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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 08-927 S01

Docket No. 52-010

May 28, 2009

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. 302 - Related to Design Control Document (DCD)
Revision 5 – RAI Number 6.2-194 Supplement 1**

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 6.2-194 Supplement 1 is addressed in Enclosures 1 and 2.

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 public 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 10 CFR 9.17.

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

Sincerely,

Richard E. Kingston
Vice President, ESBWR Licensing

D068
WFO

Reference:

1. MFN 09-150, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 302 Related to Design Control Document (DCD) Revision 5*, dated February 5, 2009.

Enclosures:

1. MFN 08-927 S01 – Response to Portion of NRC Request for Additional Information Letter No. 302 - Related to Design Control Document (DCD) Revision 5 – RAI Number 6.2-194 S01 – GEH Proprietary Information
2. MFN 08-927 S01 – Response to Portion of NRC Request for Additional Information Letter No. 302 - Related to Design Control Document (DCD) Revision 5 – RAI Number 6.2-194 S01 – Public Version
3. MFN 08-927 S01 – Response to Portion of NRC Request for Additional Information Letter No. 302 - Related to Design Control Document (DCD) Revision 5 – RAI Number 6.2-194 S01 - Affidavit

cc: AE Cabbage USNRC (with enclosures)
JG Head GEH/Wilmington (with enclosures)
DH Hinds GEH/Wilmington (with enclosures)
eDRF 0000-0101-6746

Enclosure 2

MFN 08-927 S01

Response to Portion of NRC Request for

Additional Information Letter No. 302

Related to Design Control Document (DCD) Revision 5

RAI Number 6.2-194 S01

Public Version

NRC RAI 6.2-194 S01

The staff reviewed GEH response to RAI 6.2-194 in GEH letter MFN-08-927 and found that items A and C are not acceptable.

- A. Table 1 shows that the total break flow from the FW line into the shield wall annulus obtained from the GEH and NRC calculations using the GEH method described in MFN 178-78 are generally in agreement until the end of the acoustic response period, [[]]. Figure 1 also shows general agreement, within about 10%, between TRACE results and the NRC calculation using the MFN 178-78 method. The duration of the acoustic phenomenon, [[]], is directly dependent on the pipe length on the RSW side which GEH indicated in a 1/21/2009 telephone conversation to be about 4.4 m. GEH in the response to RAI 6.2-23 in GEH letter MFN 08-270 indicates that the peak pressure in the shield wall annulus following a FW break occurs at [[]]. The time for the peak pressure, calculated by GEH using a FW break flow of [[]], is relatively close to the calculated end of the acoustic phenomenon at [[]] when the flow rate is determined to increase to [[]].

Justify that the peak pressure that occur at [[]] is bounding despite that the blowdown flow rate increases significantly later (after [[]]).

- C. GEH specifically states in Item 5 of Part D of MFN 06-159 Supplement 1 that the "Volumes are minimized for conservatism and simplicity where necessary." Review of the TRACG input supplied with MFN 06-159 Supplement 1 shows that the volumes inside the shield wall annulus are indeed reduced to reflect the stated conservatism. However, the TRACG input does not include a reduction in the values of the flow areas between volumes in either the circumferential or axial directions. (The values for FA at the models internal flow areas in the TRACG input are all equal to 1.0.) Irreversible flow loss coefficients should also be included for the flow areas which possess flow obstructions. The TRACG input does not include irreversible flow loss coefficients in either the circumferential or axial directions. (The values for FRICP in the TRACG input are all equal to 0.0.)
- (i) Provide modeling details of flow obstructions for the flow in the shield wall annulus.
 - (ii) For the FWLB and RWCU break cases, provide results of the shield wall annulus pressurization analysis accounting for the flow obstructions and the increase in blowdown flowrate for the FWLB as stated under item (A) above.

Table 1: Total Flow from Both Sides of a FWLB in the Shield Wall Annulus

<i>NRC Calculation Using GEH Method from MFN 178-78</i>			
<i>Time Period</i>	[[
<i>Total Break Flow</i>]]
<i>GEH Calculation from MFN 08-270</i>			
<i>Time Period</i>		[[
<i>Total Break Flow</i>]]

[[

]]

Figure 1: Comparisons between NRC and GEH Calculations and TRACE Results

GEH Response

- (A) A detailed TRACG model was developed to determine the break flow for comparing the break flow used in the current annulus pressurization (AP) analysis of feedwater (FW) line break case. This TRACG model is derived from the TRACG model for the loss of coolant accident (LOCA) feedwater line break case. Results show that the break flow calculated from this detailed TRACG model is less than the break flow used in the current AP analysis as shown in the Figure 6.2-194S01-1. It is concluded that the break flow used in the current AP analysis is conservative and bounding.
- (C) The modeling details of flow obstructions, including the flow areas between volumes in the circumferential and axial directions and flow loss coefficients are included in the Attachment A. Results of the pressurization analysis accounting for the above mentioned modeling modifications show that an increase of peak pressure of [[]] for the reactor water clean up (RWCU) line break case and [[]] for the FW line break case. Please note that the break flow of the FW line break case provided in MFN 08-270 (March 20, 2009) instead of the break flow determined according to MFN 178-78 (May 2, 1978) stated in item (A) was used in this sensitivity analysis because it is concluded that the break flow determined in MFN 08-270 is conservative and bounding. The small percentage increase in the calculated peak pressure for the analyzed cases do not have impact on the design of the structure because the AP loads pressures remain at least 16% less than the values used in the structural integrity analysis.

DCD Impact

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

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Figure 6.2-194S01-1 Break Flow (sum of both sides).

Attachment A Modeling details of flow obstructions

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Enclosure 3

MFN 08-927 S01

Response to Portion of NRC Request for

Additional Information Letter No. 302

Related to Design Control Document (DCD) Revision 5

RAI Number 6.2-194 S01

Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, **David H. Hinds**, state as follows:

- (1) I am Manager, New Units Engineering, GE Hitachi Nuclear Energy ("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 08-927 S01 Mr. Richard E. Kingston to U.S. Nuclear Energy Commission, entitled "*Response to Portion of NRC Request for Additional Information Letter No. 302 – Related to Design Control Document (DCD) Revision 5 – RAI Number 6.2-194 Supplement 1,*" dated May 28, 2009. The proprietary information in enclosure 1, which is entitled "*MFN 08-927 S01 – Response to Portion of NRC Request for Additional Information Letter No. 302 – Related to Design Control Document (DCD) Revision 5 – RAI Number 6.2-194 S01 – GEH Proprietary Information,*" is indicated as the content contained between opening double brackets ([[)) and closing double brackets (]])), and the text is red in color. [[This sentence is an example ⁽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.
- (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) is classified as proprietary because it contains details of GEH's design and licensing methodology. The development of the methods used in these analyses, along with the testing, development and approval of the supporting methodology was achieved at a significant cost to GEH.
- (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.

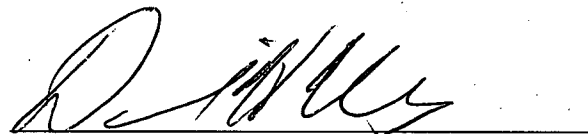
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

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 28th day of May 2009.



David H. Hinds
GE-Hitachi Nuclear Energy Americas LLC