



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

May 18, 2012

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

**SUBJECT: CHAPTERS 3, 9, 14, AND 19 OF THE SAFETY EVALUATION REPORT WITH
 OPEN ITEMS ASSOCIATED WITH THE U.S. EVOLUTIONARY POWER
 REACTOR DESIGN CERTIFICATION APPLICATION**

Dear Mr. Borchardt:

During the 594th meeting of the Advisory Committee on Reactor Safeguards (ACRS), May10-12, 2012, we met with representatives of the NRC staff and AREVA NP, Inc., (AREVA or the applicant) to review the following chapters of the Safety Evaluation Report with Open Items associated with the review of the U.S. Evolutionary Power Reactor (U.S. EPR) Design Certification Application:

- Chapter 3, “Design of Structures, Components, Equipment, and Systems”;
- Chapter 9, “Auxiliary Systems”;
- Chapter 14, “Initial Test Program and Inspections, Tests, Analyses, and Acceptance Criteria”; and
- Chapter 19, “Probabilistic Risk Assessment and Severe Accident Evaluation.”

Our EPR Subcommittee also reviewed these chapters during meetings on February 18-19, 2010; May 21, 2010; November 14, 2011; and February 21-23, 2012. 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 Safety Evaluation Report chapters were discussed at these meetings. We had the benefit of the documents referenced.

CONCLUSIONS

1. Our reviews of the staff’s Safety Evaluation Report with Open Items for Chapters 3, 9, 14, and 19 have not identified issues that require further consideration by us at this time.
2. We plan to review the staff’s resolution of the open items in these Safety Evaluation Report chapters during future meetings.

DISCUSSION

We have reviewed the four chapters of the staff's Safety Evaluation Report listed in the opening of this letter. We conclude that staff has adequately identified open items that must be resolved prior to finalizing the Safety Evaluation Report. We agree that pathways are available for staff and the applicant to resolve these open items. We did not identify any additional items or other technical issues that require further consideration by us at this time.

An observation made in our review is that the applicant is not seeking certification for reactor cores composed of fuels of different designs. Indeed, the staff will include in their Safety Evaluation Report a notice that certification does not include approval for a 'mixed core' with fuel of different designs. In contrast, the reference COL applicant has indicated an interest in possible use of mixed cores. Utilization of a mixed core will require substantial, additional analysis including analysis of the system for detecting limits on the minimum departure from nucleate boiling ratio.

We plan to review the resolution of the open items in these Safety Evaluation Report chapters during future meetings.

Dr. J. Rempe did not participate in our discussions of this matter.

Sincerely,

/RA/

J. Sam Armijo
Chairman

REFERENCES

1. AREVA NP Letter, "Application for Standard Design Certification of the U.S. EPR (Project No. 733)," dated December 11, 2007 (ML073520305)
2. AREVA NP Letter, "Submittal of Revision 1 of the U.S. EPR Final Safety Analysis Report for Design Certification," dated May 29, 2009 (ML091670376)
3. AREVA NP Letter, "Submittal of Revision 2 of the U.S. EPR Final Safety Analysis Report for Design Certification," dated August 31, 2010 (ML102560479)
4. AREVA NP Letter, "Submittal of Revision 3 of the U.S. EPR Final Safety Analysis Report for Design Certification," dated August 10, 2011 (ML11230A572)
5. NRC Memorandum, transmitting U.S. EPR Design Certification Application – Safety Evaluation with Open Items for Portions of Chapter 3, "Design of Structures, Components, Equipment, and Systems," dated April 13, 2010 (ML100770163)
6. NRC Memorandum, transmitting U.S. EPR Design Certification Application – Safety Evaluation with Open Items for Portions of Chapter 3, "Design of Structures, Components, Equipment, and Systems," dated December 8, 2011 (ML110810082)
7. NRC Memorandum, transmitting U.S. EPR Design Certification Application – Safety Evaluation with Open Items for Portions of Chapter 3, "Design of Structures, Components, Equipment, and Systems," dated December 15, 2011 (ML113081431)
8. NRC Memorandum, transmitting U.S. EPR Design Certification Application – Safety Evaluation with Open Items for Portions of Chapter 9, "Auxiliary Systems," dated October 18, 2011 (ML111380392)
9. NRC Memorandum, transmitting U.S. EPR Design Certification Application – Safety Evaluation with Open Items for Portions of Chapter 9, "Auxiliary Systems," dated February 13, 2012 (ML120270163)
10. NRC Memorandum, transmitting U.S. EPR Design Certification Application – Safety Evaluation with Open Items for Chapter 14, "Initial Test Program and Inspections, Tests, Analyses, and Acceptance Criteria," dated February 9, 2012 (ML120330273)
11. NRC Memorandum, transmitting U.S. EPR Design Certification Application – Safety Evaluation with Open Items for Chapter 19, "Probabilistic Risk Assessment and Severe Accident Evaluation," dated January 15, 2010 (ML093070188)

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Letter to R.W. Borchardt, Executive Director for Operations, from J. Sam Armijo, ACRS
Chairman, May 18, 2012

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