



July 28, 2010
NRC:10:068

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

Closure Plan for U.S. EPR Instrumentation and Control Communications Independence Issues

Ref. 1: Letter, Thomas E. Sliva (AREVA NP Inc.) to Document Control Desk (NRC),
"Commitment to Provide Closure Plans for U.S. EPR Instrumentation and Control Communications Independence Issues," NRC:10:060, July 1, 2010.

AREVA NP Inc. (AREVA NP) met with NRC staff members on June 25, 2010, to discuss communications independence in U.S. EPR instrumentation and control (I&C) systems. During the meeting, the NRC staff described remaining concerns regarding communications independence in the U.S. EPR I&C design as described in Chapter 7 of the U.S. EPR Final Safety Analysis Report (FSAR) and associated reports incorporated by reference in the FSAR. As understood by AREVA NP based on information provided by NRC staff on June 25, the remaining areas of concern are:

1. Complexity of design
2. Data communication between safety divisions
 - a. Between Safety Information and Control System (SICS) divisions
 - b. Between Safety Automation System (SAS) divisions
 - c. Between Protection System (PS) divisions
3. Continuous connection between non-safety Service Unit (SU) and safety divisions
4. Data communication from non-safety Process Information and Control System (PICS) to safety divisions

At the June 25 meeting, AREVA NP proposed design changes to address items 1, 2a, and 4. Subsequently, AREVA NP committed in Reference 1 to provide formal closure plans for items 1, 2a, and 4 by July 28, 2010. Upon further evaluation, AREVA NP has determined that, due to the interrelationships between the items listed above, providing separate closure plans for each item is not appropriate, as details associated with resolution of one item may be affected by resolution of another item. For instance, a technical report or FSAR section modified to resolve item 2a may be affected by subsequent resolution of item 2c. Instead, AREVA NP has prepared an integrated closure plan which provides a framework for resolution of all of the items identified by the NRC staff related to U.S. EPR I&C communications independence.

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FORM 2270WA-1 (4/1/2006)

DOTT
NRC

Enclosed with this letter is the initial version (Revision 0) of an integrated closure plan. At present, the integrated closure plan addresses items 1, 2a, and 4, as committed in Reference 1. AREVA NP will submit Revision 1 of the integrated closure plan by August 4, 2010, to address item 3 as discussed with the NRC staff at a meeting on July 21, 2010. Items 2b and 2c will be addressed in Revision 2 of the integrated closure plan, which will be submitted subsequent to the meeting requested in Reference 1 to discuss these items. In each revision, the plan will be expanded, as appropriate, to address the additional items and to reflect the associated impact on items addressed in prior versions of the integrated closure plan.

The enclosed version of the integrated closure plan includes:

- Identification of design changes to address items 1, 2a, and 4.
- Identification of licensing documentation impacted by the design changes.
- Timeline for conduct of engineering activities and preparation and submittal of updated licensing documentation.

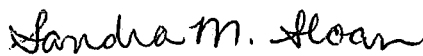
As noted in Reference 1, AREVA NP will keep the NRC staff informed throughout the preparation and submittal of the revised documentation, including providing draft information for discussion prior to submittal of final information. To support that objective, the timeline identifies opportunities for interactions with the NRC staff at appropriate times based on AREVA NP completion of scheduled work activities and availability of associated documentation. Note that the timeline and milestones in Revision 0 of the integrated closure plan reflect design changes to address items 1, 2a, and 4. Additional details regarding milestones and documentation availability will be added in subsequent revisions, and will account for interrelationships between the individual closure strategies to create a final, integrated closure plan.

AREVA NP notes that in addition to the items specifically related to communications independence, other topics still under review by NRC in the area of U.S. EPR I&C may impact the timeline for resolution of communications independence issues. Examples of such topics include the design of the priority and actuator control system (PACS) and the associated 100% testing methodology, and the diversity and defense-in-depth (D3) approach.

AREVA NP requests a public meeting with NRC staff in August 2010 to confirm the viability of the enclosed integrated closure plan.

If you have any questions related to this information, please me by telephone at (434) 832-2369 or by e-mail at sandra.sloan@areva.com.

Sincerely,



Sandra M. Sloan, Manager
New Plants Regulatory Affairs
AREVA NP Inc.

