HITACHI

GE Hitachi Nuclear Energy

Richard E. Kingston
Vice President, ESBWR Licensing

P.O. Box 780
3901 Castle Hayne Road, M/C A-65
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 09-454

Docket No. 52-010

July 1, 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. 337 Related to ESBWR Design Certification Application - Auxiliary Systems - RAI Numbers 9.1-121 and 9.1-122**

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 NRC Letter 337, dated May 14, 2009, Reference 1. GEH response to RAI Numbers 9.1-121 and 122 are addressed in Enclosure 1, which 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 a non-proprietary version that 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 of 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 09-331, Letter from U.S. Nuclear Regulatory Commission to Jerald G. Head, *Request for Additional Information Letter No. 337 Related to ESBWR Design Certification Application*, dated May 14, 2009.

Enclosures:

1. Response to Portion of NRC Request for Additional Information Letter No. 337 Related to ESBWR Design Certification Application - Auxiliary Systems - RAI Numbers 9.1-121 and 9.1-122 - Proprietary Version
2. Response to Portion of NRC Request for Additional Information Letter No. 337 Related to ESBWR Design Certification Application - Auxiliary Systems - RAI Numbers 9.1-121 and 9.1-122 - Non-Proprietary Version
3. MFN 09-454– Affidavit – Larry J. Tucker – July 1, 2009

cc:	AE Cubbage	USNRC (with enclosures)
	JG Head	GEH/Wilmington (with enclosures)
	DH Hinds	GEH/Wilmington (with enclosures)
	eDRF section	0000-0103-0598

Enclosure 3

MFN 09-454

Affidavit

Larry J. Tucker

July 1, 2009

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, Larry J. Tucker, state as follows:

(1) I am Manager, ESBWR Engineering, GE-Hitachi Nuclear Energy Americas LLC ("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 to be discussed and sought to be withheld is delineated in the letter from Mr. Richard E. Kingston to U.S. Nuclear Regulatory Commission, entitled "*MFN 09-454 Response to Portion of NRC Request for Additional Information Letter No. 337 Related to ESBWR Design Certification Application - Auxiliary Systems - RAI Numbers 9.1-121 and 9.1-122*", dated July 1, 2009. The information in Enclosure 1, which is entitled "*Response to Portion of NRC Request for Additional Information Letter No. 337 Related to ESBWR Design Certification Application - Auxiliary Systems - RAI Numbers 9.1-121 and 9.1-122 - Proprietary Version*" contains proprietary information, and is identified by [[dotted underline inside double square brackets{3}]]. Figures and other large 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 computer code analysis inputs and assumptions used by GEH for analyzed transients using the TRACG computer model. Development of these inputs and assumptions and the TRACG computer code was achieved at a significant cost to GEH, and is considered 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 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 1st day of July 2009.

Larry J. Tucker

Larry J. Tucker
GE-Hitachi Nuclear Energy Americas LLC

Enclosure 2

MFN 09-454

Response to Portion of NRC Request for

Additional Information Letter No. 337

Related to ESBWR Design Certification Application

Auxiliary Systems

RAI Numbers 9.1-121 and 9.1-122

Public Version

NRC RAI 9.1-121

The staff request clarification of both the normal and abnormal heat load conditions.

1. NEDE-33373P Section 5.2.2.1 identifies that the assumed heat generated under normal conditions is [[ ]]. This corresponds to the heat load from 10 years of spent fuel, 7.63 MW, identified in the response to RAI 9.1-10 S02 in MFN 06-309 S08. However, DCD Section 9.1.3.2 states that the normal heat load condition is defined as irradiated fuel in the Spent Fuel Pool resulting from 20 years of plant operations. Clarify if the normal heat load is based on 10 years or 20 years of spent fuel and use a consistent value in the DCD and LTR.

