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July 08, 2010
NRC:10:062

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

Additional Information in Support of AREVA NP Revision 2 of the ANP-10272, "Software Program Manual For TELEPERM XS Safety Systems Topical Report" (TAC No. MD3971)

Ref. 1 Letter, Ronnie L. Gardner (AREVA NP Inc.) to Document Control Desk (NRC), " AREVA NP Revision 2 of the ANP-10272, 'Software Program Manual For TELEPERM XS Safety Systems Topical Report' (TAC No. MD3971)," NRC:10:042, May 7, 2010

AREVA NP Inc. (AREVA NP) requested the NRC's review and approval of ANP-10272 Revision 2, "Software Program Manual for TELEPERM XS Safety Systems Topical Report," in Reference 1. In a teleconference call on July 1, 2010 regarding the ongoing review of ANP 10272, the NRC requested additional information regarding a statement in the topical report. AREVA NP agreed to provide the requested information, which is included as an enclosure to this letter.

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

Sincerely,

Ronnie L. Gardner, Manager
Corporate Regulatory Affairs
AREVA NP Inc.

Enclosure

cc: G.   Tesfaye
       Docket 52-020

Db77
NRD

AREVA NP RESPONSE to VERBAL REQUEST FOR ADDITIONAL INFORMATION

ANP-10272, "SOFTWARE PROGRAM MANUAL FOR TELEPERM XS™ SAFETY SYSTEMS

TOPICAL REPORT" (TAC NO. MD3971) PROJECT NUMBER 733

The NRC requested clarification of the following statement found in Section C.6.5 of ANP-10272, "Software Program Manual for TELEPERM XS Safety Systems Topical Report," Revision 2:

> Sending and receiving processing units execute their functions asynchronously if no "expedited messages" are sent via serial bus links, with the exception of voter subunits monitoring each other.

The statement is taken directly from the plant-independent system test certifications issued by the Institut für Sicherheitstechnologie (Institute for Safety Technology known as ISTec) and Technischer Überwachungs-Verein (German Technical Inspection Agency known as TÜV) as part of the independent qualification process for the SVEx processing modules. The statement reflects the fact that the SVEx safety function processor modules operate asynchronously except when the modules are configured in a master-checker voting configuration, as described in Section 2.7.1.2.3 of Topical Report EMF-2110(NP)(A), "TELEPERM XS: A Digital Reactor Protection System," Revision 1.

The NRC Safety Evaluation Report for EMF-2110(NP)(A) notes that the master-checker synchronization is accomplished through the use of the K32 backplane bus interrupt (IRE) in Section 2.1. This interrupt is generated on a checker processor in order to start the current processing cycle of the checker. It is initiated by the master processor in conjunction with sending a trigger to the checker at the beginning of each processing cycle. The IRE interrupt is the means for controlling the necessarily synchronized processing cycles of a master/checker pair.

The IRE interrupt is also used by the SVEx processor to trigger the protocol handler on the SCPx communication to send the new message out, as described in Section 2.9.3 of EMF-2110(NP)(A). The IRE interrupt is represented by the control flow line shown between the SVE1 and SCP2 processor on report figure 2.20.

Information on the IRE interrupt was provided to NRC in a letter dated December 28, 1999, which provided additional information in support of the EMF-2110(NP) review (see Section 1.5.3.3 of Instruction Manual KWU NLL1-1009-76-V1.9109.97).

The IRE interrupt used to trigger the checker processor is the expedited message discussed in the plant-independent system test certifications and repeated in ANP-10272.

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Corporate Regulatory Affairs
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Enclosure

cc: G.   Tesfaye
        Docket 52-020

AREVA NP INC.

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<u>AREVA NP RESPONSE to VERBAL REQUEST FOR ADDITIONAL INFORMATION</u>

<u>ANP-10272, "SOFTWARE PROGRAM MANUAL FOR TELEPERM XS™ SAFETY SYSTEMS</u>

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