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Subject: Response to Portion of NRC Request for Additional Information Letter No. 101 Related to ESBWR Design Certification Application, RAI Numbers 22.5-1, 22.5-10 and 22.5-11.

The purpose of this letter is to submit the GE-Hitachi Nuclear Energy Americas LLC (GEH) response to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) sent by NRC letter dated June 21, 2007 (Reference 1). The responses to those questions are addressed in Enclosure 1 as RAI Numbers 22.5-1, 22.5-10 and 22.5-11.

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

Sincerely,



James C. Kinsey
Vice President, ESBWR Licensing

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Reference:

1. MFN 07-357, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 101 Related to ESBWR Design Certification Application*, June 21, 2007.

Enclosure:

1. Response to Portion of NRC Request for Additional Information Letter No. 3 Related to ESBWR Design Certification Application ESBWR Probabilistic Risk Assessment RAI Number 19.2.4-1 S01

cc:	AE Cubbage	USNRC (with enclosures)
	GB Stramback	GEHNEA/San Jose (with enclosures)
	RE Brown	GEHNEA/Wilmington (with enclosures)
	eDRF Section	0000-0075-1760

Enclosure 1
MFN 07- 509

**Response to Portion of NRC Request for
Additional Information Letter No. 101
Related to ESBWR Design Certification Application
Regulatory Treatment of Non-Safety Systems (RTNSS)
RAI Numbers 22.5-1, 22.5-10 and 22.5-11**

NRC RAI 22.5-1

Section 14.3.7.3 states that RTNSS systems shall have Tier 1 inputs that include design descriptions and ITAAC. The staff finds that the above position is not implemented consistently throughout the DCD. The inconsistency is shown in the following examples:

A. In the response to RAI 14.3.69, the applicant recognized that the PSWS is a RTNSS system, but determined that an inspection, test and analyses, and acceptance criteria (ITAAC) is not required for PSWS.

B. In Revision 3, DCD Tier 1, Section 2.12.3, the RCCWS ITAAC was revised to remove the information of design descriptions and system drawings, design commitment, scope of ITAAC.

C. In Revision 3, DCD Tier 1, Section 2.12.5, the CWS ITAAC was revised to remove a large portions of the information described of a system description and system drawings, design commitment, scope of ITAAC. Review and revise DCD Tier 1 to consistently include all RTNSS systems in Tier 1 for ITAAC.

GEH Response

SSCs are determined by applying the Regulatory Treatment of Non-Safety Systems (RTNSS) criteria described in DCD Tier 2, Section 19A.1. Systems with system-level or component-level *safety-related*, RTNSS, Infrequent Event and/or Special Event (e.g., ATWS, Station Blackout and Safe Shutdown Fire in Tier 2, Chapter 15) mitigation functions or having a design characteristic, feature or function (DCFF) required for meeting a regulation shall have Tier 1 inputs that include Design Description (DD) and inspection, test and analyses, and acceptance criteria (ITAAC). (Ref. DCD Tier 2 subsection 14.3.7.3). DCD Tier 1 Rev 4 was revised to provide Tier 1 inputs including DD and ITAAC for all systems providing RTNSS functions.

A. The Plant Service Water System (PSWS) is subject to additional regulatory oversight for its post-72 hour cooling functions. A DD and ITAAC are provided addressing the specific RTNSS functions credited for the system.

B. The Reactor Component Cooling Water System (RCCWS) is subject to additional regulatory oversight for its nonsafety-related functions. A DD and ITAAC are provided addressing the specific RTNSS functions credited for the system.

C. The Chill Water System (CWS) is subject to additional regulatory oversight for its nonsafety-related functions. A DD and ITAAC are provided addressing the specific RTNSS functions credited for the system.

DCD Impact

DCD Tier 1 Rev 4 was revised to provide Tier 1 inputs including DD and ITAAC for all systems supporting RTNSS functions.

NRC RAI 22.5-10

In addition to the function of refilling the PCCS/ICS pools, which is identified for RTNSS treatment, discuss any other non-safety systems that are credited for post-72 hours to address the residual uncertainties associated with passive system performance and maintain containment temperature and pressure at acceptably low levels in accordance with GDC 38.

GEH Response

The FAPCS low pressure coolant injection function and the FAPCS suppression pool cooling function are classified as RTNSS. These functions have been identified as RTNSS to account for residual uncertainties in modeling assumptions and data for passive injection and containment heat removal functions. In addition, the BiMAC device is classified as RTNSS to account for severe accident phenomenological uncertainty. These functions are discussed in DCD Section 19A.4.3.

DCD/NEDO-33201 Impact

There is no impact on DCD Chapter 19 Revision 4.

There is no impact on NEDO-33201, Revision 2.

NRC RAI 22.5-11

Section 19A.3.1.3, Control Room Habitability, identifies that safety-related portions of the Control Room Habitability Area Ventilation System maintain the main control room habitability and that a small portable AC power generator kept on the plant site would be included within the scope of RTNSS. Please describe the electrical output and quality requirements of this portable AC power generator such that it will be able to provide sufficient power to operate the Control Room Habitability Area Ventilation System from 72 hours up to 7 days.

GEH Response

The ESBWR standard plant design includes the requirement to store onsite at least two small portable Control Room Habitability Area Ventilation System (CRHAVS) generators for the purpose of supplying power to an Emergency Filter Unit (EFU) fan post 72 hrs. This is a function that satisfies the significance criteria for Regulatory Treatment of Non-Safety Systems (RTNSS). The CRHAVS generator is required to satisfy RTNSS criterion B1 for long term safety assessment to maintain control room habitability. The portable AC generator that provides power to the Control Room Habitability Area ventilation is not risk-significant (LRO) and the proposed regulatory oversight is in the Availability Control Manual.

The CRHAVS generator will have a rating of greater than 2 kW at 120 volts / 60 Hz. This generator will meet electrical quality requirements similar to the Safety-Related Uninterruptible AC Power Supply. Plant design specifications for electrical equipment require equipment to be capable of continuous operation with equipment terminal voltage fluctuations of plus or minus 10% of rated voltage. Therefore, the portable CRHAVS generator will be self-regulating and maintain bus voltage within this range to ensure proper operation of the EFU fan.

Design Detail (DD) and inspection, test and analyses, and acceptance criteria (ITAAC) are provided addressing the specific RTNSS functions credited for the system in Tier 1 of the DCD. The CRHAVS portable generator function satisfies the significance criteria for Regulatory Treatment of Non-Safety Systems, and therefore requires regulatory oversight. The short-term availability controls for this function is consistent with the functional unavailability assumed in the ESBWR PRA. Surveillance requirements are provided to ensure that component performance is consistent with the functional reliability in the ESBWR PRA.

DCD Impact

DCD Tier 2 Rev 4, Chapter 19A, ACM, Availability Controls Manual Section AC 3.8.3 was added to ensure the availability and reliability of the CRHAVS portable generator.

DCD Tier 1 Rev 4, Table 2.16.2-6 was revised to reflect the DD, ITAAC and RTNSS functions for the portable CRHAVS generator.