

February 27, 2008

ORGANIZATION: GE-Hitachi Nuclear Energy Americas, LLC

PROJECT: Economic Simplified Boiling Water Reactor (ESBWR) Design Certification

SUBJECT: SUMMARY OF AUDIT FOR ESBWR GAMMA THERMOMETER
JANUARY/FEBRUARY, 2008

From January 28, through February 1, 2008, the U.S. Nuclear Regulatory Commission (NRC) commenced the first phase of an audit of GE-Hitachi Nuclear Energy Americas, LLC (GEH) documentation regarding ESBWR gamma thermometer at the GEH office in Washington, D.C. During this audit, the NRC team conducted a review of the documentation regarding the development and qualification of nuclear design methods used by the core monitoring software and the use of gamma thermometer instruments to perform transient core monitoring. A list of attendees is provided in Enclosure 1, and a summary of the meeting, including open items briefed during the audit closing, is provided in Enclosure 2.

During continuing review of the ESBWR design certification, staff will be considering information gained during this audit, and will communicate any additional issues or requests for information with the applicant on the ESBWR docket.

/RA/

Bruce M. Baval, Project Manager
ESBWR/ABWR Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-010

Enclosures:
As stated

cc w/encls: See next page

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DATE	02/13/2008	02/15/2008	02/26/2008	02/19/2008	02/27/2008

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Table 1: Audit Participation Summary

Table 1 provides a comprehensive list of the audit participants from both NRC and GEH. Their attendance at either the entrance meeting or at the closing meeting (via teleconference) has been noted.

Last Name	First Name	Affiliation	Entrance Meeting	Closing Meeting (telecon)
ARMSTRONG	DAVE	GEH		X
BAVOL	BRUCE	NRC	X	X
CHEUNG	YEE	GRH	X	
COOK	MICHAEL	GEH	X	
CUEVAS	GABRIEL	GEH		X
GILMER	JAMES	NRC	X	
GOLUB	PAREEZ	GEH	X	X
GOODSON	CRAIG	GEH	X	
HACES	JAVIER	GEH	X	
KAO	SHIH PING	GEH	X	
KINSEY	JAMES	GEH	X	
MARQUINO	WAYNE	GEH	X	
MOEN	STEPHEN	GEH	X	X
MOORE	BRIAN	GEH	X	X
PITTS	HAL	ENTERGY		X
SORENSEN	JOHN	GEH	X	
WASHBURN	TYSON	GEH		X
WILLIAMS	SHAWN	NRC	X	
WILLIAMSON	DAN	GEH		X
YARSKY	PETER	NRC	X	X

Summary of Audit for ESBWR Gamma Thermometer (GT) January/February, 2008

From January 28, through February 1, 2008, the U.S. Nuclear Regulatory Commission (NRC) commenced the first phase of an audit with GE-Hitachi Nuclear Energy Americas, LLC (GEH) to review the documentation regarding the development and qualification of nuclear design methods used by the core monitoring software to use in-core instrumentation measurements to perform adaptations and calibrations. The staff also reviewed documents on the use of gamma thermometer (GT) instruments to perform transient core monitoring. The documents requested by the staff included (1) a description of the models and methods incorporated into the ESBWR specific core monitoring software, (2) the qualification of those models and methods performed by GEH to determine their technical adequacy, and (3) the testing of the software to confirm that code changes have not adversely impacted the efficacy of the code.

The NRC team reviewed the design record files (DRFs) for the GT Design and Testing Qualification, the update to PANACEA to include the GT based adaptive models, and related proprietary DRF material. The NRC team also reviewed the latest revision of NEDC-33197P and supporting references. Two additional requested documents, "Results of J-Factor comparisons to Monte Carlo Methods" and "Documentation of the Level 2 Review of the PANACEA GT Adaption Software" were not available from GEH at the time of the audit. The staff cannot complete its review of the nuclear design methods or core instrumentation to acceptably meet the requirements of GDC 10 or GDC 13 without all audit information. GEH will provide a schedule of delivery to the staff for the remaining documentation. A continuation of the ESBWR GT audit will be performed as requested material is received from GEH.

The NRC team and GEH personnel conducted a closing meeting for the first phase of the audit via teleconference where the NRC team communicated findings and GEH ongoing items. A comprehensive audit report will be provided at the conclusion of the audit.

The following open Requests for Additional Information (RAIs) were discussed with GEH in order to clarify tentative responses based on audit material.

RAIS 7.2-14 S01, 7.2-18 S01, 7.2-20 S01, 7.2-51 S01, 7.2-55 S01, 7.2-56 S01, 7.2-58, 7.2-59 S02, 7.2-60 S01, 7.2-64 S01, 4.2-12 S02, and 4.3-2 S02.

DC GE - ESBWR Mailing List

(Revised 02/07/2008)

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