ArevaEPRDCPEm Resource

From: Tesfaye, Getachew
Sent: Friday, June 05, 2009 7:39 PM
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Cc: Reddy, Devender; Bloom, Steven; Segala, John; Hearn, Peter; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: Draft - U.S. EPR Design Certification Application RAI No. 243 (2991), FSAR Ch. 10
Attachments: Draft RAI_243_SBPA_2991.doc

Attached please find draft RAI No. 243 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: 555

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Request for Additional Information No. 243 (2991), Revision 0

6/5/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 10.02 - Turbine Generator
Application Section: 10.2 - Turbine Generator

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

10.02-6

Follow Up RAI to EPR RAI 10.2-1

Item 1.A of the "SRP Acceptance criteria," in Section II, "Acceptance Criteria" of SRP Section 10.2, "Turbine Generator," states that the turbine generator (TG) overspeed protection system should meet single failure criterion and should be testable when the turbine is in operation. Also, Item 1 of Section III, "Review Procedures" of the SRP Section 10.2, describes that the reviewer confirms that the applicant has provided sufficient information, including the piping and instrumentation diagrams and other details to support staff's conclusions of the review. Further, Item 2.A of the SRP review procedure states that the reviewer verifies the adequacy of the TG control and overspeed protection system and determines that a single failure of any component or subsystem will preclude an unsafe turbine overspeed. Therefore, in U.S. EPR RAI 10.2-1 (Question RAI 91-10.2-1), the NRC staff requested the applicant (AREVA) to provide schematic and logic diagrams of all input signals to the triple processors and all outputs from the triple processors, so that the staff can verify fault-tolerant features that are described in EPR DCD FSAR Tier 2 Section 10.2.2.5. The staff also requested that AREVA to show all inter-channel signal paths between processors and to state whether signal paths are unidirectional or bi-directional. The staff further requested the applicant to provide the following clarifications, as they relate to the EPR TG control systems:

a. Define the term "fault-tolerant" as it relates to the "Single Failure Criterion."

b. Describe the method for meeting the single failure criteria for the TG control systems. If not, describe AREVA's plan on meeting this criterion.

The applicant responded to RAI 10.2-1 in RAI Response No. 91, Supplement 2 dated January 7, 2009, and stated that the Combined License (COL) applicant must select a TG design which is bounded by the requirements specified in the U.S. EPR FSAR and that such TG designs are commercially available. Schematic and logic diagrams showing the input and output signals for the triple processors are dependent on the TG selected for procurement by the COL applicant; and thus, were not provided in the response. Further, each COL applicant must demonstrate that the as-procured turbine performs within the bounding specifications or provide justification for the departure. With respect to the requested clarifications, the applicant defined fault tolerant and

stated that the single failure criteria for these system is not applicable due to their non-safety related nature.

However, AREVA did not identify any COL information item in FSAR Tier 2 Table 1.8-2, "U.S. EPR Combined License Information Items," in order for the COL applicants to provide such information as schematics. Regarding TG system classification, the staff acknowledges that TG system is classified as a nonsafety-related system, and also the staff recognizes that the guidance/requirements provided in RG 1.52 and 1.53 and IEEE Standard 379-2000 do not explicitly apply to the single-failure criterion of the TG control system. However, to meet the requirements of GDC 4 and the SRP Acceptance criteria as stated earlier, the TG control and overspeed protection systems should meet the single failure criterion and should be testable when the turbine is in operation.

Therefore, the staff requests AREVA to provide the following additional information:

1) Identify a COL information item in the FSAR of the U.S. EPR DCD, to enable the COL applicants that use the EPR TG design, for providing the schematics and logic diagrams that were requested in the above U.S. EPR - RAI 10.2-1.

2) Address adequately with full justification the meeting of the single failure criteria by the EPR TG design as described in the SRP Section 10.2, Item 1.A of the SRP Acceptance Criteria.