

August 15, 2008

Dr. William J. Shack, Chairman  
Advisory Committee on Reactor Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

SUBJECT: INTERIM LETTER 4: CHAPTER 3 OF THE U.S. NUCLEAR REGULATORY  
COMMISSION STAFF'S SAFETY EVALUATION REPORT WITH OPEN ITEMS  
RELATED TO THE CERTIFICATION OF ECONOMIC SIMPLIFIED BOILING  
WATER REACTOR DESIGN

Dear Dr. Shack:

I am responding to your letter dated July 21, 2008, regarding the Advisory Committee on Reactor Safeguards' (ACRS or Committee's) meeting on July 9-11, 2008.

During the full Committee meeting, the staff discussed its safety evaluation report (SER) with open items (OIs) for Chapter 3, "Design of Structures, Components, Equipment, and Systems" of the economic simplified boiling water reactor (ESBWR) design certification application. These discussions included the status and technical concerns of the OIs identified in the SER. The ACRS indicated that additional information is needed to demonstrate that dynamic forces from seismic events are treated properly in the analyses of heat exchangers immersed in elevated water pools.

The enclosure to this letter discusses the staff's responses to the ACRS comments. The staff will continue to work with General Electric-Hitachi Nuclear Energy to obtain satisfactory resolution to the OIs presented in the SERs.

W. Shack

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Thank you for your comments. I appreciate the willingness of the ACRS to engage with the staff on a chapter-by-chapter SER review. I believe this process has greatly facilitated the staff's work. The staff looks forward to continued interactions with the Committee for the remaining chapters of the ESBWR design certification application.

Sincerely,

*/RA/*

Michael R. Johnson, Director  
Office of New Reactors

Enclosure:  
Staff Response to ACRS Comments

cc: Chairman Klein  
Commissioner Jaczko  
Commissioner Lyons  
Commissioner Svinicki  
SECY

W. Shack

-2-

Thank you for your comments. I appreciate the willingness of the ACRS to engage with the staff on a chapter-by-chapter SER review. I believe this process has greatly facilitated the staff's work. The staff looks forward to continued interactions with the Committee for the remaining chapters of the ESBWR design certification application.

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**The U.S. Nuclear Regulatory Commission Staff's Response to the  
Advisory Committee on Reactor Safeguards  
Interim Letter Dated July 21, 2008,  
Regarding Safety Evaluation Reports with Open Items  
on the ESBWR Design Certification Application**

Following are the staff's responses to the comments from the Advisory Committee on Reactor Safeguards (ACRS) on the staff's safety evaluation report (SER) with open items for Chapter 3, "Design of Structures, Components, Equipment, and Systems" of the economic simplified boiling-water reactor (ESBWR) design certification application. The staff plans to discuss final resolution of these concerns during the ACRS committee meetings on the final SER for the ESBWR design certification application.

ACRS Comment: Seismically induced dynamic loads could affect the structural integrity of the heat exchangers submerged in large elevated water pools. Additional information is needed to demonstrate that dynamic forces from seismic events are treated properly in the analyses of heat exchangers, such as passive reactor isolation condenser and containment cooling system heat exchangers, immersed in elevated water pools.

Staff Response: ESBWR Design Certification Document (DCD) Tier 2, Revision 5, Section 3.9.3.7.4, "Floor-Mounted Major Equipment," states that the isolation condenser heat exchangers are analyzed to verify the adequacy of their support structure under various plant operating conditions. However, the hydrodynamic effect of the water pool on the structural integrity of the submerged heat exchangers, during a seismic event, is not discussed. Therefore, the staff is not certain how General Electric-Hitachi Nuclear Energy (GEH) would simulate the pertinent dynamic forces from seismic events and apply them properly in the analysis of the heat exchangers. As a result, the staff issued request for additional information (RAI) 3.9-247 in RAI letter number 228 (ML082140682). RAI 3.9-247 requested GEH to demonstrate how dynamic forces from seismic events are treated in the analysis of heat exchangers immersed in elevated water pools.

ACRS Comment: The evolving nature of the ESBWR design makes it difficult for the staff and the ACRS to perform an efficient review.

Staff Response: The staff agrees with the Committee's concerns regarding the impact of design changes on review efficiency. To mitigate the impact, GEH communicated planned changes to the staff in advance of the submittal of DCD Revision 5. GEH also made formal presentations to the staff after the submittal of DCD Revision 5 to discuss the design changes. Going forward, GEH has committed to the staff that DCD changes will only be made to resolve open items or to address safety issues that are identified. Any changes that are determined to be necessary to support design certification will be communicated to the staff as they are identified.

Enclosure