

GE-Hitachi Nuclear Energy Americas LLC

Proprietary Notice

*This letter forwards proprietary information in accordance with 10CFR2.390. Upon the removal of Enclosure 1, the balance of this letter may be considered nonproprietary.*

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MFN 06-464  
Supplement 4

Docket No. 52-010

August 28, 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. 67 Related to ESBWR Design Certification Application –  
Mechanical Systems and Components – RAI Number 3.9-51 S01**

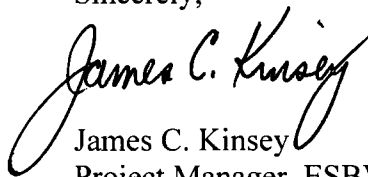
Enclosure 1 contains GEH's response to the subject NRC RAI transmitted via e-mail on May 15, 2007. GEH's original response was provided in the Reference 1 letter.

Enclosure 1 contains GEH proprietary information as defined by 10 CFR 2.390. GEH customarily maintains this information in confidence and withholds it from public disclosure. A non-proprietary version is provided in Enclosure 2.

The affidavit contained in Enclosure 3 identifies that the information contained in Enclosure 1 has been handled and classified as proprietary to GEH. GEH hereby requests that the information of Enclosure 1 be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390 and 9.17.

If you have any questions or require additional information regarding the information provided here, please contact me.

Sincerely,



James C. Kinsey  
Project Manager, ESBWR Licensing

DO68  
NRE

Reference:

1. MFN 06-464, Letter from David Hinds to U.S. Nuclear Regulatory Commission, *Response to Portion of NRC Request for Additional Information Letter No. 67 Related to ESBWR Design Certification Application - DCD Section 3.9 - RAI Numbers 3.9-4 through 3.9-11, 3.9-17, 3.9-18, 3.9-23, 3.9-26, 3.9-27, 3.9-29, 3.9-32, 3.9-34 through 3.9-36, 3.9-38 through 3.9-40, 3.9-44, 3.9-46 through 3.9-55, 3.9-57, 3.9-59, 3.9-60, 3.9-67, 3.9-72 through 3.9-76, 3.9-79, 3.9-80, 3.9-91 through 3.9-94, 3.9-96 through 3.9-99, 3.9-101, 3.9-102, 3.9-104, 3.9-105, 3.9-108, 3.9-110, 3.9-132, 3.9-140, 3.9-142, 3.9-147, 3.9-150, 3.9-151, and 3.9-153*, November 22, 2006

Enclosures:

1. MFN 06-464, Supplement 4 – Response to Portion of NRC Request for Additional Information Letter No. 67 Related to ESBWR Design Certification Application – Mechanical Systems and Components – RAI Number 3.9-51 S01 – GEH Proprietary Information
2. MFN 06-464, Supplement 4 – Response to Portion of NRC Request for Additional Information Letter No. 67 Related to ESBWR Design Certification Application – Mechanical Systems and Components – RAI Number 3.9-51 S01 – Public Version
3. Affidavit – James C. Kinsey – August 28, 2007

cc: AE Cabbage USNRC (with enclosures)  
DH Hinds GEH (with enclosures)  
RE Brown GEH (w/o enclosures)  
eDRF 0000-0070-0632

**Enclosure 2**

**MFN 06-464**

**Supplement 4**

**Response to Portion of NRC Request for**

**Additional Information Letter No. 67**

**Related to ESBWR Design Certification Application**

**Mechanical Systems and Components – RAI Number 3.9-51 S01**

**Public Version**

*Original RAI response is provided for clarity*

**NRC RAI 3.9-51**

It is stated in DCD Tier 2, Section 3.9.2.3 that data from previous plant vibration measurements are assembled and examined to identify predominant vibration response modes of major components. In general, response modes are similar but response amplitudes vary among boiling water reactors (BWRs) of differing size and design. Provide the extent of the variation in the response amplitudes, in BWRs of differing size and design for selected typical major reactor internals components.

**GE Response**

Since the shroud/separator structure is of special interest to the ESBWR, the variations in the measured shroud/separator responses during startup testing at full power for seven older reactors are provided below.

| <i>Plant Name</i>    | <i>RPV ID (inches)</i> | <i>Shroud Displacement Amplitude (p-p mils)</i> |
|----------------------|------------------------|---|
| <i>Dresden 2</i>     | <i>251</i>             | <i>1.5</i>                                      |
| <i>Dresden 3</i>     | <i>251</i>             | <i>1.5</i>                                      |
| <i>Fukushima 1</i>   | <i>188</i>             | <i>0.5</i>                                      |
| <i>Millstone</i>     | <i>213</i>             | <i>1.5</i>                                      |
| <i>Monticello</i>    | <i>205</i>             | <i>1.0</i>                                      |
| <i>Quad Cities 1</i> | <i>251</i>             | <i>0.5</i>                                      |
| <i>KKM</i>           | <i>158</i>             | <i>2.5</i>                                      |

The mean value of these displacements is 1.29 and the standard deviation is 0.699.

**DCD Impact**

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

**NRC RAI 3.9-51 S01**

*RAI 3.9-51 S01 Comment on response to RAI 3.9-51:*

*The applicant has provided in its response to RAI 3.9-51 an extent of the variation in the response amplitudes for the shroud separator in BWRs of differing size and design as requested. However, response amplitudes of other major components were not provided. The applicant should provide a more complete list of predominant vibration response amplitudes of major ESBWR components in other BWRs of differing size and design.*

**GEH Response**

The control rod guide tube (CRGT), in-core guide tube (ICGT) and in-core housing (ICH) are other major components of special interest to the ESBWR.

