ArevaEPRDCPEm Resource

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Sent: Friday, September 11, 2009 9:51 AM
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Subject: Draft - U.S. EPR Design Certification Application RAI No. 293 (3713), FSAR Ch. 16
Attachments: Draft RAI_293_CTSB_3713.doc

Attached please find draft RAI No. 293 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. 293 (3713), Revision 0

9/11/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 16 - Technical Specifications
Application Section: TS 3.4

QUESTIONS for Technical Specification Branch (CTSB)

16-294

POTENTIAL OPEN ITEM

Follow-up to Question 16-54.

The EPR GTS, Section 3.4.1, contains limits for RCS departure from nucleate boiling (DNB). Section 3.4.1 of EPR GTS models the DNB limits in the Westinghouse STS. During its review, however, the staff noted that the applicant did not include an RCS flow limit as part of LCO 3.4.1. In the Westinghouse STS, an numerical flow limit which is based on the maximum allowable steam generator (SG) tube plugging is listed in addition to the flow limit specified in the core operating limits report (COLR). Justify not including this flow limit in the EPR GTS. In RAI 16-54, the applicant was asked to justify not specifying the minimum thermal design flow of 119692 gpm in LCO 3.4.1. This minimum flow is listed as an initial condition for design basis accident analyses in EPR FSAR subsection 15.0.0.3.1. In its response letter dated March 12, 2009, the applicant stated that since the SG tube plugging limit is provided in the STS as a bracketed value, it selects not to include the flow of 119692 gpm in the EPR GTS. The staff finds this answer inadequate. In the GTS bases, the applicant needs to state that the RCS flow limit specified in the COLR is at least equal or more restrictive than the SG tube plugging limit before the staff can determine the adequacy of LCO 3.4.1 requirements.

16-295

POTENTIAL OPEN ITEM

Follow-up to Question 16-77

The EPR GTS, Section 3.4.6 and Section 3.4.7 contain operability requirements for RCS Loops - MODE 4 and MODE 5 with loops filled, respectively. Sections 3.4.6 and 3.4.7 of the EPR GTS model the RCS Loops, in MODE 4 and MODE 5 with loops filled, operability requirements in the Westinghouse STS. As part of its review, however, the staff noted that the applicant omitted a precautionary “Note” regarding low temperature overpressure protection (LTOP) before starting an idle reactor coolant pump (RCP). In RAI 16-77, the applicant was asked to clarify on this omission. In its response letter dated March 12, 2009, the applicant proposed to revise GTS 3.4.6 and its associated bases to include this "Note" in LCO 3.4.6. In reviewing this response, the staff believes

the same Note should also be placed in LCO 3.4.7, since during planned heatup to Mode 4, at least one RCS loop can be placed in operation.

16-296

POTENTIAL OPEN ITEM

Follow-up to Question 16-64.

In RAI 16-64, the applicant was asked to provide a discussion in the Bases 3.4.6 on Required Action A.2 and its associated completion time of 24 hours. In its response letter dated December 12, 2008, the applicant proposed to revise the EPR GTS and its associated bases to add the requested information. In reviewing this response, the staff noted that the proposed changes to the description of Condition A and Required Action A.1 are in conflict with the discussion provided for Required Actions A.1 and A.2 in the bases.

16-297

POTENTIAL OPEN ITEM

Follow-up to Question 16-79

The EPR GTS, Section 3.4.9, contains operability requirements for the pressurizer. The EPR GTS 3.4.9 models similar operability requirements in the Westinghouse STS. During its review, the staff noted that the discussion on capacities of emergency powered heaters in the bases is not clear. In RAI 16-79, the applicant was asked to clarify on the designed capacity of these heaters. In its response letter dated March 12, 2009, the applicant provided the needed information including revising the bases to incorporate clarifying details. The staff finds the response acceptable, however noted an editorial error that needed to be corrected.

16-298

[Intentionally Deleted.]

16-299

POTENTIAL OPEN ITEM

Follow-up to Question 16-68

The EPR GTS, Section 3.4.11, contains operability requirements for the low temperature overpressure protection (LTOP) system. The EPR GTS 3.4.11 models similar operability requirements in the Westinghouse STS. During its review, the staff noted incomplete information provided in the TS bases and relevant information in the FSAR Subsection 5.2.2. In RAI 16-68, the applicant was asked to address the missing details. In its response letter dated April 9, 2009, the applicant provided the requested details including revising affected areas in both EPR FSAR and the GTS Bases to complete the missing details. In reviewing this response, the staff, however, noted that the applicant

also proposed to remove a discussion of single failure criteria applicable to the required number of PSRVs which appears to be relevant and consistent with approach discussed in the Westinghouse STS. The applicant is requested to provide further explanation on this information removal.

