ArevaEPRDCPEm Resource

From: Tesfaye, Getachew
Sent: Friday, April 30, 2010 10:33 AM
To: 'usepr@areva.com'
Cc: Bongarra, James; Marble, Julie; Junge, Michael; Steckel, James; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 383 (4249), FSAR Ch. 18
Attachments: RAI_383_COLP_4249.doc

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on March 22, 2010, and discussed with your staff on April 26, 2010. No changes were 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,
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Hearing Identifier: AREVA_EPR_DC_RAIs
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Request for Additional Information No. 383 (4249), Revision 1

4/30/2010

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 18 - Human Factors Engineering
Application Section: 18.7
QUESTIONS for Operating Licensing and Human Performance Branch (AP1000/EPR Projects) (COLP)

18-162

General question related to AREVA minimum inventory descriptions:

AREVA's FSAR markup submitted as part of the response to RAI 240, sub-section 18.7.4.4, discusses the concept of minimum inventory of alarms, controls, and displays. The FSAR also includes lists of MI alarms, controls, and displays for the main control room and the remote shutdown workstation as Tables 18.7-1 and 18.7-2. The FSAR further indicates that the "US EPR Human System Interface Design Implementation Plan" (IP), Rev 002, sub-section 5.1.2.3 describes the methodology for "selecting the final minimum inventory." However, the IP only briefly acknowledges the minimum inventory and, in turn, references AREVA NP Document, "US EPR Main Control Room and Remote Shutdown Station Minimum Inventory" (NP document) as providing the methodology for selecting the minimum inventory (MI) of alarms, controls, and displays (ACDs). AREVA made the NP document available for staff audit.

Although AREVA states that the NP document provides the methodology for selecting the MCR and RSS MIs, staff review determined that the NP document does not provide a sufficient level of detail (i.e., descriptions comparable to implementation plans prepared for NUREG-0711 elements). For example, the descriptions contained in the FSAR, IP and NP document do not explain how the ACDs contained in the Tables 18.7-1 and 18.7-2 were actually derived; the alarms, controls, and displays merely "appear" in the Tables and have no correlation with a process used for their selection. The methodology should be detailed enough for the staff to understand the rationale for how and why particular parameters were selected and how and why a parameter was determined to be an ACD and, for individuals experienced in the needed technical disciplines to develop the MI to satisfactorily execute the plan.

While in section 3.0 of the NP document AREVA cites several sources (e.g., SECY 92-053, ISG-05, Rev.0, NUREG-0800) as regulatory bases and guidance for preparing the minimum inventory, the methodology description does not clearly explain how AREVA used these sources to prepare the minimum inventory for the MCR and RSS. Nor is it clear to the staff whether AREVA used an alternative approach (es) to prepare the MCR and RSS minimum inventories. In either case, AREVA should provide an implementation plan with sufficient level of detail for the staff to understand:

1) what source documents AREVA used as the basis for the methodology;
2) how AREVA used the source documents to prepare the methodology; and
3) how the methodology was used to prepare the MCR and RSS inventories contained in Tables 18.7-1 and 18.7-2. (This will allow for verification that the implementation plan methodology was used to develop the MCR and RSS minimum inventories.).

18-163

Detailed question related to AREVA minimum inventory description (note that these detailed questions represent examples of issues the staff has identified with the descriptions provided by AREVA and are not meant to be inclusive:

a) With respect to the FSAR markup submitted as part of the response to RAI 240, p.18.7-19, provide the definitions of: "readily accessible HSIs;" "credited set of alarms, controls, and displays needed to implement the plant emergency operating procedures;" "normal or preferred safety means;" and "Fixed alarms, controls, and displays".

b) In the FSAR markup submitted as part of the response to RAI 240, p.18.7-20, what is meant by, "The methodology for selecting the final minimum inventory is described in US EPR Human System Interface Design Implementation Plan"? Is the "methodology" contained in the NP document the same methodology used to develop the MCR and RSS MIs contained as Tables 18.7-1 and 18.7-2 in FSAR Revision 2-Interim or was a different methodology used to prepare the MIs contained in the tables? In addition, if the methodology proposed in the NP document is for selecting the "final minimum inventory," what do the MIs contained in Tables 18.7-1 and 18.7-2 represent. Are these MIs the same or different from the "final" MIs? If the MIs contained in the tables are different from the "final" MIs, please explain how and why they differ.

