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Subject: **Response to Portion of NRC Request for Additional Information Letter No. 326 Related to ESBWR Design Certification Application – RAI Number 14.3-430 S01**

Enclosure 1 contains the GE Hitachi Nuclear Energy (GEH) response to the subject NRC RAI originally transmitted via the Reference 1 letter. Enclosure 2 contains DCD markup associated with this response.

The initial RAI 14.3-430 was received from the NRC on September 16, 2008 (Reference 2), and the GEH response was transmitted to the NRC on February 3, 2008 (Reference 3).

If you have any questions about the information provided here, please contact me.

Sincerely,

FOR

Richard E. Kingston
Vice President, ESBWR Licensing

References:

1. MFN 09-248, Letter from the U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 326, Related To ESBWR Design Certification Application*, dated April 8, 2009
2. MFN 08-722, Letter from the U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 252, Related To ESBWR Design Certification Application*, dated September 16, 2008
3. MFN 09-085, *Response to Portion of NRC Request for Additional Information Letter No. 252 Related to ESBWR Design Certification Application RAI Number 14.3-430*, dated February 3, 2008

Enclosures:

1. Response to Portion of NRC Request for Additional Information Letter No. 326, Related to ESBWR Design Certification Application – RAI Number 14.3-430 S01
2. Response to Portion of NRC Request for Additional Information Letter No. 326, Related to ESBWR Design Certification Application – RAI Number 14.3-430 S01 - DCD Markup

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|---|---|---|
| cc: | AE Cubbage | USNRC (with enclosures) |
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# Enclosure 1

# MFN 09-290

# Response to Portion of NRC Request for

# Additional Information Letter No. 326

# Related to ESBWR Design Certification Application

# RAI Number 14.3-430 S01

**NRC RAI 14.3-430:**

*In Rev. 5, a number of ITAAC for DW to WW vacuum breaker isolation valve function (VBIF) were identified in Tier 1 Section 2.15. However no discussion/ITAAC is provided in Tier 1 Section 2.2 on the instrumentation and control systems associated with VBIF. A section similar to 2.2.14, DICS should also be added addressing VBIF.*

**GEH Response:**

GEH agrees that the vacuum breaker isolation valve function (VBIF) should be identified as part of the Q-DCIS in DCD Tier 1, Section 2.2; however, addition of a new subsection is not required.

The vacuum breaker isolation valves and associated VBIF logic are part of the Containment System. Therefore, including the VBIF requirements in DCD Tier 1, Section 2.15, is appropriate. No new Section will be added to DCD Tier 1 by this response.

However, the vacuum breaker isolation valve function will be added to DCD Tier 1 Table 2.2.10-1 by the GEH response to RAI 14.3-402.

DCD Tier 1, Revision 5, Section 2.15.1(15) describes the requirements for the VBIF.

DCD Tier 1, Revision 5, Tables 2.15.1-1b and 2.15.1-1c, identify the mechanical and electrical qualification requirements for the vacuum breaker isolation valves (VBIVs). The GEH response to RAI 7.1-110 will revise DCD Tier 1, Table 2.15.1-1c to indicate that the VBIF is part of Q-DCIS.

DCD Tier 1, Revision 5, Table 2.15.1-2, Item 15, describes the ITAAC requirements for the VBIV and the associated VBIF logic.

**DCD Impact:**

The vacuum breaker isolation valve function will be added to DCD Tier 1, Table 2.2.10-1, for Revision 6 by the GEH response to RAI 14.3-402 (MFN 09-078).

The GEH response to RAI 7.1-110 (MFN 08-920) will revise DCD Tier 1, Table 2.15.1-1c, for Revision 6 to indicate that the VBIF is part of Q-DCIS.

**NRC RAI 14.3-430 S01:**

*Revise Table 2.15.1-1c*

*In response to RAI 14.3-430 GEH provided a reference to DCD Tier 1, Revision 5, Section 2.15.1 instead of providing the vacuum breaker isolation valve design description in Section 2.2 of the DCD Tier 1. In Tier 1 Table 2.15.1-1 c, the active safety function for the vacuum breaker isolation valve is stated as "OPEN" and "CLOSE", whereas in Section 2.15.1, there is no design description provided for the "OPEN" safety function. Explain the discrepancy between the design description in section 2.15.1 and the information in Table 2.15.1-1c.*

**GEH Response:**

A vacuum breaker isolation valve (VBIV) isolates a stuck open vacuum breaker of which there are three and one can provide full vacuum relief. The single-failure of a vacuum breaker to close is mitigated by the closure of its respective VBIV. In the event that one VBIV is closed, the two remaining operable vacuum breakers provide the single failure redundancy required for the vacuum relief function. Therefore the VBIV's do not have a safety-related function to open.

For operational convenience, each VBIV is equipped with an actuator that can open the valve once it is closed during testing. Table 2.15.1-1c will be revised to remove "OPEN" as a safety-related function from the VBIV. The associated design description will remain as it is..

**DCD Impact:**

DCD Tier 1, Table 2.15.1-1c will be revised as noted in the attached markup, in Enclosure 2.

# Enclosure 2

# MFN 09-290

# Response to Portion of NRC Request for

# Additional Information Letter No. 326

# Related to ESBWR Design Certification Application

# RAI Number 14.3-430 S01
# DCD Markup

## Table 2.15.1-1c

## Electrical Equipment

| Equipment Name (Description) | Equipment Identifier See Figure 2.15.1-1 | Control Q-DCIS/ DPS | Seismic Category I | Safety-Related | Safety-Related Display | Active Safety Function | Remotely Operated | Containment Isolation Valve Actuator |
|---|---|---|---|---|---|---|---|---|
| Vacuum Breaker | 11(A) | - | Yes | Yes | Yes | Open/Close | No | No |
| Vacuum Breaker Isolation Valve | 11a(A) | Yes/No~~Note 1~~ | Yes | Yes | Yes | ~~Open/~~Close | Yes | No |
| Vacuum Breaker | 11(B) | - | Yes | Yes | Yes | Open/Close | No | No |
| Vacuum Breaker Isolation Valve | 11a(B) | Yes/No~~Note 1~~ | Yes | Yes | Yes | ~~Open/~~Close | Yes | No |
| Vacuum Breaker | 11(C) | - | Yes | Yes | Yes | Open/Close | No | No |
| Vacuum Breaker Isolation Valve | 11a(C) | Yes/No~~Note 1~~ | Yes | Yes | Yes | ~~Open/~~Close | Yes | No |
| Vacuum Breaker Isolation Function Independent Control Platform~~Containment System Logic Controllers~~ | - | Yes/No~~Note 1~~ | Yes | Yes | Yes | ~~Open/~~Close Vacuum Breaker Isolation Valves on ~~signals~~demand | Yes | No |

~~Notes:~~

~~1. Safety-related control provided by control system independent of Q-DCIS and DPS~~