ArevaEPRDCPEm Resource

From: WELLS Russell D (AREVA NP INC) [Russell.Wells@areva.com]
Sent: Thursday, December 17, 2009 6:35 PM
To: Tesfaye, Getachew
Cc: Pederson Ronda M (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 322, FSAR Ch 18
Attachments: RAI 322 Response US EPR DC.pdf

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 322 Response US EPR DC.pdf" provides technically correct and complete responses to 4 of the 6 questions.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 322 Questions 18-49 and 18-50.

The following table indicates the respective pages in the response document, "RAI 322 Response US EPR DC.pdf" that contain AREVA NP's responses to the subject questions

Question #	Start Page	End Page
RAI 322 — 18-47	2	3
RAI 322 — 18-48	4	4
RAI 322 — 18-49	5	5
RAI 322 — 18-50	6	6
RAI 322 — 18-51	7	7
RAI 322 — 18-52	8	8

A complete answer is not provided for 2 questions. The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 322 — 18-48	January 29, 2010
RAI 322 — 18-52	January 18, 2010

Sincerely,

(Russ Wells on behalf of)
Ronda Pederson
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From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Tuesday, November 17, 2009 3:58 PM
To: ZZ-DL-A-USEPR-DL
Cc: Keefe, Molly; Marble, Julie; Bongarra, James; Pieringer, Paul; Junge, Michael; Steckel, James; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 322 (3842), FSARCh. 18

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on October 22, 2009, and discussed with your staff on November 17, 2009. Draft RAI Question 18-40 was modified 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
NRO/DNRL/NARP
(301) 415-3361

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 1048

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Subject: Response to U.S. EPR Design Certification Application RAI No. 322, FSAR Ch 18
Sent Date: 12/17/2009 6:34:59 PM
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From: WELLS Russell D (AREVA NP INC)

Created By: Russell.Wells@areva.com

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RAI 322 Response US EPR DC.pdf	142758	

Options
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Return Notification: No
Reply Requested: No
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Expiration Date:
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Response to

Request for Additional Information No. 322 (3922, 3907), Revision 1

11/17/2009

U.S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 18 - Human Factors Engineering
Application Section: 18.11
Application Section: 18.2 Operating Experience Review

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

Question 18-47:

The Design Implementation Plan (document no. 118-9047891-001) Appendix A flow chart designates an HED that results from the Design Implementation process as a "Safety-Significant HED," yet in Section 3.5.1 of the Design Implementation Plan the term that is used is simply "HED." Please clarify whether the HEDs that are identified in Section 3.5.1 are the same as those in the flow chart.

Also regarding the Appendix A flow chart, it was difficult for the staff to determine the significance of the diagram and the parts within. For instance:

- Section 3.1 of the implementation plan states that the Appendix A diagram shows how the design inputs, V&V process and design implementation fit into the overall HFE design process. Where is the overall process in relation to what is shown?
- The gray boxes (that appear to be screenshots) on the left side of the diagram point to various aspects of the flow chart. It is difficult to determine if the information within the gray boxes signifies what's included in the flow diagram box it is pointing to or identifying, and whether what's described in the gray boxes are process documents, results documents, etc.
- The staff is unclear of the significance of the phases. Are the phases (Phases 1, 2, & 3) tied to both the gray boxes on the left and the flow chart?

In general, the staff requests that AREVA provide additional clarifying information giving a more detailed description of the relationship of design implementation to the EPR HFE process, and of the design implementation process itself.

