May 15, 2008

Mr. Ronnie L. Gardner
AREVA NP Inc.
3315 Old Forest Road
P.O. Box 10935
Lynchburg, VA 24506-0935

SUBJECT: AREVA NP, INC. – SECOND REQUEST FOR ADDITIONAL INFORMATION REGARDING ANP-10284, "U.S. EPR INSTRUMENTATION AND CONTROL DIVERSITY AND DEFENSE-IN-DEPTH [D3] METHODOLOGY TOPICAL REPORT" (TAC MD5884)

Dear Mr. Gardner:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated June 20, 2007, AREVA NP Inc. submitted for NRC staff review, ANP-10284, Revision 0, "U.S. EPR Instrumentation and Control Diversity and Defense-in-Depth [D3] Methodology Topical Report." By letter dated August 20, 2007 (ADAMS Accession Number ML072150532) the NRC accepted this topical report for review. A first set of questions was submitted by the NRC on November 1, 2007 (ADAMS Accession Number ML072830112) and the AREVA response to those questions was received on January 29, 2008 (ADAMS Accession Number ML080290159).

The NRC staff review has determined that some areas of this report require additional information in order to complete the review. The specific information requested is addressed in the enclosure to this letter, and is substantially the same as the draft that was provided to your staff via electronic mail on April 18, 2008 (ADAMS Accession Number ML081200614) and discussed during a telephone conference on April 28, 2008. AREVA has agreed to provide a response within 30 days of receipt of this letter.

If you have any questions regarding this matter, I may be reached at 301-415-3361.

Sincerely,

/RA/

Getachew Tesfaye, Sr. Project Manager
EPR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-020

Enclosure: Request for Additional Information

cc: See next page

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DRAFT

SECOND REQUEST FOR ADDITIONAL INFORMATION

ANP-10284, "U.S. EPR INSTRUMENTATION AND CONTROL

DIVERSITY AND DEFENSE-IN-DEPTH [D3] METHODOLOGY

TOPICAL REPORT"

DOCKET NO. 52-020

RAI-18. What is the architecture of the DAS as it relates to the PAS? Is the DAS implemented on its own hardware/software component within the PAS system, or is it implemented on the same hardware as other PAS functions as a particular software function? Please provide detailed explanation.

RAI-19. Please describe, in detail, the electrical isolation circuitry that is used between the PS system and the DAS system, starting from the output of a sensor.

If Section 13, SAFETY TO NON-SAFETY INTERFACE, of ANP-10281P, U.S. EPR Digital Protection System Topical Report, Revision 0, is to be referenced, please provide a figure, such as Figure 13-2 on page 13-4 of ANP-10281P, that includes (identified on figure) the sensor output connection to the PS, the electrical isolation circuitry used and the DAS connection.

RAI-20. On Table 2-2, page 2-9 of TR-ANP-10284, should the Risk Reduction column have an 'X' for RT and ESF since the risk reduction line of defense includes the PAS which incorporates the DAS? Please explain why or why not.

RAI-21. How does the approved D3 description in EMF-2110(NP)(A), Revision 1, "TELEPERM XS: A Digital Reactor Protection System," Siemens Power Corporation, May 2000, compare to the architecture and methodology provided in TR-ANP-10284?

RAI-22. On Page 3-2, second paragraph from bottom, of TR-ANP-10284, it is stated:

> "The results of this review, as discussed in Section 9.5 of Reference 14, demonstrate that CCFs are not credible if appropriate design and testing measures are taken."

What does AREVA mean by this statement?

RAI-23. On Page 3-3 of TR-ANP-10284, AREVA states that the programmable logic device (PLD) in the AV42 Priority Module contains no software. How is this statement consistent with the definition of firmware in IEEE 100?

RAI-24. 10 CFR 50.62 requires that the ATWS mitigation system operate in a reliable manner. Provide information in TR-ANP-10284 describing the quality requirements of the ATWS mitigation system.

RAI-25. On page 4-3 of TR-ANP-10284, it is stated:

> "If it is judged that the automated plant response using the I&C systems not affected by the postulated CCF will not be sufficient to meet the acceptance criteria stated in NUREG-0800, BTP 7-19, then one of the following actions will be performed:
>
> - Identify additional functionality to mitigate the event.
> - <u>Determine if there is adequate justification to preclude adding additional functionality.</u>"
>
> [Underline added]

Describe the kind of determination intended in this situation and how does that meet NRC guidance as identified in BTP 7-19?

RAI-26. On page 4-3 of TR-ANP-10284, it is stated:

> "If qualitative evaluations are insufficient to verify that acceptance criteria are met for specific AOOs or postulated accidents, then quantitative analysis of those events will be performed in Step 4."

Describe in detail what encompasses the quantitative analysis and how it would be used. Additionally, discuss how it meets current NRC guidance for D3 analysis.

RAI-27. On page 4-5 of TR-ANP-10284, it is stated:

> "As discussed in Step 2, quantitative analyses might be required for some events to confirm that the applicable acceptance criteria are met. The best estimate methods used to perform these analyses will be described in the analytical results documentation.
>
> If quantitative analyses do not demonstrate that the design meets the acceptance criteria, the evaluation process will be performed again for that event using the quantitative results as input to achieve an acceptable design."

Describe in detail what encompasses the quantitative analysis and how it would be used. Additionally, discuss how it meets current NRC guidance for D3 analysis.

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