



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

April 21, 2010

Mr. R.W. Borchardt  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT:    CHAPTERS 2, 4, 5, 8, 10, 12, AND 17 OF THE SAFETY EVALUATION  
              REPORT WITH OPEN ITEMS ASSOCIATED WITH THE U.S. EVOLUTIONARY  
              POWER REACTOR DESIGN CERTIFICATION APPLICATION**

Dear Mr. Borchardt:

During the 571<sup>st</sup> meeting of the Advisory Committee on Reactor Safeguards, April 8 - 10, 2010, we met with representatives of the NRC staff and AREVA NP, Inc., (AREVA) to review the following chapters of the Safety Evaluation Report (SER) with Open Items associated with the review of the U.S. Evolutionary Power Reactor (U.S. EPR) Design Certification Application: Chapter 2, "Site Characteristics"; Chapter 4, "Reactor"; Chapter 5, "Reactor Coolant System and Connected Systems"; Chapter 8, "Electric Power"; Chapter 10, "Steam and Power Conversion"; Chapter 12, "Radiation Protection"; and Chapter 17, "Quality Assurance." Our EPR Subcommittee also reviewed these chapters during meetings on November 3 and 19, 2009, February 18 and 19, 2010, and March 3, 2010. Technical aspects of the U.S. EPR design as well as the open items and the combined license (COL) action items identified in each of these SER chapters were discussed at these meetings. We also had the benefit of the documents referenced.

## **CONCLUSIONS**

1. Our review of the staff's SER with Open Items for Chapters 2, 4, 5, 8, 10, 12, and 17 has not identified any issues that merit further consideration by us at this time.
2. We plan to review the staff's resolution of the open items in these SER Chapters during future meetings.
3. The U.S. EPR structures, systems, and components (SSC) described in these chapters may interact with SSC discussed in other SER chapters that have not been reviewed yet. We will comment on any potential safety implications of SSC interactions in future letters and in our final report.

## **BACKGROUND**

By letter dated December 11, 2007, AREVA submitted an application for certification of a standard design for the U.S. EPR, pursuant to 10 CFR Part 52, "*Licenses, Certifications, and Approvals for Nuclear Power Plants.*" Subsequent to the original application in a letter dated

May 29, 2009, AREVA submitted Revision 1 to the Final Safety Analysis Report (FSAR) portions of the application which is under review by the staff.

## DISCUSSION

We have agreed to review the staff's SER on a chapter-by-chapter basis to identify technical issues that may merit further consideration. The staff has provided to us SER Chapters 2, 4, 5, 8, 10, 12, and 17 with Open Items and associated COL action items for our review. SER Chapter 8, "Electric Power," contains no open items.

We found the open items identified by the NRC staff to be appropriate. We did not identify any additional items or other technical issues that merit further consideration by us at this time for these SER chapters. We will review the staff's resolution of the open items in these SER chapters during future meetings.

The U.S. EPR structures, systems, and components described in these chapters may interact with SSC discussed in other chapters of the SER that have not been reviewed yet. We will comment on the potential safety implications of any SSC interactions in future letters and in our final report.

Sincerely,

*/RA/*

Said Abdel-Khalik  
Chairman

### References:

1. Letter to the U.S. Nuclear Regulatory Commission, Application for Standard Design Certification of the U.S. EPR (Project No. 733), 12/11/2007 (ML073520305)
2. Letter to the U.S. Nuclear Regulatory Commission, Submittal of Revision 1 of the U.S. EPR Final Safety Analysis Report for Design Certification, 05/29/2009 (ML091670376)
3. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 2, "Site Characteristics," 09/03/2009 (ML091950194)
4. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 4, "Reactor," 02/04/2010 (ML093290134)
5. Letter to the U.S. Nuclear Regulatory Commission, Request for Review and Approval of ANP-10285P, "U.S. EPR Fuel Assembly Mechanical Design Topical Report," 10/20/2007 (ML072840175)

6. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 5, “Reactor Coolant System and Connected Systems,” 02/16/2010 (ML093350274)
7. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 8, “Electric Power,” 08/20/2009 (ML091760963)
8. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 10, “Steam and Power Conversion,” 10/19/2009 (ML092510210)
9. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 12, “Radiation Protection,” 10/13/2009 (ML092520436)
10. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 17, “Quality Assurance,” 1/12/2010 (ML093060192)

6. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 5, “Reactor Coolant System and Connected Systems,” 02/16/2010 (ML093350274)
7. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 8, “Electric Power,” 08/20/2009 (ML091760963)
8. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 10, “Steam and Power Conversion,” 10/19/2009 (ML092510210)
9. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 12, “Radiation Protection,” 10/13/2009 (ML092520436)
10. Memorandum to Edwin M. Hackett, U.S. Nuclear Regulatory Commission, EPR Design Certification Application – Safety Evaluation Report with Open Items for Chapter 17, “Quality Assurance,” 1/12/2010 (ML093060192)

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