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Subject: **Supplemental Response to Portion of NRC Request for Additional Information Letter No. 390 Related to ESBWR Design Certification Application – Fuel Storage and Handling – RAI Numbers 9.1-132 and 9.1-133**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) supplemental response to the U.S. Nuclear Regulatory Commission (NRC) Requests for Additional Information (RAIs) 9.1-132 and 9.1-133 sent by NRC Letter No. 390, Reference 1. This letter is meant to replace the responses to RAIs 9.1-132 and 9.1-133 submitted via Reference 2. No other RAI responses submitted via Reference 2 are affected by this letter.

GEH response to RAIs 9.1-132 and 9.1-133 is addressed in Enclosure 1. Enclosure 2 contains the DCD markups associated with this response.

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

Sincerely,

Richard E. Kingston

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Vice President, ESBWR Licensing

References:

1. MFN 09-693, Letter from U.S. Nuclear Regulatory Commission to Jerald G. Head, *Request for Additional Information Letter No. 390 Related to ESBWR Design Certification Application*, November 2, 2009
2. MFN 09-726, Response to Portion of NRC Request for Additional Information Letter No. 390 Related to ESBWR Design Certification Application - Fuel Storage and Handling - RAI Numbers 9.1-130, 9.1-131, 9.1-132, 9.1-133, 9.1-134, 9.1-135, 9.1-136, 9.1-137, 9.1-138 and 9.1-139, November 20, 2009

Enclosures:

1. Supplemental Response to Portion of NRC Request for Additional Information Letter No. 390 Related to ESBWR Design Certification Application – Fuel Storage and Handling – RAI Numbers 9.1-132 and 9.1-133
2. Supplemental Response to Portion of NRC Request for Additional Information Letter No. 390 Related to ESBWR Design Certification Application – Fuel Storage and Handling – RAI Numbers 9.1-132 and 9.1-133 – DCD Markups

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	eDRF Section	0000-0111-2279

Enclosure 1

MFN 09-726, Supplement 1

Supplemental Response to Portion of NRC Request for Additional Information Letter No. 390 Related to ESBWR Design Certification Application

Fuel Storage and Handling

RAI Numbers 9.1-132 and 9.1-133

NRC RAI 9.1-132

The safety-related external connections for FAPCS for emergency refill of the Isolation Condenser (IC)/Passive Containment Cooling System (PCCS) pools and the spent fuel pool (SFP) are inconsistently described in DCD Tier 2 and incorrectly identified as nonsafety-related in DCD Tier 1. As a sample, DCD Tier 2, Sections 9.1.3.2, 9.1.3.3, 9.2.5, and Table 9.1-3 describe in various ways these connections while identifying them as safety-related. These connections are described in Section 9.5.1.1 but are not identified as safety-related. DCD Tier 1 Rev. 6, Table 2.6.2-2, 7(c), states incorrectly that these connections are nonsafety-related. Revise the description of these safety-related connections in DCD Tier 1 and Tier 2 to be consistent. GEH should evaluate whether these connections are described in other sections or tables as the list above is only a sample.

GEH Supplemental Response

GEH Original Response (Letter MFN 09-726, dated November 20, 2009) for reference:

The function of replenishing the SFP and IC/PCCS pools at 72 hours post-accident is nonsafety-related; however, the FAPCS piping used to convey this water to the pools has been conservatively classified as safety-related. In the past, this classification has led to some confusion about whether the makeup function itself is safety-related, and the DCD has been written to make a distinction between the nonsafety-related *function* and the safety-related *piping* that helps perform this function.

A review of the DCD sections describing this function concludes:

- Tier 2, Section 9.5.1.1 does not contradict the classification described above.
- Tier 1, Table 2.6.2-2 Item 7 is an ITAAC written to govern the functions of suppression pool cooling, low pressure coolant injection, and SFP and IC/PCCS pool makeup – all of which are nonsafety-related. The piping itself is correctly described by Tier 1, Table 2.6.2-1 as being designed to ASME Section III, and Seismic Category I. No change to Tier 1, Section 2.6.2 is needed.
- Tier 2, Subsection 19A.3.3, 5th bullet does use the words nonsafety, but again the intention is to describe the nonsafety-related RTNSS function, not the piping itself. The bullet will be changed to avoid confusing the RTNSS function with the portion of FAPCS pipe that is safety-related.

GEH Supplemental Response (new information transmitted via this letter):

During a phone call on December 10, 2009, the NRC communicated to GEH some concerns related to the wording of the revised Tier 2, Subsection 19A.3.3.