The variations in the measured CRGT responses during startup testing at full power for some older reactors are provided below.

**CRGT**

| Plant Name     | JP Exit Velocity (ft/sec) | Maximum Measured Stress (ksi) |
|----------------|---------------------------|-------------------------------|
| Dresden 2      | 13.5                      | [[ ]]                         |
| Browns Ferry 1 | 15.3                      | [[ ]]                         |
| Fukushima 1    | 13.5                      | [[ ]]                         |
| Duane Arnold   | 16.9                      | [[ ]]                         |
| Monticello     | 16.2                      | [[ ]]                         |
| Grand Gulf     | 23.4                      | [[ ]]                         |
| Perry          | 26.0                      | [[ ]]                         |
| Kuosheng 1     | 25.2                      | [[ ]]                         |

The mean value of these stresses is [[ ]] and the standard deviation is [[ ]]. A plot of the stress vs. jet pump exit flow velocity is shown below. It is seen that, in general, the stress increases with the jet pump exit velocity.

[[

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The variations in the measured ICGT and ICH responses during startup testing at full power for some older reactors are provided below.

### ICGT and ICH

| Plant Name     | JP Exit Velocity (ft/sec) | Maximum Stress (ksi) |
|----------------|---------------------------|----------------------|
| Dresden 2      | 13.5                      | [[ ]]                |
| Browns Ferry 1 | 15.3                      | [[ ]]                |
| Fukushima 1    | 13.5                      | [[ ]]                |
| Duane Arnold   | 16.9                      | [[ ]]                |
| Monticello     | 16.2                      | [[ ]]                |
| Grand Gulf     | 23.4                      | [[ ]]                |
| Perry          | 26.0                      | [[ ]]                |
| Kuosheng 1     | 25.2                      | [[ ]]                |

The mean value of these stresses is [[ ]] and the standard deviation is [[ ]]. A plot of the stress vs. jet pump exit flow velocity is shown below. It is seen that, in general, the stress increases with the jet pump exit velocity.

[[

]]

**DCD Impact**

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

**Enclosure 3**

**MFN 06-464**

**Supplement 4**

**Affidavit**



# GE-Hitachi Nuclear Energy Americas LLC

## AFFIDAVIT

I, **James C. Kinsey**, state as follows:

- (1) I am Project Manager, ESBWR Licensing, GE-Hitachi Nuclear Energy Americas LLC (“GEH”), and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.
- (2) The information sought to be withheld is contained in Enclosure 1 of GEH’s letter, MFN 06-464, Supplement 4, Mr. James C. Kinsey to U.S. Nuclear Energy Commission, entitled “*Response to Portion of NRC Request for Additional Information Letter No. 67 Related to ESBWR Design Certification Application – Mechanical Systems and Components – RAI Number 3.9-51 S01*”, dated August 28, 2007. The proprietary information in Enclosure 1, which is entitled “*Response to Portion of NRC Request for Additional Information Letter No. 67 Related to ESBWR Design Certification Application – Mechanical Systems and Components – RAI Number 3.9-51 S01 – GEH Proprietary Information*”, is delineated by a [[dotted underline inside double square brackets.<sup>{3}</sup>]] Figures and large equation objects are identified with double square brackets before and after the object. In each case, the superscript notation <sup>{3}</sup> refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.
- (3) In making this application for withholding of proprietary information of which it is the owner or licensee, GEH relies upon the exemption from disclosure set forth in the Freedom of Information Act (“FOIA”), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for “trade secrets” (Exemption 4). The material for which exemption from disclosure is here sought also qualify under the narrower definition of “trade secret”, within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).
- (4) Some examples of categories of information which fit into the definition of proprietary information are:
  - a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by GEH’s competitors without license from GEH constitutes a competitive economic advantage over other companies;
  - b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;
  - c. Information which reveals aspects of past, present, or future GEH customer-funded development plans and programs, resulting in potential products to GEH;

- d. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a. and (4)b. above.

- (5) To address 10 CFR 2.390(b)(4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GEH, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GEH, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties, including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.
- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or subject to the terms under which it was licensed to GEH. Access to such documents within GEH is limited on a "need to know" basis.
- (7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist, or other equivalent authority for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GEH are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.
- (8) The information identified in paragraph (2) above is classified as proprietary because it contains details of GEH's evaluation methodology.

The development of the evaluation process along with the interpretation and application of the analytical results is derived from the extensive experience database that constitutes a major GEH asset.

- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GEH's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GEH's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical and NRC review costs comprise a substantial investment of time and money by GEH.

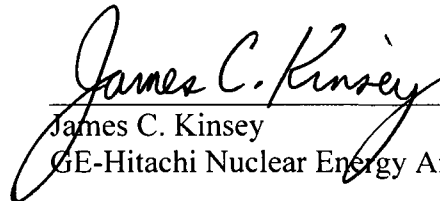
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GEH's competitive advantage will be lost if its competitors are able to use the results of the GEH experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GEH would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GEH of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this 28<sup>th</sup> day of August 2007.

  
James C. Kinsey  
GE-Hitachi Nuclear Energy Americas LLC