



June 20, 2007
NRC:07:022

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Request for Review and Approval of ANP-10284, "U.S. EPR Instrumentation and Control Diversity and Defense-in-Depth Methodology Topical Report"

Ref. 1: Letter, Ronnie L. Gardner (AREVA NP Inc.) to Document Control Desk (NRC), "Proposed Plan for the Pre-Application Review of the U.S. EPR," NRC:06:036, September 8, 2006.

Ref. 2: Letter, Ronnie L. Gardner (AREVA NP Inc.) to Document Control Desk (NRC), "Proposed Plan for the Pre-Application Review of the U.S. EPR," NRC:07:007, February 14, 2007.

AREVA NP Inc. (AREVA NP) requests the NRC's review and approval of the enclosed report, ANP-10284, "U.S. EPR Instrumentation and Control Diversity and Defense-in-Depth Methodology Topical Report." This topical report was identified as a pre-application submittal in Attachment 3 of Reference 1 and Attachment 1 of Reference 2.

The U.S. EPR Instrumentation and Control Diversity and Defense-in-Depth Methodology Topical Report describes the I&C systems that comprise the overall U.S. EPR I&C architecture. The U.S. EPR defense-in-depth concept is discussed, and is compared to the echelons of defense discussed in NUREG/CR-6303. Design features that are used to prevent common cause failures in the safety I&C systems, as well as mitigate the effects of a postulated common cause failure in the safety I&C systems are presented. A methodology to evaluate the adequacy of the U.S. EPR I&C design with respect to diversity and defense-in-depth is presented.

As discussed in the report, the U.S. EPR diversity and defense-in-depth methodology consists of the following steps:

- Step 1 - Susceptibility analysis of safety I&C systems to common cause failure.
- Step 2 - Qualitative evaluation of abnormal operational occurrences and postulated accidents.
- Step 3 - Determine inventory of diverse controls and indications.
- Step 4 - Quantitative analyses of abnormal operational occurrences and postulated accidents.

AREVA NP INC.
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- Step 5 - Human factors engineering verification and validation.
- Step 6 – Platform diversity analysis.

The results of the first three steps will be described in the U.S. EPR Design Control Document (DCD). The last three steps will be completed during detailed design.

AREVA NP requests the approval of the following items in this report:

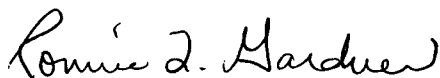
- The U.S. EPR defense-in-depth concept.
- The adequacy of the proposed design features to mitigate the consequences of a postulated CCF in the safety I&C systems.
- The methodology used to evaluate the adequacy of the I&C design with respect to D3.

AREVA NP is prepared to support the NRC review of this document through meetings, telephone conference calls, and written responses that provide additional discussion or clarification of the information contained in this report to resolve any NRC questions.

AREVA NP plans to reference this topical report in its DCD for the U.S. EPR. Therefore, AREVA NP requests that the NRC provide timely feedback and interactions to inform development of the DCD. AREVA NP requests that the NRC complete its review of the topical report and issue the SER by March 2008.

If you have any questions related to this submittal, please contact Ms. Sandra M. Sloan, Regulatory Affairs Manager for New Plants Deployment. She may be reached by telephone at 434-832-2369 or by e-mail at sandra.sloan@areva.com.

Sincerely,



Ronnie L. Gardner, Manager
Site Operations and Regulatory Affairs
AREVA NP Inc.

Enclosure

cc: L. J. Burkhart
G. Tesfaye
Project 733



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- Step 5 - Human factors engineering verification and validation.
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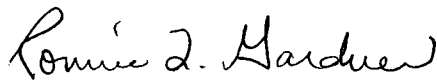
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