



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 07-696

Docket No. 52-010

January 2, 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. 100 Related to ESBWR Design
Certification Application RAI Number 4.4-62**

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 the Reference 1 NRC letter. GEH response to RAI Number 4.4-62 is addressed in Enclosure 1.

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

Sincerely,

James C. Kinsey
Vice President, ESBWR Licensing

DO68
UKD

Reference:

1. MFN 07-327, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, GEH, *Request For Additional Information Letter No. 100 Related To ESBWR Design Certification Application*, dated May 30, 2007.

Enclosures:

1. MFN 07-696 – Response to Portion of NRC Request for Additional Information Letter No. 100 – Related to ESBWR Design Certification Application – RAI Number 4.4-62

cc: AE Cabbage USNRC (with enclosure)
GB Stramback GEH/San Jose (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
eDRF 0000-0076-6928

Enclosure 1

MFN 07-696

**Response to Portion of NRC Request for
Additional Information Letter No. 100
Related to ESBWR Design Certification Application**

RAI Number 4.4-62

NRC RAI 4.4-62

Limiting or potentially limiting AOOs in OLMCPR determination

In DCD Tier 2, Rev. 3, Section 15.2, several Anticipated Operational Occurrences have been listed as potentially limiting with respect to Operating Limit MCPR determination. In previous revisions, the loss of feedwater heater with Selected Control Rod Run-in (SCRRI) failure was described as the worst case for OLMCPR determination. In Topical Report NEDC-33237P, Revision 2, Sections 5.12 and 6.0, the LFWH with SCRRI failure is still listed as the limiting event for OLMCPR determination. The DCD and the Topical Report should be consistent regarding the potentially limiting events.

GEH Response

The Anticipated Operational Occurrences (AOOs) listed as “potentially limiting” in DCD Tier 2 Section 15.2 are listed as such to ensure they are analyzed on a cycle specific basis. An event is listed as potentially limiting using judgment based on ESBWR transient analysis results and past BWR transient analysis experience. The goal is to ensure a sufficient spectrum of events is analyzed as core and fuel designs change. Only the limiting Δ CPR/ICPR result from the potentially limiting events analyzed for a given fuel cycle is used to determine the OLMCPR.

In DCD Tier 2 Revisions 1 through 4 the Loss of Feedwater Heating (LFWH) with failure of Selected Control Rod Run-In (SCRRI) is an Infrequent Event not an AOO. GEH assumes that the event intended to be referred to in this RAI is the LFWH AOO, which includes SCRRI actuation. The LFWH AOO from DCD Revision 1 is the event used to calculate the ESBWR representative OLMCPR in NEDC-33237P (Reference 4.4-62-1). Note that an OLMCPR of 1.30 is assumed in the core design and is conservative with respect to the calculated OLMCPR of 1.28.

A design change to the Isolation Condenser System, which increased the water mass in the system, was introduced in DCD Revision 2. This change increased the Δ CPR/ICPR of the Inadvertent Isolation Condenser Initiation (IICI) AOO. The Select Rod Insert (SRI) function was added to the SCRRI function in DCD Revision 3. Addition of the SRI function reduced the Δ CPR/ICPR for the LFWH. As a result of these changes DCD Tier 2 Revision 4 Section 15.2 shows the IICI event Δ CPR/ICPR as limiting. The IICI Δ CPR/ICPR is slightly more limiting than the Δ CPR/ICPR used to calculate the OLMCPR in Reference 4.4-62-1. However the increase in calculated OLMCPR due to the higher IICI Δ CPR/ICPR, including calculated uncertainty, is less than the conservatism included in the assumed OLMCPR. Because the assumed OLMCPR is not affected, NEDC-33237P (Reference 4.4-62-1) will not be revised.

DCD Impact

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

No changes to the subject LTR will be made in response to this RAI.

Reference

- 4.4-62-1 Global Nuclear Fuel, "GE14 for ESBWR – Critical Power Correlation, Uncertainty, and OLMCPR Development", NEDC-33237P, Class III, Revision 2, April 2007.