



**HITACHI**

**GE Hitachi Nuclear Energy**

James C. Kinsey  
Vice President, ESBWR Licensing

PO Box 780 M/C A-55  
Wilmington, NC 28402-0780  
USA

T 910 675 5057  
F 910 362 5057  
jim.kinsey@ge.com

MFN 07-639

Docket No. 52-010

December 4, 2007

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555-0001

**Subject: Response to Portion of NRC Request for Additional  
Information Letter No. 109 Related to ESBWR Design  
Certification Application RAI Number 19.1-153**

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 (RAI) sent by NRC letter dated October 12, 2007 (Reference 1). The GEH response to RAI Number 19.1-153 is in Enclosure 1.

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

Sincerely,

James C. Kinsey  
Vice President, ESBWR Licensing

DOLB

NRO

MFN 07-639

Page 2 of 2

Reference:

1. MFN 07-555, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 109 Related to ESBWR Design Certification Application*, October 12, 2007.

Enclosure:

1. Response to Portion of NRC Request for Additional Information Letter No. 109 Related to ESBWR Design Certification Application ESBWR Probabilistic Risk Assessment RAI Number 19.1-153

cc: AE Cubbage USNRC (with enclosure)  
GB Stramback GEH/San Jose (with enclosure)  
RE Brown GEH/Wilmington (with enclosure)  
eDRFSection 0000-0078-1993

**Enclosure 1**  
**MFN 07-639**

**Response to Portion of NRC Request for  
Additional Information Letter No. 109  
Related to ESBWR Design Certification Application  
ESBWR Probabilistic Risk Assessment  
RAI Number 19.1-153**

**NRC RAI 19.1-153**

*The staff has reviewed Table 19.2-3 of the ESBWR DCD Chapter 19, dated April 28, 2007. The table is missing many key ESBWR features that reduce shutdown risk and their disposition (e.g., DCD Tier 2, Tier 1 material, technical specifications, or emergency response guidelines). Please expand this table to include key risk features. Some examples of these features that reduce shutdown risk are:*

- A. Key design features/SSCs that reduce potential vessel diversions from the vessel through the RWCU/SDC system (e.g. automatic isolation of the RWCU\SDC process and sampling valves on low level (level 2)).*
- B. Key design features that provide automatic responses to losses of the RWCU/SDC system (e.g., the automatic initiation of the Isolation Condenser on low level (level 2) in Modes 3,4, and 5.*
- C. Key design features that provide automatic RCS injection following Loss of RWCU/SDC, vessel diversions, and LOCAs (e.g., the automatic initiation of gravity driven core cooling system in Modes 3, 4, 5 and 6 and the RCS vent path needed for GDCS.*
- D. Key operator actions and key pieces of instrumentation that are needed to support the associated operator actions (e.g., operator closing the drywell hatches following a LOCA or vessel diversion.*
- E. Key SSCs that are needed to be available at shutdown to provide an alternate decay heat removal path to RWCU/SDC using low pressure makeup (e.g., SRVs/DPVs, suppression pool, fire water, FAPCS, etc.).*

**GEH Response**

- A. DCD subsection 19A.4.4.8, Revision 4 discusses the design feature of automatic isolation of the RWCU\SDC process and sampling valves on low level to mitigate potential vessel diversions.
- B. As discussed in NEDO-33201 Section 16, Revision 2 loss of RWCU/SDC is not a significant contributor to shutdown risk, accounting for less than 1% of shutdown CDF. Therefore, mitigating features that respond to loss of RWCU/SDC are not considered to be within the scope of DCD Chapter 19 Table 19.2-3. The risk is low because loss of shutdown cooling is a design consideration built into the design.
- C. Table 19.2-3, (p.19.2-39) discusses the need for automatic initiation of GDCS during the entire shutdown period and the need for depressurization to be available while the vessel head is in place.

- D. Table 19.2-3, (p.19.2-38) discusses the need for the operator closing the lower drywell hatches during shutdown conditions with a loss of coolant level.
- E. Table 19.2-3, (p.19.2-38) discusses the need for “systems critical to decay heat removal function” being available during shutdown conditions.

Items C, D, and E are dispositioned as “Operational Programs.” These items are incorporated into operating procedures, emergency response procedures, and training, as appropriate.

**DCD/NEDO-33201 Impact**

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

No NEDO-33201 changes will be made in response to this RAI.