ArevaEPRDCPEm Resource

From: Tesfaye, Getachew
Sent: Tuesday, August 10, 2010 2:13 PM
To: 'usepr@areva.com'
Cc: McNally, Richard; Dixon-Herrity, Jennifer; Li, Chang; Lee, Samuel; Strnisha, James; Terao, David; Miernicki, Michael; Patel, Jay; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: Draft - U.S. EPR Design Certification Application RAI No. 435 (4831,4981,4925), FSAR Ch. 3, OPEN ITEM
Attachments: Draft RAI_435_EMB2_4831_SBPB_4981_CIB1_4925.doc

Attached please find draft RAI No. 435 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,
Getachew Tesfaye
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Hearing Identifier: AREVA_EPR_DC_RAIs
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Request for Additional Information No. 435(4831, 4981, 4925), Revision 1

8/10/2010

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 03.02.02 - System Quality Group Classification
SRP Section: 03.04.01 - Internal Flood Protection for Onsite Equipment Failures
SRP Section: 03.11 - Environmental Qualification of Mechanical and Electrical Equipment

Application Section: 3.2.2

QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects) (EMB2)
QUESTIONS for Balance of Plant Branch 2 (ESBWR/ABWR) (SBPB)
QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects) (CIB1)

03.02.02-12

POTENTIAL OPEN ITEM
Follow-up to RAI 72, Question 03.02.02-1

General Design Criterion 1 identifies, in part, that structures systems and components important to safety shall be designed, fabricated, erected and tested to quality standards commensurate with the importance of the safety functions to be performed. Where generally recognized codes and standards are used, they shall be supplemented or modified as necessary to assure a quality product in keeping with the required safety function. FSAR Subsection 3.2, in combination with Subsection 3.1.1.1.1, identify that safety-related SSCs are designed to quality standards commensurate with their safety-functions, or to fail in a safe condition. GDC 1 actually applies to all important to safety SSCs and not only SSCs that are considered safety-related. As defined in 10 CFR 50 Appendix A, important to safety SSCs are those that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. In addition to the guidance provided in SRP 3.2 for classification, applicants complete a Probabilistic Risk Analysis (PRA) which identifies risk significant SSCs. In RAI 03.02.02-1, the applicant was requested to clarify in FSAR Subsections 3.2 and 3.1.1.1.1 how GDC 1 is satisfied relative to SSCs that are not identified as safety-related, but are considered important to safety or risk significant by the PRA such that augmented quality requirements (e.g.; NS-AQ), such as the non-safety -related fire protection system or any SSC that is classified as Seismic Category II, should be considered. Our intent is to understand that, based on a comprehensive classification methodology, that a process is in place to satisfy GDC 1.

The RAI response stated that the FSAR will not be changed and referenced the response to RAI 03.02.01-1 concerning GDC 2 and seismic classification of important to safety SSCs that are not considered safety-related. The response to RAI 03.02.01-1 goes into great detail on the definition of words in the regulations and why the applicant does not have to address the staff concern. However, in this case, the intent of the

request for additional information is to understand the methodology used to determine that all SSCs are appropriately classified for safety and quality group, and to ensure that methodology is documented in the FSAR. The response does not adequately address the request in regard to compliance with GDC 1 for non-safety-related SSCs that are important to safety. Specifically, there should be a process in place to assure that those risk-significant non-safety-related SSCs have appropriate special treatment, such as a QA program and appropriate design considerations, to ensure reliability consistent with their safety function, the D-RAP and reliability assumed in the PRA. For example, the process to apply the NS-AQ supplemented safety classification to certain SSCs should be explained so that GDC 1 is satisfied for all important to safety SSCs and not just those specifically designated as safety-related. Explain in the FSAR how this consideration is accomplished and/or provide a pointer in the FSAR to the sections where this methodology is considered if the process is already described.

03.04.01-14

OPEN ITEM

Follow-up to Open Item RAI 377, Question 03.04.01-13

In the response to the Open Item RAI 377 Question 03.04.01-13, the applicant established a COL information item to address the maintenance program of watertight doors as described below:

> "A COL applicant that references the U.S. EPR design certification will include in its maintenance program appropriate watertight door preventive maintenance in accordance with manufacturer recommendations so that each Safeguards Building watertight door above elevation +0 feet remains capable of performing its intended function."