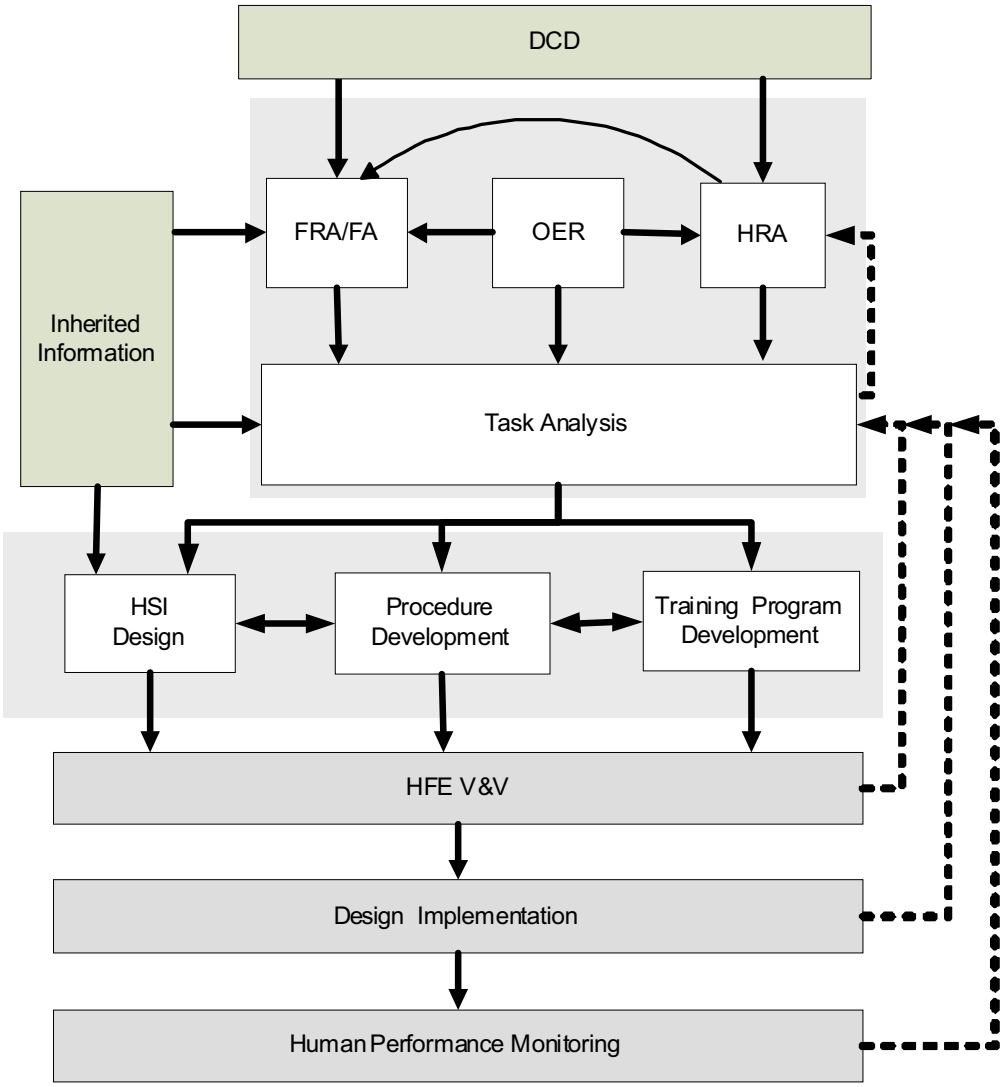
Response to Question 18-47:

The U.S. EPR Human Factors Engineering (HFE) Design Implementation Plan flowchart will be replaced with Figure 18-47-1 that is consistent with the other U.S. EPR HFE Implementation Plans and illustrates the location of the design implementation element in the overall HFE process.

The schedule for providing the revised U.S. EPR HFE Design Implementation Plan is provided below.

Document Number	Commitment Date
U.S. EPR HFE Design Implementation Plan #118-9047891-002	4/22/2010

Figure 18-47-1—Human Factors Engineering Design Implementation Plan



FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

Question 18-48:

One of the objectives for the staff in NUREG-0711 Section 12.2 and NUREG-0800 Chapter 18, for design implementation is to verify that "the applicant's as-built design conforms to the verified & validated design that resulted from the HFE design process." A critical part of the HFE design process is a complete implementation plan. The implementation plan should communicate the applicant's proposed methodology for meeting the acceptance criteria of the element.

The staff reviews the implementation plans to:

- Understand how the detailed methodology will be implemented
- Determine that the methodology can be reliably conducted by design personnel
- Be confident that the methodology will provide results that will be acceptable as evaluated by the relevant NUREG-0711 review criteria

The staff reviewed the submitted Design Implementation Plan (document no. 118-9047891-001), and discovered several ambiguous terms. In order for the staff to ensure that the EPR design implementation plan can be reliably conducted by design personnel, the staff requests clarification for the following:

1. In Section 3.3 of the Implementation Plan (first paragraph), AREVA states that for the aspects of the HFE design that cannot be verified by the Full Scope Simulator (FSS) these will be verified by "other" methods. Clarify what is meant by the term "other methods".
2. Section 3.3.1 of the Implementation plan, under the Responsible HFE Engineer category, in bullets 2 & 3, states "Using guidance from the V&V plan…". Clarify which aspect of the V&V plan this is in reference to.
3. Section 3.5.1, bullet point 4, provides guidance to the Responsible HFE Engineer to "Develop a list of the applicable design requirements from the SDRDs." Clarify what the term applicable means in this step of the process.
4. In Section 3.6.1 of the Implementation Plan, the first step has the responsible HFE engineer "Compile and provide the standard EPR procedures and training material, as well as the guidance for developing procedures and training." Clarify what the term guidance means in this step.

Response to Question 18-48:

A response to this question will be provided by January 29, 2010.

Question 18-49:

NUREG-0711, Section 12.4.6, Criterion (2) states that the final (as-built in the plant) HSIs should be compared with the detailed design description to verify that they conform to the design that resulted from the HFE design process and V&V activities. The criterion does not limit verification of the as-built HSIs to comparing the standard design *documentation* to the as-built *documentation*. HSIs should also be physically verified "in the plant."

After reviewing the implementation plan, in particular Section 3.5, the staff was unable to find guidance to conduct a physical verification of the final "as-built" MCR, panels and HSI design. Clarify if a physical verification of the MCR, panels and HSIs will be conducted along with a verification of the necessary documentation.

