HITACHI

GE Hitachi Nuclear Energy

Richard E. Kingston
Vice President, ESBWR Licensing

P.O. Box 780
3901 Castle Hayne Road, M/C A-55
Wilmington, NC 28402 USA

T 910.819.6192
F 910.362.6192
rick.kingston@ge.com

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 08-845

Docket No. 52-010

October 29, 2008

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: Response to Portion of NRC RAI Letter No. 220 Related to ESBWR Design Certification Application - DCD Tier 2 Section 3.9 – Mechanical Systems and Components; RAI Numbers 3.9-237 and 3.9-239

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) letter number 220 sent by NRC letter dated July 29, 2008 (Reference 1). RAI Numbers 3.9-237 and RAI 3.9-239 are addressed in Enclosure 1.

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. Enclosure 2 is the non-proprietary version, which does not contain proprietary information and is suitable for public disclosure.

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 in 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, please contact me.

Sincerely,

Richard E. Kingston

Richard E. Kingston
Vice President, ESBWR Licensing

D068
NRO

Reference:

1. MFN 08-609 Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, GEH, *Request For Additional Information Letter No. 220 Related to NEDE-33312P, "ESBWR Steam Dryer Acoustic Load Definition," NEDE-33313P, "Steam Dryer Structural Evaluation," NEDC-33408P, "ESBWR Steam Dryer-Plant Based Load Evaluation Methodology," NEDE-33259P, "Reactor Internals Flow Induced Vibration Program," and ESBWR Design Control Document, Revision 5*, dated July 29, 2008

Enclosures:

1. Response to Portion of NRC RAI Letter No. 220 Related to ESBWR Design Certification Application - DCD Tier 2 Section 3.9 – Mechanical Systems and Components; RAI Numbers 3.9-237 and 3.9-239, Proprietary Version

2. Response to Portion of NRC RAI Letter No. 220 Related to ESBWR Design Certification Application - DCD Tier 2 Section 3.9 – Mechanical Systems and Components; RAI Numbers 3.9-237 and 3.9-239, Public Version

3. Affidavit

cc:	AE Cubbage	USNRC (with enclosures)
	RE Brown	GEH/Wilmington (with enclosures)
	DH Hinds	GEH/Wilmington (with enclosures)
	eDRF	0000-0092-7973 R1 (RAI 3.9-237 & 239)

Enclosure 2

MFN 08-845

Response to Portion of NRC Request for

Additional Information Letter No. 220

Related to ESBWR Design Certification Application

Mechanical Systems and Components

RAI Numbers 3.9-237 and 3.9-239

Public Version

NRC RAI 3.9-237

Summary: Provide analyses that show stresses in the SLC Line are below design limits

Stresses in the SLC line due to the dynamics of the supports are not discussed. In Section 5.5, each standby liquid control (SLC) line is said to be supported at two locations on the RPV and four locations on the Shroud. Provide the analyses that show the stresses in the SLC line are below design limits, due to the relative dynamic motion of the Shroud and the RPV in higher vibration modes. [[

]]. Because both longitudinal and lateral support of the SLC line is provided, both beam and shell mode induced motion of the supports appears important.

GEH Response

The stiffness of the SLC lines are very small when compared to that of a much larger structure like the ESBWR shroud and RPV. Thus, while a small shroud or RPV displacement may result in significant stresses in the shroud and RPV, a similar SLC line displacement will result in much lower stresses. [[

]] The un-amplified stresses due to support motion are classified as secondary stresses per the ASME Code and have much higher allowables. Thus, they are of no concern.

The shroud/chimney/steam separator assembly is essentially an axisymmetric structure and the flow is also axisymmetric. Hence, no significant shell mode, other than n=0 and n=1 will be excited. Any minor unbalance forces due the non-axisymmetric structural elements such as chimney internal partitions, and separator structural ties will results in small shell mode responses. Since the ESBWR flow is more uniform than the ABWR, fluid forces would be even smaller than in ABWR. Thus, any shell mode responses will be smaller in the ESBWR when compared to the ABWR.

