

October 27, 2005

ORGANIZATION: General Electric Nuclear Energy (GE)

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

SUBJECT: SUMMARY OF MEETING HELD ON AUGUST 30, 2005, REGARDING THE ESBWR DESIGN CERTIFICATION APPLICATION

The Nuclear Regulatory Commission (NRC) hosted a public meeting with General Electric Nuclear Energy (GE) on August 30, 2005, at NRC Headquarters to discuss GE's ESBWR design. A list of attendees is provided as Enclosure 1. Enclosure 2 contains the agenda for the meeting.

GE provided handouts during the meeting which can be accessed through the Agencywide Documents Access and Management System (ADAMS). This system provides text and image files of NRC's publicly available documents. The handouts mentioned above may be accessed through the ADAMS system under Accession Nos. ML052490427 and ML052490428. If you do not have access to ADAMS or if there are problems in accessing the handouts located in ADAMS, contact the NRC Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdrc@nrc.gov. A summary of the meeting is included below.

By letter dated August 24, 2005, GE submitted an application for final design approval and standard design certification of the ESBWR standard plant design. The purpose of the meeting was for GE to provide an overview of the ESBWR design certification application, the ESBWR design, and the ESBWR probabilistic risk assessment (PRA) to facilitate the staff's review of the application. GE began their presentation with an overview of the contents of the design certification application which includes the design control document (DCD) and the PRA report (NEDC-33201P). The staff informed GE that a non-proprietary version of the PRA would need to be submitted.

GE provided an overview of the ESBWR, which is a 4,500 MWth (1,550 MWe gross) plant design using natural circulation and passive safety systems. The passive safety systems include the gravity driven cooling system (GDACS), the isolation condenser system (ICS), and the passive containment cooling system (PCCS). GE indicated that the safety relief valves (SRVs) are not expected to open for any transients or design-basis accidents except for the anticipated transient without scram (ATWS) event due to the heat removal capability of the ICS. The GDACS pools contain enough capacity to flood the entire lower drywell to a level above the top of active fuel (TAF). During a loss of coolant accident (LOCA), the lowest water level is not reached until 500 to 600 seconds after the initiating event, the minimum water level is well above the TAF, and there is no fuel heatup.

The GDACS system relies on opening squib valves. The staff had a question about the reliability of the squib valves and whether the valves had been tested. GE informed that staff that there is significant operating experience with squib valves and that full scale tests had been performed on this specific squib valve design. The staff also asked whether the check valve

upstream of the squib valve in the GDSCS flow path was testable. GE said that the check valves were testable and they would provide additional details later.

The ESBWR safety systems provide 72-hour passive cooling capability. To accomplish this function, additional water is required for the PCCS/ICS pools after the first 36 to 40 hours. The ESBWR design provides additional capacity via an automatic connection to a normally separated pool which contains condensate grade water. The connection is opened using a pneumatic valve which fails open upon loss of power. The ESBWR has four divisions of safety related electrical power supplied by battery banks and inverters. All four electrical divisions provide 24 hours capability for monitoring and control and two of the four electrical divisions also provide 72 hours capability for monitoring only. The ESBWR design employs a digital instrumentation control system which includes the engineered safety feature and reactor protection systems.

Additional non-safety-related systems are provided in the design, such as diesel generators and the fuel and auxiliary pool cooling system, which provides defense-in-depth and are identified by GE as plant investment protection (PIP) systems. The fire protection system has been identified for regulatory treatment of non-safety systems (RTNSS) for the function of providing makeup to the ICS/PCCS pool and the spent fuel pool for post-72-hour to post-7 day accidents.

During the PRA overview, GE discussed the scope of the PRA and the contents of the PRA report. GE presented the results of their PRA and provided a discussion of how the reduced core damage frequency was achieved by providing redundancy and diversity in the design. GE also discussed the design and function of the basemat internal melt arrest and coolability (BiMAC) system which is a severe accident mitigation design feature.

/RA/

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Project No. 717

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ML052490427 and ML052490428-Handouts
ML052940440-Meeting Summary

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**ATTENDEES FOR MEETING WITH GENERAL ELECTRIC
ESBWR DESIGN CERTIFICATION
AUGUST 30, 2005**

Name	Affiliation
Amy Cabbage	NRR/RNRP
Ronald Hagen	DOE
Rick Kingston	GE
David Hinds	GE
Bob Fraser	Black & Veatch
George Stramback	GE
Louis Quintana	GE
Lauren Quinones	NRR/RNRP
Larry Rossbach	NRR/RNRP
Joe Williams	NRR/RNRP
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Jerry Wilson	NRR/RNRP
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George Youngblood	ISL
Yamir Diaz	NRR/DE
Zahira Cruz	NRR/DE
Charles Brinkman	Westinghouse
Hulbert Li	NRR/DE
William Beckner	NRR/RNRP
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Tony Attard	NRR/DSSA
John Honeharik	NRR/DE/EMCB
Mark Reinhart	NRR/DSSA/SPSB
J. Bongarra	USNRC/NRR/DIPM

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Chang Li	NRR/DSSA/SPLB
Doug Huyak	USNRC/NSIR/RSS
Nick Saltos	USNRC/DSSA/SPSB
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Rick Wachowiak	GE
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Mike Waterman	RES/DET/ERAB
Matt Chiramal	EEIB/DE/NRR
Alan Beard	GE Nuclear

Agenda for Public Meeting Regarding ESBWR Design Certification
August 30, 2005

9:00 a.m. - 9:10 a.m.	Introductory Remarks	A. Cubbage, NRR D. Hinds, GE
9:10 a.m. - 10:50 a.m.	ESBWR Design Overview	General Electric
10:50 a.m. - 11:00 a.m.	Opportunity for Public Comment	All
11:00 a.m.	Adjourn	

ESBWR

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SUBJECT: SUMMARY OF MEETING HELD ON AUGUST 30, 2005,
REGARDING THE ESBWR DESIGN CERTIFICATION
APPLICATION

ORIGINATOR: A. Cubbage

SECRETARY: C. Nagel

DATE: November 7, 2005

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