c) In the FSAR markup submitted as part of the response to RAI 240, p.18.7-20, please clarify the meaning of the sentence, "Thus, the minimum inventory is the portion of the SICS inventory credited for EOP actions to bring the plant to a safe condition or to carry out risk-important operator actions that readily accessible to the operators and does not need to be selected from a menu or screen hierarchy."

d) The FSAR markup submitted as part of the response to RAI 240, p.18.7-20, states, "The PICS is the primary non-safety-related HSI normally used for plant monitoring and control. Because the PICS is not credited for performance of safety-related functions, the minimum inventory includes alarms, displays, and controls that are required in addition to the PICS." IP sub-section 6.5.1 states that, "The PICS is primary system used to monitor and control the plant. Displays for the PICS are designed to provide operators the information and control capability required to safely monitor and control the plant during all modes of operation, including accidents." In addition, IP section 6.6, states that, "The U.S. EPR includes Conventional I&C (CNV I&C) in addition to the digital displays for monitoring and control. CNV I&C include items such as push buttons, switches, digital and analog meters, and illuminated indicators. These items are utilized for certain safety related functions that are required to shutdown the plant in the event of a PICS failure." Please clarify, is the MCR MI composed of only SICS alarms, controls, and displays (i.e., safety-related components) or are there/can there be PICS or CNV I&C alarms, controls, and displays that are included in the minimum inventory?

e) In the FSAR markup submitted as part of the response to RAI 240, p.18.7-21, two terms are used to describe the remote shutdown facility: remote shutdown workstation and RSS (remote shutdown station). Are they synonymous or different? Which is the correct term?

f) The FSAR markup submitted as part of the response to RAI 240, p.18.7-2, states that, "The minimum inventory of alarms, displays, and controls in the RSS meets criteria similar [emphasis added] to that in the MCR, but consists of only those functions necessary to attain safe shutdown following an MCR evacuation." Specifically, what criteria are used to develop the RSS MI? In addition, the NP document appears to identify one method applicable to both the MCR and the RSS MIs.

g) The NP document is referenced by the IP. However the NP document does not have an effective date. Please explain how this NP document is used as a primary reference without having an effective date.

h) In sub-section 3.3.4 of the NP document, AREVA provides an explanation of US EPR design changes. AREVA states that, largely, 1) the thermo hydraulic processes for the US EPR are similar to those of the predecessor, 4-loop PWR plants and that 2) change to the predecessor plant EPGs (emergency procedure guidelines) is minimal. AREVA further states that they use the system design descriptions contained in the US EPR FSAR to identify changes and that a “gap analysis” will be performed, focusing on those areas where the change identified affects safety-related functions and systems. To better understand this process, the staff requests further explanation of how and when the “gap analysis” is conducted and, at minimum, examples of results from the analysis to date.

18-164

Question related to minimum inventory ITAAC:

(a) The AREVA ITAAC for minimum inventory are contained as Entry 8 of the AREVA Tier 1, Table 3.4-1. “Commitment Wording” for this entry states, “The selection of the minimum inventory is performed in accordance with the HSI Design Implementation Plan.” However, the HSI IP and FSAR, Rev 2-Interim, do not contain a process for selecting/developing the minimum inventory. These documents merely reference AREVA NP document (118-9098995-000, Rev 0). The staff reviewed the NP document and determined that it did not provide an acceptable level of detail (see previous RAI 18.13.x.). The “Commitment Wording” for Entry 8 should be revised to identify the accurate source document(s) that will contain the methodology AREVA uses to develop the minimum inventory (and that the staff will subsequently evaluate).

(b) The “Acceptance Criteria” for Entry 8 does not identify that the summary report concludes that all MCR and RSS minimum inventory HSIs described in the AREVA EPR FSAR have been incorporated into the final inventory of HSIs. Revise the applicable criterion to address this discrepancy.

(c) The “Acceptance Criteria” does not indicate ITAAC will verify that the as-built MCR and RSF contain, as a minimum, the HSIs identified using the implementation plan methodology in the DC. Revise the applicable criterion to address this discrepancy.

(d) The “Acceptance Criteria” does not indicate that ITAAC will validate that the as-built MCR and RSF minimum inventories support operator performance of those EOP actions and PRA critical operator actions necessary to bring the reactor to a safe shutdown condition and maintain it in a safe shutdown condition. Revise the applicable criterion to address this discrepancy.