In summary, SLC support motion will result in negligible stresses on the SLC lines. Thus, stresses due to support motion will be much below the allowable limits.

DCD/LTR Impact

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

No changes to the LTR *"Reactor Internals Flow Induced Vibration Program", NEDE-33259P, Revision 1, December 2007* will be made in response to this RAI.

NRC RAI 3.9-239

Summary: Provide rationale for the location of the Instrumentation intended to confirm adequacy of the Steam Separator Assembly design.

Elaborate on the rationale for and the location of the instrumentation intended to confirm the adequacy of the design of the Steam Separator Assembly. In light of RAI 3.9-236, comment on whether the instrumentation will measure/confirm stresses induced by internal flow in the individual separators.

GEH Response

There are four accelerometers installed on the upper guide ring of the Steam Separator Assembly. Due to their location on the relatively rigid upper ring, these accelerometers measure the gross motion of the Separator Assembly rather than the acceleration of the individual separators. Dynamic analyses of the separator/chimney/shroud structure and the ABWR shroud structures show that the maximum FIV stresses from gross motion occur at the roots of the standpipes. Thus it can be concluded that dynamic analysis results show the accelerometer placement is appropriate.

As far as the individual separators are concerned, their reliability have been confirmed through out-of-reactor tests. As stated in the response to RAI 3.9-56 "(MFN 07-426 dated August 1, 2007)" during development testing of the particular separator used in the ESBWR, hot tests were conducted for the purpose of determining the FIV response of the separator using various flow rates. During the test, the maximum flow rate through the steam separator was [[ ]] quality. This is higher than the ESBWR maximum separator flow of [[ ]] Test results show a maximum flow induced vibration stress of less than [[ ]] well below the GE acceptance criteria of 68.95 MPa (10,000 psi). Thus it can be concluded that separator flow induced vibration effects are acceptable. Furthermore, satisfactory operating experience in many BWR's and the ABWR, with higher flow rates, give added assurance that FIV induced stresses are acceptably low in the individual steam separators.

DCD/LTR Impact

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

No changes to the LTR *"Reactor Internals Flow Induced Vibration Program", NEDE-33259P, Revision 1, December 2007* will be made in response to this RAI.

MFN 08-845

Enclosure 3

Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, David H. Hinds, state as follows:

(1) I am the Manager, New Units Engineering, GE Hitachi Nuclear Energy ("GEH"), 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 letter MFN 08-845, Mr. Richard E. Kingston to U.S. Nuclear Regulatory Commission, entitled *Response to Portion of NRC RAI Letter No. 220 Related to ESBWR Design Certification Application - DCD Tier 2 Section 3.9 – Mechanical Systems and Components; RAI Numbers 3.9-237 and 3.9-239* dated October 29, 2008. The GEH proprietary information in Enclosure 1, which is entitled *Response to Portion of NRC RAI Letter No. 220 Related to ESBWR Design Certification Application - DCD Tier 2 Section 3.9 – Mechanical Systems and Components; RAI Numbers 3.9-237 and 3.9-239 – Proprietary Version,* is delineated by a [[dotted underline inside double square brackets.{3}]]. 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. A non-proprietary version of this information is provided in Enclosure 2, *Response to Portion of NRC RAI Letter No. 220 Related to ESBWR Design Certification Application - DCD Tier 2 Section 3.9 – Mechanical Systems and Components; RAI Numbers 3.9-237 and 3.9-239 - Public Version.*

(3) In making this application for withholding of proprietary information of which it is the owner, 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 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, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, 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 identifies detailed GE ESBWR design information. GE utilized prior design information and experience from its fleet with significant resource allocation in developing the system over several years at a substantial cost.

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 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 29th day of October 2008.

David H. Hinds
GE-Hitachi Nuclear Energy Americas LLC