



**HITACHI**

**GE Hitachi Nuclear Energy**

Jerald G. Head  
Senior Vice President, Regulatory Affairs

PO Box 780 M/C A-18  
Wilmington, NC 28402-0780  
USA

T 910 819 5692  
F 910 362 5692  
gerald.head@ge.com

**Proprietary Notice**

This letter forwards proprietary information in accordance with 10 CFR 2.390. Upon the removal of Enclosure 1, the balance of this letter may be considered non-proprietary.

MFN 12-052, Rev. 1

Docket number: 05200010

June 12, 2012

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

**Subject: NRC Requests for Additional Information (RAI) 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 – RAI 3.9-281**

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 05200010, please find attached the GEH final response for RAI 3.9-281.

Enclosure 1 contains the complete response, with proprietary information identified within brackets [[ ]], and designated in red and dotted underline text, to assist in identification. The proprietary information, as identified by GE Hitachi Nuclear Energy, Americas LLC., should be protected accordingly.

Enclosure 2 contains the 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.

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

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I declare under penalty of perjury that the foregoing information is true and correct to the best of my knowledge, information, and belief.

Sincerely,



Jerald G. Head  
Senior Vice President, Regulatory Affairs

Commitments: None

Reference:

1. 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

Enclosures:

1. Final Response for RAI 3.9-281 - Proprietary Version
2. Final Response for RAI 3.9-281 – Non-Proprietary Version
3. Affidavit for MFN 12-052, Rev. 1

cc: Glen Watford, GEH  
Peter Yandow, GEH  
Patricia Campbell, GEH  
Mark Colby, GEH  
Tim Enfinger, GEH  
Gerald Deaver, GEH  
David Keck, GEH  
eDRF Section: 0000-0147-3906

## **Enclosure 2**

**MFN 12-052, Rev. 1**

**Final Response for RAI 3.9-281**

**Public Version**

### **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.

**NRC RAI 3.9-281**

*Summary: The staff's question is in regard to describing SSES dryer components requiring further post evaluation to determine the stress reduction factors.*

*GEH is requested to provide a description for SSES dryer components requiring further post evaluation to determine the stress reduction factors (SRF). If applicable, GEH is requested to describe sub-model analysis and [[ ]] approach. GEH should also explain whether sub-modeling and/or [[ ]] approach always provides [[*

*]]. Additionally, GEH is requested to describe if the [[ ]].*

**GEH Response**

**References:**

1. NEDE-33313P-A, Rev. 2, "ESBWR Steam Dryer Structural Evaluation", October 2010
2. 26A6642AK rev. 9 "ESBWR DCD Tier 2, Chapter 3 Design of Structures, Components, Equipment and Systems", Sections 3.9 – 3.11
3. Letter from M. Krupa, Entergy Operations, Inc. to U.S. NRC, subject: "Request for Additional Information Regarding Extended Power Uprate", September 8, 2010, - Attachment, NEDC-33601P rev. 0 "Grand Gulf Replacement Steam Dryer Fatigue Stress Analysis Using PBLE Methodology", Engineering Report, September 2010
4. Letter from M. Krupa, Entergy Operations, Inc. to U.S. NRC, subject: "Request for Additional Information Regarding Extended Power Uprate", November 25, 2011 - Attachment 1, GNRO-2011/00105 Grand Gulf Nuclear Station Extended Power Uprate Response to Request for Additional Information Mechanical and Civil Engineering Branch, Steam Dryer.

**Summary:**

SSES steam dryer components requiring further post evaluation would be [[ ]]. Stress reduction factors are not defined in ESBWR DCD and LTRs. Weld stress in ESBWR steam dryer components is determined as explained in LTR NEDE-33313P-A (Reference 1).

**Detail:**

The PBLE benchmarking process, [[

]].

As stated in NEDE-33313P-A section 4.1 if the [[

]].

The other approach described in NEDE-33313P-A section 4.1 is the method for determining weld peak stress [[

]].

Stress reduction factor (SRF) is not defined in LTR NEDE-33313P-A (ref. 1) or 26A6642AK section 3.9 (ref. 2). Stress reduction factors were described in GGNS document NEDC-33601P section 3.3.2.4 (ref. 3). The SRF is described as a stress ratio of weld stresses after post processing, the sub-model weld stress to the global model weld stress, or a closed form solution method's weld stress to the global model weld stress. ESBWR describes a similar [[

]].

SRF was further explained in GGNS RAI 6 (ref. 4), which is similar to this ESBWR RAI. The basic subject is the unique comparison of weld stress results determined using the sub-model or closed form solution method with the global model determined weld stress. The ESBWR steam dryer weld stress is determined as defined in NEDE-33313P-A. The ESBWR process is irrespective of the previous analysis paths for replacement steam dryer projects due to unique design features.

For a particular region, if the analyst finds [[

]].

As stated in the last paragraph of NEDE-33313P-A, section 4.1, if [[

]].

**DCD Impact**

None.

**Licensing Topical Report Impact**

None.

**Enclosure 3**

**MFN 12-052, Rev. 1**

**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 and have determined that it should be withheld from public disclosure for reason(s) identified in paragraph (4).
- (2) The information sought to be withheld is contained in enclosure 1 of GEH's letter, MFN 12-052, Rev. 1, Mr. Jerald G. Head to U.S. Nuclear Regulatory Commission, entitled "NRC Requests for Additional Information (RAI) 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 – RAI 3.9-281," dated June 12, 2012. The proprietary information in enclosure 1, entitled "Final Response for RAI 3.9-281 - Proprietary Version," 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 {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 technology, design, and regulatory information.
- (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

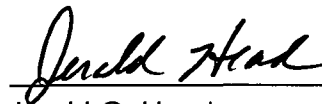
evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

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 12<sup>th</sup> day of June, 2012.



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Jerald G. Head  
GE-Hitachi Nuclear Energy Americas LLC