

September 13, 2007

APPLICANT: GE-Hitachi Nuclear Energy Americas LLC (GEH)

PROJECT: Economic Simplified Boiling Water Reactor (ESBWR)

SUBJECT: SUMMARY OF ESBWR PROBABILISTIC RISK ASSESSMENT AUDIT  
CONDUCTED JULY 18 and 19, 2007

The U.S. Nuclear Regulatory Commission (NRC) conducted an ESBWR Probabilistic Risk Assessment (PRA) audit on July 18 and 19, 2007, at the Twinbrook Hilton, Rockville, Maryland (July 18) and NRC headquarters, Rockville, Maryland (July 19). The NRC staff conducted the audit with representatives of GEH. Attendees are identified in Enclosure 1.

The NRC staff conducted the audit as part of the agency's review process for ESBWR design certification. The audit included review of GEH's responses to requests for additional information (RAIs) associated with staff's review of the ESBWR Design Control Document (DCD) and GEH's topical report, NEDO-33201, "ESBWR Probabilistic Risk Assessment," and review of various technical assumptions and analyses pertaining to risk assessment. The audit focused on PRA Level 1 technical issues, shutdown analyses, and the Regulatory Treatment of Non-Safety Systems. The audit agenda is provided as Enclosure 2.

The audit involved technical discussions between the staff and GEH representatives and GEH presentations on the following topics: 1) ESBWR PRA overview, 2) Treatment of Thermal-Hydraulic Uncertainties Associated with Passive Systems, and 3) ESBWR Sensitivity Analyses. These presentations are included as Enclosures 3, 4, and 5. The staff considered the audit to be a valuable exchange of PRA-related information and assisted the staff in its review of the ESBWR PRA. A complimentary follow-up audit is planned for late October 2007.

Please direct any inquires concerning this audit to me at 301-415-0224 or [tak@nrc.gov](mailto:tak@nrc.gov).

/RA/

Thomas A. Kevern, Senior Project Manager  
ESBWR/ABWR Projects Branch  
Division of New Reactor Licensing  
Office of New Reactors

Docket No. 52-10

Enclosures:  
As stated

cc w/encl: See next page

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DATE	09/06/2007	09/7/2007	09/13/2007

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Meeting Summary for ESBWR PRA Audit by Thomas A. Kevern dated September 13, 2007

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CONDUCTED JULY 18 and 19, 2007

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## ESBWR Probabilistic Risk Assessment Audit

### List of Attendees

July 18 and 19, 2007

Name	Organization
Tom Kevern	NRC/NRO/DNRL
Hossein Hamzehee	NRC/NRO/DSRA
Ed Fuller	NRC/NRO/DSRA
Mark Caruso	NRC/NRO/DSRA
John Lai	NRC/NRO/DSRA
Rocky Foster	NRC/NRO/DNRL
Rick Wachowiak	GEH
Lou Lanese	GEH

## **Agenda for ESBWR PRA Audit**

### **Agenda**

**July 18 and 19, 2007**

Topic	Duration	Lead
1. Welcome and Introduction	(20 min)	NRC
2. Status and Schedule for RAI Responses and Submittals <ul style="list-style-type: none"><li>a. Level 1 internal and External Events</li><li>b. Shutdown Assessment</li></ul>	(2 hr)	GEH
3. Level 1 Technical Issues <ul style="list-style-type: none"><li>a. PRA Technical Adequacy</li><li>b. Common Cause Failure Modeling</li><li>c. Treatment of T-H Uncertainties associated with passive systems and Success Criteria</li><li>d. Uncertainty, sensitivity and importance analysis</li><li>e. Fire Modeling</li></ul>	(4 hr)	GEH
4. Shutdown Technical Issues	(2 hr)	NRC
5. RTNSS	(2 hr)	NRC
6. Wrap-up/Discussion	(1 hr)	All

Enclosure 2



Enclosure 3

**ESBWR Probabilistic Risk Assessment**

(ML072470442)

## Enclosure 4

# **Treatment of Thermal-Hydraulic Uncertainties Associated with Passive Systems**

(ML072470449)

Enclosure 5

**ESBWR Sensitivity Analyses**

(ML072470445)