ArevaEPRDCPEm Resource

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Sent: Wednesday, October 21, 2009 6:37 PM
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Subject: Draft - U.S. EPR Design Certification Application RAI No. 316 (3851), FSAR Ch. 4
Attachments: Draft RAI_316_SRSB_3851.doc

Attached please find draft RAI No. 316 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. 316 (3851), Revision 0

10/21/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 04.06 - Functional Design of Control Rod Drive System
Application Section: 04.06

QUESTIONS for Reactor System, Nuclear Performance and Code Review (SRSB)

04.06-11

POTENTIAL OPEN ITEM

This is a follow-up RAI to Question 04.06-9, which stated that ”The mechanical adequacy Section 4.6.3 refers to Section 3.9.4.4 where it is stated that to confirm the mechanical adequacy of the CRDS, a prototype testing program was created”. According to Section 3.9.4.4, this program comprises performance tests, stability tests and endurance tests. No reference to the results of this test program is given, and it is not clear from Section 3.9.4.4 how the status and results of this test program support Section 4.6 and other sections of the FSAR. The tests are reported to verify the performance of the equipment under a broad range of conditions. However, the range and conditions are not specified. In response to RAI 95, question 03.09.04-1b, the applicant describes two tests that have been completed for the U.S. EPR design, but does not provide a reference to a report or documentation of the type of tests and test results. In addition, the response to RAI 95, question 03.09.04-1b states that testing is currently underway but does not describe tests that are currently in progress.

Provide the results and status of the CRDS prototype testing program and the range of environmental conditions that support the FSAR. This information is necessary to evaluate the performance of the CRDS to ensure an extremely high probability of accomplishing their safety functions in accordance with GDC 29.

The Response to Question 04.06-9 was given as “Testing related to the environmental conditions for the control rod drive system has been completed. The test results are available for NRC inspection.”

Provide a discussion of each test of the testing program and a reference to the tests.

04.06-12

POTENTIAL OPEN ITEM

The analog position indication system is the only safety-related measurement in the CRDS. Section 4.6.2 states that failure of the analog rod position indicators to operate properly would not prevent the RCCAs from inserting into the core or resulting in

inadvertent withdrawal from the core. Being the only safety-related measurement, the analog position indicator failure would be worthwhile to consider in the safety analysis. In the safety analysis in Section 15.4 of the FSAR, this assumption was not found to have been considered in connection with any of the analysis presented.

Provide a discussion of the analog position indication system in regard to DCD Section 15.4 and rationalization for not including it the analysis.

The Compliance to the Single Failure Criterion of the Reactor Trip system is discussed in Section 7.2.2.3.1 of the FSAR and in the Table 7.2.2 FMEA Summary for Reactor Trip, which concluded that the protection system maintains the ability to perform the reactor trip function in the presence of any credible single failure of an input sensor, functional unit of the protection system, or reactor trip device. Table 7.2.2 includes as one failure type single failure of sensor-RCCA position measurement. However, it is unclear if the failure of the safety-related analog position measurement or the non-safety-related digital position measurement failure has been considered.

Provide additional information of the analog position indication system in respect to Table 7.2.2 FMEA and clarify which measurement system is referred to in the table.