16-300

POTENTIAL OPEN ITEM

Follow-up to Question 16-69

In RAI 16-69, the staff questioned the completeness of actions to resolve the MHSI miniflow line problem which causes entry into Condition A of LCO 3.4.11. In its response letter dated March 12, 2009, the applicant proposed to revise Condition C to close the action loop. The staff reviewed the proposed change and noted that the alternate Required Action C.2 is effective only for the accumulators, not for the MHSI pumps. The applicant should consider a change to Condition F to resolve this issue.

16-301

POTENTIAL OPEN ITEM

Follow-up to Question 5.4.2.2-3

The EPR GTS, Section 3.4.12, contains RCS operational leakage limits. The EPR GTS 3.4.12 models similar operability requirements in the Westinghouse STS. During its review, the staff noted that the applicant has adopted the NRC approved TSTF-449, Steam Generator Tube Integrity, Revision 4, in EPR GTS 3.4.12, 3.4.16 and 5.5.8, however, TSTF-449 requirements were not properly incorporated in LCO 3.4.12.d and TS 5.5.8. In RAIs 5.4.2.2-3 and 5.4.2.2-9, the applicant was asked to address these discrepancies. In its response letter dated November 14, 2008, the applicant proposed to revise LCO 3.4.12.d, TS 5.5.8 and the affected supporting information in the GTS Bases to resolve these discrepancies. The staff reviewed Revision 1 of the EPR FSAR and found that required changes were incorporated in LCO 3.4.12.d and TS 5.5.8, but conforming changes (8 places) were not accordingly made in the GTS bases (B 3.4.12 and B 3.4.16).

16-302

POTENTIAL OPEN ITEM

Follow-up to Question 16-81

The EPR GTS, Section 3.4.15, contains RCS Dose Equivalent I-131 and Dose Equivalent XE 133 limits. Section 3.4.15 of the EPR GTS models similar limits in the Westinghouse STS. As part of its review, however, the staff noted that the GTS Bases contain information that was different from the information contained in the NRC approved TSTF-490, Revision 0. In RAI 16-81, the applicant was asked to address these differences. In its response letter dated December 18, 2008, the applicant adequately provided the basis for the specified requirements including revising the EPR

GTS Bases to include clarifying details. The staff finds the stated response acceptable, however, editorial errors still exist in the GTS bases that need to be corrected.

16-303

POTENTIAL OPEN ITEM

Follow-up to Question 16-62

In RAI 16-62, the applicant was asked to provide justification for the as-found tolerance of 3% for the setpoint setting of MSSVs. This 3% value is not consistent with requirements of ASME Code, Section III, NC 7000 which is listed as a reference in the EPR GTS Bases B 3.7.1. ASME Code Subsection NC 7512 requires a tolerance of 1% unless a greater tolerance is established as permissible in the Overpressure Protection Report per NC 7200.

In its response letter dated December 12, 2008, the applicant reiterated a discussion of SR 3.7.1.1 in the GTS Bases 3.7.1 which states "The SR allows a +/- 3% setpoint tolerance for OPERABILITY; however, the valves are reset to +/- 1% during the surveillance to allow for drift. The lift settings correspond to ambient conditions of the valve at nominal operating temperature and pressure," and concluded that "The ASME Code requirement is met provided the +/- 1% tolerance is met during pre-service and in-service testing." The staff disagreed with this conclusion.

In the Westinghouse STS, as discussed in the bases of LCO 3.4.6 for the pressurizer safety valves and of LCO 3.7.1 for the main steam safety valves, ASME Code requirements apply to the setpoint tolerance for OPERABILITY. Further, in the Westinghouse STS, the 3% value is bracketed as preliminary and subject to additional conformance of referenced ASME Code requirements (e.g. If the 3% value is selected for use it should be addressed in the applicable Overpressure Protection Report).

16-304

POTENTIAL OPEN ITEM

Follow-up to Question 16-90

In RAI 16-90, the applicant was asked to address an inconsistency between requirements of ASME Code, Section III, Article NC-7512.1 and relevant information provided in FSAR Table 15.2-1 regarding the MSSV rated litf capacity.

In its response letter dated December 12, 2008, the applicant stated "the flow area of the main steam safety valves is calculated based on rated flow rate being achieved when system pressure is equal to nominal setpoint pressure, plus 3% accumulation. The MSSV setpoint pressure used in the safety evaluation is calculated as the nominal setpoint pressure, plus 3% setpoint uncertainty (to account for drift). Since accumulation and uncertainty have the same value of 3%, rated flow will be achieved at the initial valve opening." The applicant also indicated that no change to the EPR FSAR is needed.

The staff finds the above response unacceptable in that combining an one-sided + 3% accumulation with a two-sided +/- 3% setpoint uncertainty can result in a total of + 6% difference from the nominal setpoint value. The rated lift capacity assumed in the accident analysis should be at the upper limit of the combined tolerance (e.g., at the RCS pressure of 1608.7 psia instead 1518.5 psia for the first MSSV).

