ArevaEPRDCPEm Resource

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Sent: Thursday, October 22, 2009 4:38 PM
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Subject: Draft - U.S. EPR Design Certification Application RAI No. 319 (3842), FSAR Ch. 18
Attachments: Draft RAI_319_COLP_3858.doc

Attached please find draft RAI No. 319 regarding your application for standard design certification of the U.S. EPR. If you have any question or need clarifications regarding this RAI, please let me know as soon as possible, I will have our technical Staff available to discuss them with you.

Please also review the RAI to ensure that we have not inadvertently included proprietary information. If there are any proprietary information, please let me know within the next ten days. If I do not hear from you within the next ten days, I will assume there are none and will make the draft RAI publicly available.

Thanks,
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Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 907

Mail Envelope Properties (0A64B42AAA8FD4418CE1EB5240A6FED1026ABCAF54)

Subject: Draft - U.S. EPR Design Certification Application RAI No. 319 (3842), FSAR Ch. 18
Sent Date: 10/22/2009 4:38:08 PM
Received Date: 10/22/2009 4:38:10 PM
From: Tesfaye, Getachew

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Files	**Size**	**Date & Time**
MESSAGE	722	10/22/2009 4:38:10 PM
Draft RAI_319_COLP_3858.doc	42490	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Draft

Request for Additional Information No. 319 (3858), Revision 0

10/22/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 18 - Human Factors Engineering
Application Section: 11, Verification and Validation

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

18-37

Information used as a basis a safety determination and for verifying implementation of NUREG-0711 criteria for the Human Factors Engineering Program must be docketed. As discussed in the 09/29/09 audit with AREVA, provide the latest revisions of the following documents for docketing:

1. AREVA NP Technical Document 117-9097806-000, "U.S. EPR Local Control Station Style Guide"
2. AREVA NP Technical Document 117-9041149-000, "U.S. EPR Human System Interface Design Guide”

18-38

Section 3.4 of NUREG-0711 Criterion 1 states:

The review should include information pertaining to the human factors issues related to the predecessor plant(s) or highly similar plants and plant systems.

Section 3.2.1 of the U.S. EPR Operating Experience Review (OER) implementation plan states that the U.S. EPR is an evolutionary PWR design based on years of operation and design experiences from the precursor plants. The applicant has identified this operational and design information as being based on the European N4 and Konovi plants which are based upon Westinghouse PWRs currently operating in the U.S. The U.S. EPR OER is based upon operating experience from highly similar plants and systems. Therefore, the applicant lists the following as applicable data sources: (1) N4 and Konovi; (2) highly similar PWR plants; (3) BWR plants using similar systems; and (4) plants’ corrective action programs (CAPs) and modernization programs related to the human factors engineering issues/challenges with other similar systems.

Define and provide examples for the following terms: "predecessor," "highly similar," and "precursor" as it relates to Criterion 1 of NUREG-0711.

18-39

Section 3.4.1 of NUREG-0711 Criterion 1 states that some useful information pertaining to operating experience review (OER) may be found in the plant's corrective action program (CAP).

Section 3.2.1 of the OER implementation plan says that one of the data sources utilized for the operating experience review is the plants' CAP.

Operating nuclear power plants may have multiple corrective action programs tracking all kinds of issues. Provide specific examples of the programs or tracking systems that will be used to collect the CAP data related to Section 3.4.1 of NUREG-0711 Criterion 1.

18-40

Section 3.4.1 of NUREG-0711 (criterion 3) states:
The OER should address related HFE technology. For example, if touch screen interfaces or computerized procedures are planned, HFE issues associated with their use should be reviewed.

Section 3.2.3 of the EPR OER implementation plan provides lists of non-nuclear industries to solicit for OER, as well as a listing of types of related HFE technology. This section also contains a listing of website databases from which OE in advanced HFE technology may be found.

More information is needed for this section of the implementation plan. Provide to the Staff a detailed methodology for collecting this information, including how the data collection will take place and the timeframe for the review and evaluation.

18-41

Section 3.4.1 of NUREG-0711 (criterion 3) states:

The OER should address related HFE technology. For example, if touch screen interfaces or computerized procedures are planned, HFE issues associated with their use should be reviewed.

Section 3.2.3.1 of the EPR OER implementation plan provides a list of related HFE technology to be used in the OER review, including "intelligent" computer based procedures.

Define and clarify what is meant by "intelligent" computer based procedures.

18-42

Section 3.4.1 of NUREG-0711, Criterion 4 states “Personnel interviews should be conducted to determine operating experience related to predecessor plants or systems.”

Section 3.2.4 of the EPR Operating Experience Review (OER) implementation plan describes the methodology for conducting the interviews for the operating experience review. Staff is aware that documents referenced and identified in the OER implementation plan, such as “Human Performance Characterization in Nuclear Events,” dated January 2007, may address some of this information. However, the staff inquires

how guidance from this and similar OER reference documents will be used to obtain the operating experience information.

In addition, according to Section 3.2.4 of the OER implementation plan, the applicant intends to obtain operator information on plant performance through interviews of plant operators. However, the processes for identification and sampling of operators, and the methods to obtain unbiased interview information, are unclear to the staff, based on the information presented in the implementation plan.

Provide the methods to be used for operator identification and sampling, and the manner in which interview questions will be developed, and interviews conducted.

18-43

Section 3.4.1 of NUREG-0711 criterion 4 states "Personnel interview should be conducted to determine operating experience related to predecessor plants or systems."

Section 3.2.4.2.1 of the EPR OER implementation plan states "For the station specific events such as transients and accidents, the [interview] questions cover items such as what personnel saw or believe they saw, what they understood at the time, the actions they took, why the actions were taken, what they missed to complete their action and why they needed it."

More information is needed in order to determine how and when these interviews will occur.

Provide more detailed information as to how AREVA intends to locate and establish contact with specific utilities and the personnel involved in the specific events. Also provide information as to the recency of the events to be evaluated.

18-44

Section 2.1 of the U.S. EPR Human Performance Monitoring Implementation Plan cites 10 CFR 50.64 as "Requirements for monitoring the effectiveness of maintenance at nuclear power plants."

This is an incorrect citation. 10 CFR 50.64 is actually "Limitations on the use of highly enriched uranium (HEU) in domestic non-power reactors."

Update the implementation plan to cite the correct regulation.

18-45

Section 3.4.1 of NUREG-0711 Criterion 5 states "The OER should identify risk-important HAs that have been identified as different or where errors have occurred. The human

actions should be identified as requiring special attention during the design review process to lessen their probability."

Section 3.2.5 of the OER implementation plan says that risk-important HAs are defined as actions that are performed by plant personnel that provide a reasonable assurance of safety.

Clarify what is meant by "risk-important HAs are defined as actions that are performed by plant personnel that provide a reasonable assurance of safety."

18-46

Section 3.4.2 of NUREG-0711 identifies 3 criteria for issue analysis, tracking and review. Analysis content states that issues should be analyzed with regard to the identification of:

- human performance issues, problems, and sources of human error
- design elements that support and enhance human performance.

Section 4.0 of the OER implementation plan says that once issues are entered into the tracking database, those related to human factors are assigned to a knowledgeable HFE engineer for evaluation.

Describe for staff the training the knowledgeable engineer receives to be qualified to conduct this evaluation. Also, identify any guidance that may be used for the evaluations.