Enclosures

cc: G. Tesfaye
Docket 52-020

Closure Plan for U.S. EPR Instrumentation and Control Communications Independence Issues (Revision 0)

Introduction

AREVA NP Inc. (AREVA NP) met with NRC staff members on June 25, 2010, to discuss communications independence in U.S. EPR instrumentation and control (I&C) systems. During the meeting, the NRC staff described remaining concerns regarding communications independence in the U.S. EPR I&C design as described in Chapter 7 of the U.S. EPR Final Safety Analysis Report (FSAR) and associated reports incorporated by reference in the FSAR. As expressed by the NRC staff, the remaining areas of concern are:

1. Complexity of design
2. Data communication between safety divisions
 - a. Between Safety Information and Control System (SICS) divisions
 - b. Between Safety Automation System (SAS) divisions
 - c. Between Protection System (PS) divisions
3. Data communication from non-safety Service Unit (SU) to safety divisions
4. Data communication from non-safety Process Information and Control System (PICS) to safety divisions

In the June 25 public meeting, AREVA NP proposed design changes to address items 1, 2a, and 4. By letter dated July 1, 2010, AREVA NP committed to provide a formal closure plan for items 1, 2.a, and 4 by July 28, 2010. The formal closure plan for those three items is provided in the following sections and includes:

- Identification of design changes to address items 1, 2a, and 4.
- Identification of licensing documentation impacted by the design changes.
- Timeline for conduct of engineering activities and preparation and submittal of updated licensing documentation.

Subsequent revisions to this closure plan will address items 2b, 2c, and 3, following meetings with the NRC staff on each of these topics.

Design Changes

The following design changes will be made to reduce complexity of the I&C architecture (item 1) by simplifying system architectures, minimizing global dependence on the plant data network and establishing clear separation between the risk reduction line of defense and the other lines of defense.

- The diverse actuation system (DAS) will be separated from the plant data network, and renamed the diverse backup system (DBS).
- A new human machine interface (HMI) system will be created called the diverse backup information and control system (DBICS). This system will provide controls, indications and alarms related to the DBS such that backup control and monitoring does not depend on the PICS or the plant data network.
- The severe accident I&C (SA I&C) functionality will be part of the DBS.

- All non-safety related qualified display systems (QDS) will be eliminated from the SICS.

The following design change will be made to address concerns related to data communication between divisions of the SICS (item 2a) by eliminating those communication paths.

- Communication between the safety-related panel interfaces within the SICS system will be eliminated.

The following design change will be made to address concerns related to bi-directional data communication between the non-safety related PICS and safety divisions (item 4) by modifying those communication paths.

- Only communication from the PS and SAS to PICS will be allowed. The communication paths will be restricted so that PICS cannot send information to the PS and SAS.

Impacted Licensing Documents

The licensing documents expected to be impacted by design changes to address items 1, 2a, and 4 are identified below. Additional impacts may be identified as details of the design changes are developed and finalized.

Impacted U.S. EPR FSAR Tier 2 Material
Tables 3.10-1, 3.11-1
Sections 7.1.1.3, 7.1.1.4, 7.1.1.6, and 7.1.2.3 Tables 7.1-1, 7.1-2 Figures 7.1-2, 7.1-3, 7.1-4, 7.1-6, 7.1-7, 7.1-8, 7.1-9, 7.1-13, 7.1-17, 7.1-20, 7.1-21
Sections 7.2.1.3 and 7.2.2.3
Sections 7.3.1.1 and 7.3.2.3 Figures 7.3-2 through 7.3-29
Section 7.4.1.1
Section 7.5.2.2.4
Section 7.6.1.1
Sections 7.8.1.1.3, 7.8.1.2.3, 7.8.1.2.4, and 7.8.2.1

Impacted U.S. EPR FSAR Tier 1 Material
Sections 2.4.2, 2.4.3, and 2.4.24
Impacted Sections of ANP-10304 Rev. 1, "U.S. EPR Diversity and Defense-in-Depth Assessment"
Sections 2, 3, 4, and A.2.2
Impacted Sections of ANP-10309P Rev. 0, "U.S. EPR Digital Protection System Technical Report"
Sections 5, 6, and 12

Impacted RAI responses will be addressed in a future revision to this closure plan, since details of the design changes are needed to comprehensively identify impacted responses due to the additional level of detail contained in typical RAI responses.

Timeline

The timeline shown below reflects design changes to address items 1, 2a and 4. The timeline takes into account implementation of AREVA NP procedures and processes leading up to formal submittal of revised licensing documentation. It also indicates appropriate opportunities for interaction with NRC staff, such as meetings or audits.

The first phase of the schedule (design change documentation and review) reflects implementation of a robust design change control process and includes activities such as:

- Evaluating design options in cases where the design change can be implemented in more than one way.
- Defining and documenting the details of the design changes.
- Multidisciplinary reviews of the proposed changes including assessment of design and licensing impacts
- Formal design review boards and approvals.

The second phase of the schedule (engineering implementation of design changes) involves revising engineering documentation to reflect the approved design changes.

The third phase of the schedule (revisions to licensing documentation) involves updating the FSAR and technical reports to reflect the design changes.

