



# HITACHI

**GE Hitachi Nuclear Energy**

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### 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 non-proprietary.

MFN 12-048

Docket number: 05200010

July 18, 2012

Attn: David Misenhimer  
US Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Subject: NRC Requests for Additional Information Related to the Audit of the Economic Simplified Boiling Water Reactor (ESBWR) Steam Dryer Design Methodology Supporting Chapter 3 of the ESBWR Design Control Document – Draft Response for RAI 3.9-276**

### Reference:

1. MFN 12-037 Letter from USNRC to Jerald G. Head, GEH, Subject: Request for Additional Information Letter No. 414 related to ESBWR Design Certification Application (DCD) Revision 9," received May 1, 2012

In regard to the Requests for Additional Information transmitted in your May 1, 2012 Letter, Reference 1, to support the NRC ESBWR Steam Dryer Methodology Audit conducted March 21 – 23, 2012 Docket 5200010, please find attached the draft response for RAI 3.9-276.

Enclosure 1 contains proprietary information. The proprietary information is contained within brackets [ ] and is designated in dark red font with dotted underline to assist in identification. This RAI contains proprietary information identified by GE Hitachi Nuclear Energy, Americas LLC., and should be protected accordingly.

Enclosure 2 contains the draft response with the proprietary information redacted, and is acceptable for public release. Enclosure 3 provides an affidavit which sets forth the basis for requesting that Enclosure 1 be withheld from the public.

*DD08  
NRO*  
*Designate as original*  
*DAVID MISENHIMER, PM*

*07-26-12*

If you have any questions concerning this letter, please contact Peter Yandow at 910-819-6378.

Sincerely,



Jerald G. Head  
Senior Vice President, Regulatory Affairs

Commitments: No commitments are made.

Enclosures:

1. Draft Response to RAI 3.9-276 – Proprietary version
2. Draft Response to RAI 3.9-276 – Non-Proprietary version
3. Affidavit for MFN 12-048

cc: Glen Watford, GEH  
Peter Yandow, GEH  
Patricia Campbell, GEH  
Mark Colby, GEH  
Scott Bowman, GEH  
Draft eDRF Section 0000-0146-9762

## **Enclosure 2**

**MFN 12-048**

### **Draft Response for RAI 3.9-276**

#### **Non-Proprietary Version**

This is a non-proprietary version of Enclosure 1, from which the proprietary information has been removed. Portions of the document that have been removed are identified by white space within double brackets, as shown here [[ ]].

#### **IMPORTANT NOTICE REGARDING CONTENTS OF THIS DOCUMENT**

##### **Please Read Carefully**

The information contained in this document is furnished solely for the purpose(s) stated in the transmittal letter. The only undertakings of GEH with respect to information in this document are contained in the contracts between GEH and its customers or participating utilities, and nothing contained in this document shall be construed as changing that contract. The use of this information by anyone for any purpose other than that for which it is intended is not authorized; and with respect to any unauthorized use, GEH makes no representation or warranty, and assumes no liability as to the completeness, accuracy, or usefulness of the information contained in this document.

**DRAFT RESPONSE – FOR REVIEW ONLY**

**NRC RAI 3.9-276**

*GEH is requested to provide a specific analysis of the MSL nozzle location and size for the QC2 acoustic model and the SSES acoustic model, including the impact on the results of the analysis from the modeling errors in the location and size of the MSL nozzles.*

**GEH Response**

**Summary**

The difference in MSL nozzle geometry between the plant drawings and the FE acoustic models is very small for both the elevation and circumference compared to those used in the scaled QC2 and SSES acoustic [[ ]] that were applied in 2011, therefore there is no impact on QC2 and SSES PBLE analysis results associated with the nozzle locations and areas mismatch.

The QC2 and SSES models, built in 2007 and 2008 respectively, included adequate margins with respect to nozzle areas and are not adversely affected by the differences between drawings and models.

**Detailed Response:**

The differences in QC2 and SSES MSL nozzle locations and areas between the plant drawings and the FE acoustic models are summarized in Tables 1 and 2. The impact of the differences is also presented in these tables.

Based on the comparative results, the following conclusions are drawn:

1. The difference in MSL nozzle geometry between the plant drawings and the FE acoustic models is very small for both the elevation and circumference. The maximum elevation differences are 1.46 inch for QC2 and 0.62 inch for SSES. The maximum differences in the circumferential direction are 0.02 inch for QC2 and 0.22 inch for SSES. These differences are much smaller than the acoustic wavelength up to [[ ]] and the acoustic FE element mesh size requirement [[ ]]. Consequently, the impact of these differences is insignificant for both of the acoustic model and PBLE results.

