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**Subject: Response to NRC Request for Additional Information Letter No. 372  
Related to ESBWR Design Certification Application – Fuel Storage and  
Handling – RAI Number 9.1-15 S05**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information No. (RAI) 9.1-15 S05 sent by NRC Letter No. 372, Reference 1. The response to RAI Number 9.1-15 S04 was previously submitted to the NRC via Reference 2 in response to Reference 3.

GEH response to RAI Number 9.1-15 S05 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  
Vice President, ESBWR Licensing

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NRO

References:

1. MFN 09-608, Letter from U.S. Nuclear Regulatory Commission to Jerald G. Head, *Request for Additional Information Letter No. 372 Related to ESBWR Design Certification Application*, September 21, 2009
2. MFN 09-559, Response to NRC Request for Additional Information Letter Number No. 365 Related to ESBWR Design Certification Application – Fuel Storage and Handling – RAI Number 9.1-15 S04, August 24, 2009
3. MFN 09-555, Letter from U.S. Nuclear Regulatory Commission to Jerald G. Head, *Request for Additional Information Letter No. 365 Related to ESBWR Design Certification Application*, August 10, 2009

Enclosures:

1. Response to NRC Request for Additional Information Letter No. 372 Related to ESBWR Design Certification Application – Fuel Storage and Handling - RAI Number 9.1-15 S05
2. Response to NRC Request for Additional Information Letter No. 372 Related to ESBWR Design Certification Application – Fuel Storage and Handling - RAI Number 9.1-15 S05 – DCD Markups

cc: AE Cubbage      USNRC (with enclosure)  
JG Head            GEH/Wilmington (with enclosure)  
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eDRF Section      0000-0108-2140

**Enclosure 1**

**MFN 09-628**

**Response to NRC Request for  
Additional Information Letter No. 372  
Related to ESBWR Design Certification Application**

**Fuel Storage and Handling**

**RAI Number 9.1-15 S05**

**NRC RAI 9.1-15 S05**

*In its response to RAI 9.1-15 S04, the applicant stated that "[t]he entire buffer pool floor is occupied by fuel storage racks or other equipment and does not require a cover plate on top of the liner plate at the leak chase channels." However, during a conference call with the applicant on September 17, 2009, it became apparent that there will be areas at the bottom of the buffer pool that are constantly exposed from above. Further discussion indicated that the deep pit of the buffer pool was an exception to this new information. Clarify in the DCD whether there are areas in the buffer pool deep pit that are exposed from above (i.e., do not have fuel racks or other equipment shielding the bottom of the pit) such that a dropped fuel bundle could impact the pit bottom without first striking the fuel racks in the deep pit.*

**GEH Response**

The liner plates above the leak chase channels in the RB buffer pool deep pit floor do not require a reinforcing strip of material since the RB buffer pool deep pit floor is fully occupied by high-density fuel storage racks or other equipment. These racks or other equipment will shield the RB buffer pool deep pit floor from impacts from dropped objects such as a fuel assembly. This will be clarified in DCD Revision 7.

**DCD Impact**

DCD Tier 2 Subsection 3.8.4.2.5 will be revised in Revision 7 as noted in the attached markup.

**Enclosure 2**

**MFN 09-628**

**Response to NRC Request for  
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Related to ESBWR Design Certification Application**

**Fuel Storage and Handling**

**RAI Number 9.1-15 S05**

**DCD Markups**

### 3.8.4.2.5 Welding of Pool Liners

All pool liner welds, including the spent fuel pool liner welds, are visually inspected before starting any other NDE method. The visual weld acceptance criteria are defined in AWS Structural Welding Code, D1.1. In accordance with approved procedures, the welded seams of the liner plate are inspected by:

- Liquid Penetrant Examinations. To be carried out on all liner plate butt, fillet, corner and tee welds in accordance with ASME, Section V, Article 6 requirements. The acceptance criteria are in accordance with the requirements of ASME Section III, NE-5352.
- Helium sniffer test or vacuum box technique in accordance with ASME Section V, Article 10 requirements. Any evidence of leakage is unacceptable.

After construction is finished, each isolated pool is leak tested.

The liner welds for all pools outside of the RCCV, including the spent fuel pool, are backed by leak chase channels and a leak detection system to monitor any leakage during plant operation. The leak chase channels are grouped according to the different pool areas and direct any leakage to area drains. This allows both leak detection and determination of where leaks originate. The functioning of the leak chase channels are checked prior to completion of the pool liner installation.

*[For the floor area of the FB spent fuel pool liner that is not occupied by fuel storage racks or other equipment, the liner plates above the leak chase channels have a stainless steel reinforcing strip of material to protect against puncture from dropped objects such as a fuel assembly.]\**

The liner plates above the leak chase channels in the RB buffer pool deep pit floor do not require a reinforcing strip of material since the RB buffer pool deep pit floor is fully occupied by high density fuel storage racks or other equipment. These racks or other equipment will shield the RB buffer pool deep pit floor from impacts from dropped objects such as a fuel assembly.

\*Text sections that are bracketed and italicized with an asterisk following the brackets are designated as Tier 2\*. Prior NRC approval is required to change.

### 3.8.4.2.6 Firewater Service Complex

Applicable documents for the FWSC design are the same as the RB, which are listed in Table 3.8-9.

### 3.8.4.3 Loads and Load Combinations

#### 3.8.4.3.1 Reactor Building

##### 3.8.4.3.1.1 Loads and Notations

This section presents only the loads that are applied to the RB directly. Other loads, which are applied to the RCCV only but have effects on RB structures because of common foundation mat, like  $P_a$  and  $T_a$ , are also considered in the RB design.

Loads and notations are as follows: