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 08-371

Docket No. 52-010

April 17, 2008

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. 121 Related to ESBWR Design Certification Application, RAI Number 22.5-17 S01**

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 December 5, 2007 (Reference 1). The GEH response to RAI Number 22.5-17 S01 is addressed in Enclosure 1. The original RAI and response are in References 2 and 3.

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

Sincerely,

James C. Kinsey

James C. Kinsey
Vice President, ESBWR Licensing

D068
NRO

References:

1. MFN 07-658, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request For Additional Information Letter No. 121 Related To ESBWR Design Certification Application*, December 5, 2007
2. 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
3. MFN 07-455, Response to Portion of NRC Request for Additional Information Letter No. 101 Related to ESBWR Design Certification Application, RAI Numbers 19.1-150, 19.1-151, 22.5-12 through 22.5-14, 22.5-17 and 22.5-18

Enclosure:

1. Response to Portion of NRC Request for Additional Information Letter No. 121 Related to ESBWR Design Certification Application, Non-Safety System Interactions, RAI Number 22.5-17 S01

cc: AE Cubbage USNRC (with enclosure)
GB Stramback GEH/San Jose (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
eDRF 0000-0081-9218

Enclosure 1

MFN 08-371

Response to Portion of NRC Request for Additional

Information Letter No. 121

Related to ESBWR Design Certification Application

Non-Safety System Interactions

RAI Number 22.5-17 S01

NRC RAI 22.5-17 S01

In its response to RAI 22.5-17 in MFN 07-455 (August 23, 2007), GEH states that it evaluated potential adverse system interactions for nonsafety-related components from functional or spatial interactions. GEH reports that the evaluation did not identify any structures, systems, and components that should be considered for Regulatory Treatment of Non-Safety Systems (RTNSS). Explain how potential adverse system interactions for nonsafety-related components from functional or spatial interactions will be identified and addressed during detailed engineering and construction phase to ensure that the functions of safety related and RTNSS systems will not be adversely impacted. Please add a COL item if necessary to address this issue.

GEH Response

SECY-94-084, "Policy and Technical Issues Associated With the Regulatory Treatment of Non-Safety Systems" requires a systematic evaluation for adverse interactions between the active and passive, (i.e., nonsafety-related and safety-related) systems. This request for additional information is inquiring about interactions between nonsafety-related and RTNSS systems. As part of the DCD Revision 5 update process, an adverse systems interactions evaluation is performed for changes to the ESBWR design. Additional adverse systems interactions, if any, are included in DCD Tier 2 Revision 5, Section 19A.6.

Adverse interactions could result from the presence of two or more systems in proximate locations regarding the effects of: fire, flood, pipe break, missile hazard, and seismic events. These effects are addressed in the detailed design phase engineering procedures, which are part of the GEH quality program. In particular, the design input procedure contains provisions for identifying design inputs during development or modification of the design of systems such as consideration of loads (e.g., seismic, wind, thermal and dynamic); environmental impact (e.g., temperature, humidity, radiation, electromagnetic radiation); failure effects; and reliability requirements (including interactions that could impair important functions).

Safety-related systems are required to be protected from the effects of failures in the safety-related and nonsafety-related systems. These interactions are addressed in various sections in DCD Tier 2, namely: Section 3.3, "Wind and Tornado Loadings;" Section 3.4, "Water Level (Flood) Design;" Section 3.5, "Missile Protection;" Section 3.6, "Protection Against the Dynamic Effects Associated with the Postulated Rupture of Piping;" and Section 3.7, "Seismic Design." RTNSS systems are also protected against adverse interactions, as described in the GEH response to NRC RAI number 22.5-5 (MFN 08-336), which describes the features that are required to be implemented during the detailed engineering and construction phase to ensure that RTNSS systems are not adversely affected by interactions from internal flooding, external flooding, missiles generated during seismic events and high winds, and piping failures in fluid systems outside containment.

DCD/NEDO-33201 Impact

No change to the DCD or NEDO-33201 will be made in response to this RAI.