2. The original QC2 acoustic model built in 2007 has a [[ ]] in the nozzle areas relative to the plant drawing. The original SSES acoustic model built in 2008 has a [[ ]] of the nozzle area relative to the plant drawing.
  - These deviations have no impact on the PBLE [[ ]] benchmark and loads definition results, because the nozzle area [[ ]] cancel with the [[ ]] as part of the Method 1 methodology.
  - The PBLE [[ ]] benchmark and loads definition results are impacted by these nozzle area differences.
3. The effect of the nozzle area differences is removed when using Method 2 by scaling the [[ ]] calculated using the FE model with the ratios between drawing nozzle areas and FE model nozzle areas.
  - In the 2011 QC2 acoustic model, the nozzle areas were adjusted in the [[ ]] using the scaling factors. The [[ ]] and QC2 PBLE MSL benchmarks were revised. The GGNS loads definition was also adjusted because the [[ ]] was used in the loads generation. (Refer to 2011 GGNS NRC RAI response – Action 2).
  - In the 2011 SSES acoustic model, the nozzle areas were adjusted in the [[ ]] using the scaling factors. The [[ ]] was revised.

With the scaled QC2 and SSES [[ ]] that were applied in 2011, there is no impact on QC2 and SSES PBLE results associated with the nozzle locations and areas mismatch.

**DRAFT RESPONSE – FOR REVIEW ONLY**

**Table 1: Summary of QC2 MSL Nozzle Differences (Drawings vs. FE Acoustic Model)**

**DRAFT RESPONSE – FOR REVIEW ONLY**

**Table 2: Summary of SSES MSL Nozzle Differences (Drawings vs. FE Acoustic Model)**

[REDACTED]				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

**DRAFT RESPONSE – FOR REVIEW ONLY**

DCD/LTR Changes:

No change is proposed for the DCD or referenced License Topical Reports.



**Enclosure 3**

**MFN 12-048**

**Affidavit**

# GE-Hitachi Nuclear Energy Americas LLC

## AFFIDAVIT

I, **Jerald G. Head**, state as follows:

- (1) I am the Senior Vice President, Regulatory Affairs of 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 12-048, J. Head (GEH) to D. Misenhimer (NRC), "NRC Requests for Additional Information Related to the Audit of the Economic Simplified Boiling Water Reactor (ESBWR) Steam Dryer Design Methodology Supporting Chapter 3 of the ESBWR Design Control Document – Draft Response for RAI 3.9-276," dated July 18, 2012. The GEH proprietary information in Enclosure 1 of MFN 12-048, is identified by a ~~[[dark red, 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 {3} refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.
- (3) In making this application for withholding and determination 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 qualifies 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, 975 F2d 871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704 F2d 1280 (DC Cir. 1983).
- (4) The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a and (4)b. Some examples of categories of information that 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 GEH and/or other companies.
  - b. Information that, if used by a competitor, would reduce their expenditure of resources or improve their competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product.

- c. Information that reveals aspects of past, present, or future GEH customer-funded development plans and programs, that may include potential products of GEH.
  - d. Information that discloses trade secret and/or potentially patentable subject matter for which it may be desirable to obtain patent protection.
- (5) To address 10 CFR 2.390(b)(4), the information sought to be withheld is being submitted to the 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, not been disclosed publicly, and not been made available in public sources. All disclosures to third parties, including any required transmittals to the NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary and/or confidentiality agreements that provide for maintaining the information in confidence. The initial designation of this information as proprietary information and the subsequent steps taken to prevent its unauthorized disclosure are as set forth in the following paragraphs (6) and (7).
- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, who is the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or who is the person most likely to be subject to the terms under which it was licensed to GEH. Access to such documents within GEH is limited to 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 and/or confidentiality agreements.
- (8) The information identified in paragraph (2) above is classified as proprietary because it communicates sensitive business information regarding commercial communications, plans, and strategies associated with future actions related to GEH's extensive body of ESBWR technology, design, and regulatory information and its protection is important to the design certification process.


- (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 18<sup>th</sup> day of July, 2012.

  
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Jerald G. Head  
GE-Hitachi Nuclear Energy Americas LLC