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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 08-707

Docket No. 52-010

September 24, 2008

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. 111 – Related to ESBWR Design Certification Application
– RAI Number 21.6-101 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 21.6-101 S01 is addressed in Enclosures 1, 2 and 3.

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 10 CFR 9.17.

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

Sincerely,

Richard E. Kingston
Vice President, ESBWR Licensing

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NRO

References:

1. MFN 07-556 Letter from U.S. Nuclear Regulatory Commission to David H. Hinds, GEH, *Request For Additional Information Letter No. 111 Related To ESBWR Design Certification Application*, dated October 15, 2007

Enclosures:

1. MFN 08-707 – Response to Portion of NRC Request for Additional Information Letter No. 111 – Related to ESBWR Design Certification Application – RAI Number 21.6-101 S01 – GEH Proprietary Information
2. MFN 08-707 – Response to Portion of NRC Request for Additional Information Letter No. 111 – Related to ESBWR Design Certification Application – RAI Number 21.6-101 S01 – Non-Proprietary Version
3. MFN 08-707 – Response to Portion of NRC Request for Additional Information Letter No. 111 – Related to ESBWR Design Certification Application – RAI Number 21.6-101 S01 – Affidavit

cc: AE Cubbage USNRC (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
eDRF 0000-0082-1703

Enclosure 2

MFN 08-707

Response to Portion of NRC Request for

Additional Information Letter No. 111

Related to ESBWR Design Certification Application

RAI Number 21.6-101 S1

Non-Proprietary Version

NRC RAI 21.6-101 S1

How does the program library version of TRACG04 prediction of drywell annulus temperature compare to the data from the GIRAFFE Test STEP8_J8?

This RAI requested additional information regarding a comparison between data and TRACG04 for the GIRAFFE GS1 test from the TRACG04 Software Test Report (eECPER 0000-0009-7157-00) viewed during an audit of TRACG04 as applied to ESBWR LOCA analyses. The results showed TRACG04 significantly under predicts the dry well annulus temperature for long durations. From the RAI response in MFN 07-381, the staff understands that the comparisons were made with a prototype version of TRACG04.

- a) How does the program library version compare with this data?*
- b) If there are no comparisons of this data to the program library version of TRACG04, how is this uncertainty accounted for in ESBWR LOCA and containment analyses?*

GEH Response

- a) The updated TRACG04P (5704 Program Library Version) results for the Dry Well Annulus Temperature (GIRAFFE GS1 Test) are shown in Figure 1. The deviation between data test and TRACG04P (5704 Program Library Version) is similar to original response with deviation close to [[]] (reference 1).

The under-prediction of DW annulus gas temperature is related to the small over-prediction of the amount of NC gases accumulated in the DW annulus. The current nodalization of the GIRAFFE Test STEP8_J8 uses 1-D components to model the DW annulus. This 1-D modeling discourages any reasonable mixing of the MSL steam flow with the NC gases entering into the DW annulus via the VB valve. Figure 2 shows the results with TRACG04 (5704 Program Library Version) using a better nodalization [[]]. TRACG predictions using this new nodalization compare very well with the experimental data.

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**Figure 1 Dry Well Annulus Temperature
(Repeat of Figure 2.3.3-9 of Reference 2)**

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Figure 2 Dry Well Annulus Temperature [[

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- b) From DCD Tier 2 Appendix 6B, configuration and nodalization changes (i.e., multiple flow path between the GDCS pool airspace and the DW) to improve circulation of non-condensable gas were applied to the containment design basis analyses. The implementation of these changes affected the limiting case response (i.e., long-term peak pressure) and maximized the calculated long-term DW pressure. This effect maximizes the long-term DW pressure and significantly reduces the containment pressure deviations caused by TRACG calculation of non-condensable gas distribution.

DCD Impact

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

References

1. Letter from GEH to USNRC Document Control Desk, "Response to Portion of NRC Request for Additional Information Related to ESBWR Design Certification Application Letter No. 70 – RAI Number 21.6-101", MFN 07-381, July 11, 2007.
2. TRACG04 Software Test Report (eECPER 0000-0009-7157-00), Section 2.3.3.
3. "Update of ESBWR TRACG Qualification for NEDC-32725P and NEDC-33080P Using the 9-Apr-2004 Program Library Version of TRACG04," MFN 04-059, June 6, 2004, Section 4.3.

Enclosure 3

MFN 08-707

Response to Portion of NRC Request for

Additional Information Letter No. 111

Related to ESBWR Design Certification Application

RAI Number 21.6-101 S01

Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, David H. Hinds, state as follows:

- (1) I am General 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 08-707, Mr. Richard E. Kingston to U.S. Nuclear Energy Commission, entitled "*Response to Portion of NRC Request for Additional Information Letter No. 111 – Related to ESBWR Design Certification Application – RAI Number 21.6-101 Supplement 1,*" dated September 24, 2008. The proprietary information in enclosure 1, which is entitled "*MFN 08-707 – Response to Portion of NRC Request for Additional Information Letter No. 111 – Related to ESBWR Design Certification Application – RAI Number 21.6-101 S01 – GEH Proprietary Information,*" 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.
- (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 the results of TRACG analytical models, methods and processes, including computer codes, that GEH has developed and applied to ESBWR Loss of Coolant Accident (LOCA) response evaluations. GEH has developed this TRACG code for over fifteen years, at a significant cost. The reporting, evaluation and interpretation of the results, as they relate to the LOCA response evaluations for the ESBWR 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.

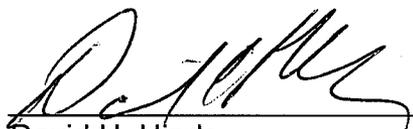
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

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 24th day of September 2008.



David H. Hinds
GE-Hitachi Nuclear Energy Americas LLC