., give the sample bounds) that will ensure that the sample age and demographics are representative of the overall population.

18-184

NUREG-0711 section 11.4.3.2.3(4) states:

- (4) To prevent bias in the sample, the following participant characteristics and selection practices should be avoided:
- participants who are part of the design organization
  - participants in prior evaluations
  - participants who are selected for some specific characteristic, such as using crews that are identified as good or experienced.

The staff requests for the applicant to identify the sampling practices used to identify participants. In addition, please verify that participants will not be part of the design organization.

Section 3.6.3.1 states that 'if the level of experience is considered to be an important variable in the evaluation results, the evaluators may selectively seek out AREVA or industry personnel with the requisite requirements to participate...'. The staff requests for the applicant to verify that the normal selection practice will not be biased toward selecting participants who are identified as good or experienced and that if the impact of experience must be assessed, to avoid a biased sample the effect of experience will be assessed statistically from the overall sample and not via selection practices. If an alternative method will be used, then please include a description and justification.

18-185

The staff reviewed the documentation related to the Staffing & Qualification (S&Q) program and found the following issues/inconsistencies:

- a. FSAR Sec. 18.4 and 18.5 refer to a withdrawn AREVA Topical Report (ANP-10279P). Also, the FSAR refers to ANP-10279P for a discussion of certain items (e. g., roles and responsibilities of operators on page 18.5-2 of FSAR). These items will need to be addressed/described in some other fashion.
- b. FSAR Sec. 18.4 and 18.5 use the words "may" and "such as" which are not appropriate in a licensing document and lead to uncertainty regarding commitments
- c. There is no S&Q Implementation Plan (IP) and the AREVA RAI responses refer to the Task Analysis (TA) IP for S&Q analyses. The TA IP does describe staffing analyses in a number of places, but this use of the TA IP is not supported by the descriptions in FSAR Sec. 18.4 and 18.5. For example, Sec. 18.5, S&Q, does not refer to the TA IP. And Section 18.4, Task Analysis, does not mention S&Q in its objective section (18.4.1) nor in the TA results summary section (18.4.3).
- d. Section 18.5.3 states that "the S&Q analysis is summarized in conjunction with the V&V results (refer to Section 18.10)." However Section 18.10.3.7, Results, does not mention specifically a full S&Q analysis. And the AREVA RAI responses refer to TA not V&V for S&Q analyses.
- e. COL item 18.5-1 specifies that a COL applicant will confirm that actual staffing levels and qualifications remain bounded by regulatory requirements and results of the S&Q analyses. But it is not clear what results are referred to or where they are documented.

- f. The wording of Tier 1, ITAAC 5 in Table 3.4-1 on S&Q does not fully agree with the arrangement and sequence of analyses for staffing or with the TA IP. For example it states that “The S&Q analysis includes ..”, however based on the documents reviewed there does not seem to be a S&Q analysis per se. ITAAC 5 also states that “an analysis of the V&V activities driven by initial staffing assumptions for the U.S. EPR has been performed.” But per the TA IP the initial staffing assumptions are an input to the TA, which may modify them based on many other inputs. It is then the output staffing from the TA that feeds V&V, not the initial staffing assumptions. Further, ITAAC 5 refers to an “output summary report of the U.S. EPR staffing and qualifications.” It is not clear what report this is, since it is not mentioned in the FSAR or the TA IP, and there is no S&Q IP.
- g. NUREG-0711, Section 6.3 specifies that the applicant should provide an IP for S&Q analysis and upon completion a results summary report should be submitted. If the combination of the Initial Staffing Assumptions, the TA IP, and the results summary report of Section 5.0 of the TA IP are to serve this purpose for S&Q, that should be clearly stated and the TA IP clarified to accomplish it.

The overall Staffing & Qualification (S&Q) program is not clearly and consistently defined as note above. Please clarify the S&Q program and ensure a complete and consistent description in the various pertinent documents.

18-186

Sections 4.3 and 4.4 of the TA IP refer to the “the staffing and qualification assumptions.” The report “Initial Staffing Assumptions for the U.S. EPR” addresses staffing assumptions but does not appear to include qualification assumptions. The staff requests for the applicant to clarify where these are defined. In addition, please clarify where the final qualification determinations will be documented.

18-187

FSAR Section 18.5.1 states that the initial staffing assumption is based on predecessor designs. NUREG-0711, OER, states in part that S&Q analyses should address “initial staffing goals and their bases including staffing levels of predecessor systems and a description of significant similarities and differences between predecessor and current systems.” The staff requests for the applicant to specify where the analysis is documented that presents the predecessor differences and staff numbers, and then modifies them for the U.S. EPR. It does not appear to be discussed in the report “Initial Staffing Assumptions for the U.S. EPR” or in the OER sections on the TA IP.

In addition, the staff requests for the applicant to provide the document(s) that modify the predecessor differences and staff numbers and provides the U.S. EPR adjusted information. If this information is not available at this time, then please provide a timeframe for when it will be available for staff review.

18-188

NUREG-0711 Section 6.4(2) and Section 2.4.1(5) specify the scope of personnel that should be considered in staffing analyses. FSAR Section 18.5.1 identifies all of these except engineering

support personnel. The Initial Staffing Assumptions report, however, does not include numbers or assumptions regarding any group except the operations shift staff. The TA IP does not identify the scope/types of personnel that are included in the staffing analyses. The staff requests for the applicant to address the concerns raised above. If the information is not available at this time, then please provide a timeframe for when the information will be available for staff review.

18-189

NUREG-0711, Section 6.4(4), the Task Analysis bullet states in part that S&Q analyses should address “availability of personnel considering other activities that may be ongoing and for which operators may take on responsibilities outside the control room (e.g., fire brigade).” The TA IP does not appear to include this aspect of staffing analysis. The staff requests for the applicant to provide this information.

18-190

NUREG-0711, Section 6.4(4), the bullet related to Task Analysis, states in part that S&Q analyses should address “personnel communication and coordination, including interactions between them for diagnosis, planning, and control activities, and interactions between personnel for administrative, communications, and reporting activities.” Section 6.4(4), HSI design, states that S&Q analyses should address “coordinated actions between individuals.” And Section 6.4(4), the training program development bullet states in part that S&Q analyses should address “crew coordination concerns that are identified during the development of training.” The TA IP mentions communication briefly but does not appear to include the coordination aspects of staffing analysis. The staff requests for the applicant to provide this information for staff review.

18-191

NUREG-0711, Section 6.4(4), the Task Analysis bullet states in part that S&Q analyses should address “actions... and procedures to meet an initial accident response ...as identified in the emergency plan.” The TA IP does not appear to include the emergency plan aspects of staffing analysis. The staff requests for the applicant to provide this information for staff review.