This section presents a list of "SSCs" (Structures, Systems or Components) that are intended to summarize the RTNSS functions described in the preceding paragraphs. The fifth bullet was revised to read:

> "Nonsafety-Related Dedicated FPS Makeup Water Supplied to the Spent Fuel Pool (SFP) and IC/PCCS Pools."

The NRC pointed out that this bullet does not specifically refer to a structure, system or component. GEH will revise the section to make the bullet consistent with the introductory paragraph, and will clarify that this is simply a representative list for the purpose of summarizing the RTNSS functions described in the preceding sections.

<u>DCD Impact</u>

DCD Tier 2, Subsection 19A3.3 will be revised as noted in the attached markup.

NRC RAI 9.1-133

In the DCD Tier 1, Rev 6, Table 2.6.2-2, #16, modify the acceptance criteria to more specifically discuss physical separation criteria necessary to keep the Fuel and Auxiliary Pool Cooling System (FAPCS) trains electrical equipment appropriately physically separated to prevent both trains from being damaged simultaneously by a design basis event including load drop. DCD Tier 2 does not identify separation criteria for non-Class-1E systems such as FAPCS.

GEH Supplemental Response

GEH Original Response (Letter MFN 09-726, dated November 20, 2009) for reference:

This RAI duplicates the question being asked in a more comprehensive RAI 14.3-449 S02, Part B.2.

Please refer to the forthcoming response to 14.3-449 S02.

GEH Supplemental Response (new information transmitted via this letter):

During a phone call on December 10, 2009, the NRC communicated to GEH that the response to RAI 14.3-449 S02 did not directly address their concern about load drops. This supplemental response was requested for clarification.

The electrical equipment supporting the two FAPCS trains is routed through separate areas and is not routed through areas in which heavy loads could be transported. Any heavy loads that are being transported in the Reactor Building or the Fuel Building (where the majority of FAPCS equipment is located) that have the potential to simultaneously compromise both FAPCS trains would be handled by single failure-proof cranes.

DCD Impact

No DCD changes will be made in response to this RAI.

Enclosure 2

MFN 09-726, Supplement 1

Supplemental Response to Portion of NRC Request for Additional Information Letter No. 390 Related to ESBWR Design Certification Application

Fuel Storage and Handling

RAI Numbers 9.1-132 and 9.1-133

DCD Markups

Beyond 72 hours, it is necessary to provide power for the Q-DCIS components. Power for Q-DCIS and emergency lighting (Subsection 9.5.3) is supplied by ancillary AC power. In addition, cooling for the areas containing the DCIS components must be considered. The Q-DCIS cabinets and related components are either passively cooled, or, if necessary have localized cooling from the Control Room Habitability Area Ventilation System (CRHAVS) recirculation air handling units. Internal air conditioning provides cooling to the recirculation air handling units and heating is also available (Subsection 9.4.1). The recirculation air handling units are powered by ancillary AC power.

19A.3.2 Seismic Assessment

The seismic margins analysis described in Subsection 19.2.3.2.4 assesses the seismic ruggedness of safety-related plant systems and the nonsafety-related systems required for decay heat removal. No accident sequence has a High Confidence Low Probability of Failure (HCLPF) ratio less than 1.67 times the peak ground acceleration magnitude of the safe shutdown earthquake (SSE). In addition, to address long-term safety functions, the structures and components that are in the scope of RTNSS Criterion B meet Seismic Category II design requirements. Therefore, there are no additional RTNSS candidates due to seismic events.

19A.3.3 Summary of RTNSS Findings for Criterion B

The following are representative SSCs ~~are~~ that provide functions in the scope for RTNSS to address long-term safety and seismic requirements:

- Diesel Driven Fire Pump
- Motor Driven Fire Pump
- Fire Water Tank
- Diesel Fire Pump Fuel Tank
- ~~Nonsafety-Related~~Piping Required for Dedicated FPS~~APCS Piping~~ Makeup Water Supplied to the Spent Fuel Pool (SFP) and IC/PCCS Pools
- Passive Autocatalytic Recombiners
- PCCS Vent Fans
- Ancillary Diesel Generators
- Ancillary Busses
- Ancillary Diesel Generator Fuel Tanks
- Ancillary Diesel Generator Fuel Transfer Pumps
- Ancillary Diesel Building HVAC
- Emergency Lighting Units
- Control Room Air Handling Units
- Air Conditioning for air handling unit coils and the Q-DCIS Room Local Coolers