Response to Question 18-49:

A physical verification is conducted along with verification of the as-built documentation. The following step for physical verification will be added to the U.S. EPR HFE Design Implementation Plan:

> "Conduct a physical verification of all as-built HSIs including the control rooms and local control stations (LCSs) to verify that the design conforms to the design requirements and regulations. For any discrepancies identified, create an HED. Enter this into the HFE Issues Tracking System. Address and follow the same HED resolution process as outlined in Section 3.9.3.5 of Reference 4."

The schedule for the revision to the U.S. EPR HFE Design Implementation Plan is provided in the Response to Question 18-47.

Information regarding physical verification will also be added to U.S. EPR FSAR Tier 2, Section 18.11.2.2.

FSAR Impact:

U.S. EPR FSAR Tier 2, Section 18.11.2.2 will be revised as described in the response and indicated on the enclosed markup.

Question 18-50:

Section 18.11.3 of the EPR DCD states that "Verification that the plant-specific procedures and training are developed using that guidance and that they conform to the design resulting from the V&V effort is performed as described in Section 18.10." Clarify if the verification of the "as-built" procedures and training will be conducted via the Design Implementation Plan (document no. 118-9047891-001) process, or as described in Section 18.10 of the EPR DCD.

Response to Question 18-50:

U.S. EPR FSAR Tier 2, Section 18.11.3 will be revised as follows:

> "Verification that plant-specific procedures and training conform to the design resulting from the V&V effort (as described in Section 18.10) is conducted using the process described in the U.S. EPR HFE Design Implementation Plan."

FSAR Impact:

U.S. EPR FSAR Tier 2, Section 18.11.3 will be revised as described in the response and indicated on the enclosed markup.

Question 18-51:

Steps 2, 4, & 6 in Section 3.7.1 of the Design Implementation Plan (document no. 118-9047891-001) instruct the responsible HFE engineer to follow the process outlined in Section 8 of the V&V plan. The staff followed this reference but noticed that the V&V Implementation Plan does not have a Section 8. Clarify the reference in the Design Implementation Plan.

Response to Question 18-51:

References to Section 8 of the U.S. EPR Human Factors Verification and Validation (V&V) Implementation Plan in Section 3.7.1 of the U.S. EPR HFE Design Implementation Plan will be updated to reference the appropriate HED process section in the U.S. EPR Human Factors V&V Implementation Plan.

The schedule for the revision to the U.S. EPR HFE Design Implementation Plan is provided in the Response to Question 18-47.

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

Question 18-52:

Section 3.3 of NUREG-0711 states "The applicant should provide for staff review an implementation plan for conducting a review of operating experience."

AREVA NP has provided the NRC with an OER implementation plan; however, the implementation plan is not referenced in Revision 1 of the DCD.

Does AREVA plan to include this reference in future revisions of the DCD?

Response to Question 18-52:

AREVA NP intends to incorporate into U.S. EPR FSAR Tier 2, Chapter 18 the references to the U.S. EPR OER Implementation Plan and the other referenced HFE implementation plans. A complete response, including FSAR markups, will be provided by January 18, 2010.

U.S. EPR Final Safety Analysis Report Markups

described in Section ~~5.1~~4.4 of the ~~Human Factors Topical Report~~U.S. EPR HFE program mangement plan (Reference 2). Modifications made after the design has been verified must follow a design control process similar to that described in Reference 2 to maintain design documentation accuracy.

The HFE Issues Tracking Database is used throughout the process to capture, track, and address HEDs found during design implementation. Each HED follows the same resolution process as outlined for V&V (see Section 18.10). If an HED requires a design change, the AREVA NP design control process is used. When the design change has been implemented, verified, validated, and documented, the HED is closed. If an HED does not require a design change, the HED may be closed with sufficient documented evidence for that decision. HFE-related modifications by U.S. EPR owners after the design is complete are governed by a human performance monitoring (HPM) program similar to that described in Section 18.12.

18.11.2.1 Aspects of the Design Not Verified During the V&V Process

Design implementation addresses features of the design that are not verifiable using a full-scope simulator (e.g., control room lighting, communication systems, background noise levels, ventilation and climate control). Verification that these features conform to the design that resulted from the V&V process is confirmed by matching the design requirements to the actual as-built design documentation.

Other aspects that are not verified during V&V include customer-specific modifications made to the standard U.S. EPR design. These modifications are verified for conformance to the design that resulted from the V&V process. This is accomplished by comparing the HFE aspects of the modification documentation to the standard HFE design documentation.

18-49

18.11.2.2 Verification of the As-Built HSIs

A review and audit of the as-built documentation and a physical verification is performed to verify conformance of the as-built design to the standard design resulting from the V&V process. This verification confirms that the as-built documentation is current for the plant, that it conforms to the design requirements, and that it matches the design documentation.

18.11.3 Verification of the Plant-Specific Procedures and Training

18-50

AREVA NP supplies guidance for developing procedures and training. Verification that the plant-specific procedures and training are developed using that guidance and that they conform to the design resulting from the V&V effort ~~is performed~~ (as described in Section 18.10) is conducted using the process described in the U.S. EPR Human Factors Engineering Design Implementation Plan (Reference 5).