The applicant was requested in a teleconference of July 21, 2010 to justify the maintenance program for watertight doors being limited to the "Safeguards Building" only, rather than all the buildings that contain safety-related SSCs. The applicant indicated in the call that divisional building design can be used to justify such that watertight doors are not relied upon for the flood protection with the exception of safeguards building and fuel building.
The staff notes the following inconsistencies and concerns:

- The fuel building is not included in the COL item.
- The reactor building and containment, and annulus building do not have divisional building design.
- The water from external flooding common water source could enter into the watertight doors of multiple divisions even with the divisional building design. The divisional building design might not be an adequate justification for limiting the maintenance program to the safeguards building and fuel building.

The applicant is requested to revise or justify the COL item described above, addressing these inconsistencies and concerns.

03.11-37

Potential OPEN ITEM

In response to RAI 326, Question 3.11-24, dated March 18, 2010, the applicant stated in Section 3.11.2.2 that environmental qualification of mechanical equipment located in harsh environments shall be demonstrated by appropriate testing and analyses. In response to RAI

96, Question 3.11-4, dated September 16, 2009, the applicant stated in Section 3.11.2.2.5 that during the procurement process, environmental effects of non-metallic components of safety-related mechanical equipment located in harsh environment areas are evaluated using one of the following methods: experience data, analysis, or testing. NRC staff does not consider these proposed FSAR sections to adequately describe the qualification methodology for nonmetallic parts in mechanical components in harsh environments. In Regulatory Guide 1.100, Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plant," NRC endorses ASME QME-1-2007 including Appendix QR-B, "Guide for Qualification of Nonmetallic Parts." Appendix QR-B describes a staff approved methodology for qualification of nonmetallic parts. NRC requests AREVA to discuss the extent to which it plans to meet ASME QME-1-2007, Appendix QR-B for the qualification of nonmetallic parts in mechanical equipment in the applicable 3.11 sections of the FSAR or explain how its methods provides an acceptable alternative to ASME QME-1-2007.

03.11-38

Potential OPEN ITEM

Tier 2, Section 3.11 of U.S. EPR FSAR describes the environmental qualification (EQ) of electrical and mechanical equipment for the U.S. EPR reactor design. The EQ program consists of two phases: initial equipment qualification and maintaining equipment qualification during the operational life of the plant. The U.S. EPR FSAR does not clearly describe these two phases of the operational EQ program. As discussed in Regulatory Guide 1.206 and Commission Paper SECY-05-0197, COL applicants must fully describe their operational programs to avoid the need for ITAAC regarding those programs.

Therefore, the NRC staff requests that AREVA address the operational aspects of the EQ program in Tier 2, Section 3.11.2.2.6, "Maintaining Mechanical Equipment Qualification," of the U.S. EPR FSAR. For example, the U.S. EPR FSAR should indicate that the EQ operational programs for maintaining equipment qualification during the operational life of the plant will include the following aspects: (1) evaluation of EQ results for design life to establish activities to support continued EQ; (2) determination of surveillance and preventive maintenance activities based on EQ results; (3) consideration of EQ maintenance recommendations from equipment vendors; (4) evaluation of operating experience in developing surveillance and preventive maintenance activities for specific equipment; (5) development of plant procedures that specify individual equipment identification, appropriate references, installation requirements, surveillance and maintenance requirements, post-maintenance testing requirements, condition monitoring requirements, replacement part identification, and applicable design changes and modifications; (6) development of plant procedures for reviewing equipment performance and EQ operational activities, and for trending the results to incorporate lessons learned through appropriate modifications to the EQ operational program; and (7) development of plant procedures for the control and maintenance of EQ records.

The EQ operational program should also discuss development of EQ Master Equipment List (EQMEL). The EQMEL identifies the electrical and mechanical equipment or components that must be environmentally qualified for use in a harsh environment. The EQMEL should include the length of time for which the function of each mechanical component is required since this information was not identified in the FSAR. The EQMEL should be developed from the equipment list provided in FSAR Tables 3.10-1 and 3.11-1. The EQMEL and a summary of equipment qualification results are maintained as part of the equipment qualification file as auditable records for the operational life of the plant.