ArevaEPRDCPEm Resource

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Sent: Thursday, June 18, 2009 6:13 PM
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Subject: Draft - U.S. EPR Design Certification Application RAI No. 249 (2968), FSAR Ch. 3
Attachments: Draft RAI_249_EEB_2968.doc

Attached please find draft RAI No. 249 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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Request for Additional Information No. 249 (2968), Revision 0

6/18/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 03.11 - Environmental Qualification of Mechanical and Electrical Equipment
Application Section: 3.11

QUESTIONS for Electrical Engineering Branch (EEB)

03.11-5

ITAAC commitment 6.1 and 6.2 wording in U.S. EPR Tier 1 ITAAC tables in Sections 2.2, 2.3, 2.4, 2.6, 2.7, 2.8 and 3.5, pertinent to EQ testing, states that equipment located in a harsh environment is required to be functional "before and during design basis accidents," while 10 CFR 50.49 (b1)(1)(i) requires the equipment to remain functional "during and following design basis events." Justify the difference in terminology used between the ITAAC (before and during), and 10 CFR 50.49 (during and after), or make the appropriate changes to the above ITAAC tables.

03.11-6

In IEEE Std 323-1974, margin is included in the design basis event environmental qualification test profile twice (2 test transients). Discuss how margin was applied for the U.S. EPR (Table 3D-3) for the EQ test profiles and provide justification.

03.11-7

In Section 3.11 of the U.S. EPR FSAR, Regulatory Guide 1.180 is referenced but it is not listed in the Reference Section (3.11.7). In addition, other relevant regulatory guides are discussed in Section 3.11 and are not listed in the Reference Section. The omissions in the Reference Section need to be corrected.

03.11-8

The U.S. EPR FSAR states that certain NUREG-0588 Category guidance was used to enhance the guidance provided in RG 1.89. Identify the elements of NUREG-0588, Category 1 that were used to enhance the EQ Program.

03.11-9

The equipment qualification program must consider the elements of temperature, pressure, humidity, chemical effects, radiation, aging, submergence, synergistic effects,

and margin. Justify why U.S. EPR FSAR Section 3.11 does not contain any discussion of synergistic effects for electrical, mechanical, and I&C equipment.

03.11-10

The U.S. EPR equipment screened for qualification are located in three areas: (1) reactor, safeguards, and fuel buildings in the Nuclear Island (NI), (2) switchgear and turbine buildings in the Turbine Island (TI), and (3) the balance of plant. Provide a discussion of equipment screened for qualification in the 30UJA (containment building) and 32 & 33UJK (electrical areas of safeguards buildings) locations listed in the FSAR.

03.11-11

Table 3D-8 (Bounding Normal EQ Radiation Dose) indicates that these values were determined based on 60 years of continuous operation and steady state operating conditions, and take into account radiation exposure. Identify what the qualified life is of the electrical and I&C equipment discussed in section 3.11.

03.11-12

Page 3.11-19 of the U.S. EPR FSAR states that applicable chemical environments are defined in Tables 3D-1, 3D-4, and 3D-7 for normal and abnormal operating conditions. Since Table 3D-7 does not identify any chemical environments, explain how the table addresses chemical environments present during normal operating conditions. Provide a discussion why chemical spray is not required for the U.S. EPR design and, the equipment qualification impact of the SAHRS system that is used for chemical environments to prevent pressure and temperature within the containment from exceeding design limits. Based on the above, discuss how the U.S. EPR EQ program considers and addresses the chemical effects resulting from the most limiting mode of plant operation.

03.11-13

U.S.EPR FSAR Section 3.11.5.3 (Radiation Environments) references Section 3D.5.51 for a specific dose calculation. Correct the section referenced to read 3D.5.5.1.

03.11-14

Follow-up to RAI Question 06.02.01-14

Figures 3D-1 and 3D-2 of Appendix 3D of Section 3.11 of US EPR FSAR provides EQ curves for combined LOCA/SLB inside containment temperature and pressure envelopes. If the re-calculation, prescribed by the staff (RAI 06.02.01-14) that uses a multi-node containment model, shows significant changes, confirm whether those temperature and pressure curves on Figure 3D-1 and 2 will be revised. Discuss what the result of new calculation will have on the EQ program.