16-305

POTENTIAL OPEN ITEM

Follow-up to Question 16-291

The EPR GTS, Sections 3.7.8, combines operability requirements for both the ESW System (ESWS) and the Ultimate Heat Sink (UHS). The staff noted that, in the Westinghouse STS, separate sections are provided for the ESWS and the UHS since their respective design and operating characteristics are completely different (e.g., the UHS contains a common system parameter that affects all four ESW redundant trains). In RAI 16-291, the applicant was asked to justify this change from the STS format and content. In its response letter dated March 26, 2009, the applicant proposed to revise the EPR GTS to reflect separate sections for these two systems (TS 3.7.8 for the ESWS and TS 3.7.19 for the UHS). The staff finds this response acceptable, however editorial errors still exist that need to be corrected (e.g., a discussion of the two Notes in the action statements was deleted in error, a SR to verify automatic operation of UHS valves is missing, etc.).

16-306

POTENTIAL OPEN ITEM

Follow-up to Question 16-121

The EPR GTS Section 3.7.9 includes operability requirements for the safety chilled water (SCW) system. The Westinghouse STS does not have a separate TS LCO for a safety chilled water system. In RAI 16-121, the applicant was asked to provide further explanation on a Note that requires entering only LCO 3.4.6 action statements for RHR loops made inoperable by SCW system. In the EPR FSAR Subsection 9.2.8, the SCW system is shown to provide cooling loads not only to the Low Head Safety Injection/Residual Heat Removal (LHSI/RHR) pumps bearing coolers, but the Control Room Air Conditioning units and the Safeguard Building Ventilation Units for Electrical Divisions. In its response letter dated December 12, 2008, the applicant stated the reason for that Note is the longer completion time allowed for an inoperable SCWS train in LCO 3.7.9 when compared to that allowed for the affected RHR loop in LCO 3.4.6. The staff finds this response acceptable, however, a discussion of this Note and the reason for not to enter other LCOs 3.5.2, 3.7.11 and 3.7.13 should have been provided in the TS bases 3.7.9. Also, considering a longer completion time allowed for an inoperable CCW system train in LCO 3.7.7 when compared to that allowed for the affected SCW system train in LCO 3.7.9, the staff believes a similar Note in GTS Section 3.7.7 for the CCW system should be revised to include LCO 3.7.9 in addition to LCO 3.4.6.

16-307

POTENTIAL OPEN ITEM

Follow-up to Question 16-93

Section 3.5.2 of the EPR GTS contains operability requirements for the ECCS. Section 3.5.2 of the EPR GTS is modeled after the ECCS operability requirements in the Westinghouse STS. Due to the increased level of train redundancy (e.g., four trains in the EPR design versus two trains in the Westinghouse design, it is not clear to the staff that the LCO conditions as specified are equivalent to those provided in the Westinghouse STS. In RAI 16-93, the applicant was asked to provide further clarifications on LCO 3.5.2 conditions. In its response letter December 12, 2008, the applicant provided the requested information including revising Condition C and various supporting information in the bases to include the clarifying details. In reviewing this response, the staff noted that the revised discussion in the bases on Actions B.1 , B.2 and C.1 is incomplete.

16-308

POTENTIAL OPEN ITEM

Follow-up to Question 16-292

In responding to RAI 142(1623)/19-269 regarding the use of Criteria 4 of 10 CFR 50.36 (c)(ii) for establishing LCO requirements in the EPR GTS, the applicant proposed three new LCOs 3.5.6, 3.5.7 and 3.5.8. These new LCOs establish controls for operation of MHSI pumps which are automatically actuated in the event of a loss of RCS inventory during Mid-Loop operation. The staff reviewed these new LCOs and, in RAI 207(2453)/16-292, requested further clarifications from the applicant regarding effectiveness of various specified actions for the described conditions in these new TSs and completeness of supporting information provided in the respective bases. In its responses letters, dated May 8, 2009 and July 5, 2009, the applicant provided the requested information including revising the EPR GTS and Bases to capture the new details. The staff finds the response acceptable, however, the proposed changes still contain editorial errors that need to be corrected.

16-309

POTENTIAL OPEN ITEM

Follow-up to Question 16-116

Section 3.6.3 of the EPR GTS contains operability requirements for Containment isolation valves. Section 3.6.6 of the EPR GTS is modeled after similar operability requirements in the Westinghouse STS. During its review, the staff noted differences between the EPR GTS and the Westinghouse STS regarding requirements for Containment purge valves. In RAI 16-116, the applicant was asked to provide clarification on these differences. In its response letter dated December 12, 2009, the

applicant provided the requested information including revising TS 3.6.3 and its associated bases to resolve these differences. The staff finds the response acceptable, however, a conforming change to the Condition D description should also have been made.