HITACHI

GE Hitachi Nuclear Energy

Richard E. Kingston
Vice President, ESBWR Licensing

P.O. Box 780 M/C A-65
Wilmington, NC 28402-0780
USA

T 910.675.6192
F 910.362.6192
rick.kingston@ge.com

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Subject: **Transmittal of ESBWR DCD Tier 2, Chapter 9 Markups Related to GEH Internal Corrective Action – Part 2**

The purpose of this letter is to submit markups to the ESBWR DCD, Tier 2, Chapter 9 and Appendix 9A, Revision 6, which are the result of GEH internal review. These markups will be incorporated into the DCD, Revision 7. The markup pages are contained in Enclosure 1. These markups are in addition to those provided in Letter MFN 10-042 (Reference 1). Changes associated with these corrective actions are enclosed within boxes on the markup pages. The changes are summarized below.

Affected Section	Description of Change
S9.1.3.3, Safety Evaluation	Removed incorrect reference to DCD Chapter 15.
S9.3.2.7, References	Revised Reference 9.3.2-7 to reflect title of Regulatory Guide 1.97 current revision.

If you have any questions or require additional information, please contact me.

Sincerely,

Richard E. Kingston

Richard E. Kingston
Vice President, ESBWR Licensing

Reference:

1. MFN 10-042, Transmittal of ESBWR DCD Tier 2, Chapter 9 Markups Related to GEH Internal Corrective Action, January 30, 2010

Enclosure:

1. Transmittal of ESBWR DCD Tier 2, Chapter 9 Markups Related to GEH Internal Corrective Action – Part 2 - DCD Markups

cc:	AE Cubbage	USNRC (with enclosure)
	JG Head	GEH/Wilmington (with enclosure)
	DH Hinds	GEH/Wilmington (with enclosure)
	TL Enfinger	GEH/Wilmington (with enclosure)
	eDRF Section	0000-0112-3825

Enclosure 1

MFN 10-042, Supplement 1

Transmittal of ESBWR DCD Tier 2, Chapter 9 Markups Related to GEH Internal Corrective Action – Part 2

DCD Markups

separate motor-driven pump in the fire pump enclosure can take suction from the fire protection storage tank and pump water into the reactor vessel via a tie in with the primary LPCI flow path.

Alternate Shutdown Cooling Mode – This mode may be initiated following an accident for accident recovery. In this mode, FAPCS operates in conjunction with other systems to provide reactor shutdown cooling in the event of loss of other shutdown cooling methods. FAPCS flow path is similar to that of LPCI mode during this mode of operation. Water is drawn from the suppression pool, cooled and then discharged back to the reactor vessel via the LPCI injection flow path. The warmer water in the reactor vessel rises and then overflows into the suppression pool via two opened safety-relief valves on the main steam lines, completing a closed loop for this mode operation.

Drywell Spray Mode - This mode may be initiated following an accident for accident recovery. During this mode of operation, FAPCS draws water from the suppression pool, cools and then spays the cooled water to drywell air space to reduce the containment pressure.

9.1.3.3 Safety Evaluation

The FAPCS is a nonsafety-related system except for the portions of the system that establish flow paths necessary for

- The interface with safety-related RWCU/SDC piping;
- The supply of post-accident makeup water to the Spent Fuel Pool and IC/PCCS pools following an accident; and
- The system's containment isolation function. (Subsection 6.2.4.3.2)

The SFP is designed to dissipate the maximum fuel decay heat through heat up and boiling of the pool water. The most conservative heat load for the SFP occurs when the pool contains spent fuel from 20 years of operation plus one full core offload. The pool water performs the safety-related heat removal function stipulated in GDC 44. Upon loss of power, the FB HVAC isolates the FB as described in Subsection 9.4.2.5. Steam generated by boiling of the SFP is released to the atmosphere through a relief panel in the FB. Water inventory in the SFP is adequate to keep the fuel covered through 72 hours, thereby avoiding heat up of the fuel and the potential for fission product release. Engineered safety feature atmosphere cleanup systems and associated guidance described in RG 1.52 are not credited by the FAPCS in the ESBWR design ~~as indicated in Subsection 15.4.1.4.1~~. The FB does not house any safety-related equipment, subject to flooding, as stated in Subsection 3.4.1.4.3. Sufficient reserve capacity is maintained onsite to extend the safe shutdown state from 72 hours through 7 days ensuring compliance with GDC 61. Post 72-hour inventory makeup is provided via safety-related connections to the Fire Protection System and to offsite water sources.

The FAPCS piping and components that provide the flow paths for the post-accident makeup water supply are designed to meet the requirements contained in Table 9.1-3, Item 3. No active valves are required to operate for establishing post-accident makeup water supply flow paths.

The RB and the FB provide adequate protection against natural phenomena for the safety-related components of the FAPCS as required by GDC 2 and GDC 4.

Additional monitoring equipment is provided within the panels to meet the process stream monitoring conditions listed in Table 9.3-1.

9.3.2.6 COL Information

9.3.2-1-A Post-Accident Sampling Program

The COL applicant shall develop a post-accident sampling program to monitor, as a minimum, the parameters delineated in Table 9.3-1 and SRP 9.3.2 (Subsection 9.3.2.2).

9.3.2.7 References

9.3.2-1 NUREG 0800, Standard Review Plan, Section 9.3.2.II, "Process and Post-Accident Sampling Systems."

9.3.2-2 Regulatory Guide 1.21, "Measuring and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants."

9.3.2-3 Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants."

9.3.2-4 Regulatory Guide 1.29, "Seismic Design Classification."

9.3.2-5 Regulatory Guide 1.33, "Quality Assurance Program Requirements."

9.3.2-6 Regulatory Guide 1.56, "Maintenance of Water Purity in Boiling Water Reactors."

9.3.2-7 Regulatory Guide 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants~~Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident~~."

9.3.2-8 Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable."

9.3.2-9 ANSI/HPS N13.1, "Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stacks and Ducts of Nuclear Facilities."

9.3.2-10 ASME B31.1, Power Piping.

9.3.2-11 EPRI TR-1008192, "BWRVIP-130: BWR Vessel and Internals Project BWR Water Chemistry Guidelines."

9.3.2-12 GE Nuclear Energy, "Regulatory Relaxation for BWR Post-Accident Sampling Stations (PASS)", NEDO-32991-A, Rev. 0, August 2001.

9.3.2-13 GE Nuclear Energy, "Methods of Estimating Core Damage in BWRs", NED~~O~~C-33045P, Rev. 0, July 2001.

9.3.3 Equipment and Floor Drain System

The Equipment and Floor Drain System (EFDS) consists of the Clean (nonradioactive) Drain Subsystem and the following five potentially contaminated subsystems:

- Low Conductivity Waste (LCW) Drain Subsystem;