2. NEDE-33373P Section 5.2.2.2 identifies that the assumed heat generated under abnormal conditions is [[ ]]. DCD Section 9.1.3.2 states that the maximum Spent Fuel Pool heat load condition is defined as a full core off-load plus irradiated fuel in the Spent Fuel Pool resulting from 20 years of plant operations. The response to RAI 9.1-10 S02 in MFN 06-309 S08 states that this heat load is 18.0 MW. However, the heat load in NEDE-33373P Section 5.2.2.2, [[ ]], substantially exceeds the heat load in MFN 06-309 S08, 18 MW, and the cooling capacity of FAPCS identified in MFN 06-309 S08, 19.2 MW. How can the fuel pool be cooled under these conditions?

Clarify if the heat load in RAI 9.1-10 S02 is in error. Also, provide appropriate design parameters for the FAPCS, such that the thermal-hydraulic analysis is consistent with the design basis of the FAPCS.

GEH Response

1. According to the introduction to Section 9.1, the spent fuel pool (SFP) is licensed to provide fuel racks to accommodate 10 calendar years of operation plus a full core offload, while the structure volume and systems (including the Fuel and Auxiliary Pools Cooling System (FAPCS)) are conservatively designed for 20 years worth of spent fuel accumulation plus a full core offload.

   Because the subject of the LTR is focused on the design of the fuel racks and not on the performance of the FAPCS, the heat loads will be made consistent with the 10-year design basis, which is described below and contrasted with the 20-year heat loads provided in RAI 9.1-10 S02.

		Maximum Heat Load
Licensing Basis for Fuel Storage Rack Design	10 Years of Spent Fuel	7.63 MW
	10 Years of Spent Fuel + Full Core Offload	17.3 MW
Licensing Basis for FAPCS Design	20 Years of Spent Fuel	8.31 MW
	20 Years of Spent Fuel + Full Core Offload	18.0 MW

2. As described above, the heat loads in the Thermal-Hydraulic analysis shall be made consistent with the 10-year design basis. Therefore, the maximum heat load postulated in the fuel racks will now be limited to 17.3 MW instead of 29 MW.

In summary, the heat loads communicated in RAI 9.1-10 S02 were not in error. The apparent discrepancy reflects a difference between the design basis of the racks and the design basis for the FAPCS. The Thermal-Hydraulic analysis for the fuel racks was never intended to be consistent with the FAPCS design basis.

DCD Impact

LTR NEDC-33373P will be revised as described above.

NRC RAI 9.1-122

NEDE-33373P Sections 5.2.2.1 calculates maximum spent fuel pool inlet temperatures for the normal and abnormal heat load conditions as [[ ]], respectively. These inlet temperatures are marginally about the maximum FAPCS heat exchanger shell inlet temperatures specified in DCD Table 9.1.8 of 35°C (95°F). Considering the response to RAI 9.1-121, justify that spent fuel pool inlet temperatures are consistent with the design of the FAPCS, including any assumptions made and summary results of supporting calculations. Since the spent pool inlet temperatures are a key assumption in the thermal-hydraulic analysis, these may need to be included in DCD table 9.1-8. The thermal-hydraulic analysis should be consistent with the design basis of the FAPCS.

Also, using the higher abnormal heat load from NEDE-33373P Section 5.2.2.2 rather than from the response to RAI 9.1-10 S02 to determine the maximum inlet temperature lowers the value of maximum temperature. How is this considered conservative?

GEH Response

As described in the response to RAI 9.1-121, the thermal hydraulic analysis was intended to evaluate the integrity of the fuel racks. It was not the intention to evaluate the capabilities of the Fuel and Auxiliary Pools Cooling System (FAPCS).

The Thermal-Hydraulic analysis assumes that the FAPCS receives water at the rated flow rate and designated maximum temperature (48.9°C for normal conditions and 60°C for abnormal conditions). The return stream from FAPCS to the pool is reduced in temperature (per unit of mass flow) by an amount equivalent to the heat load in the fuel racks in order to maintain a fixed pool bulk temperature.

The temperatures assumed for the pool inlet are not necessarily representative of the FAPCS. These temperatures are instead derived from the assumption that FAPCS maintains the pool at its maximum bulk temperature regardless of the heat load. This may be considered a "non-conservative" assumption in the context of FAPCS performance (especially given an excessive heat load of 29 MW), but it allows for a conservative and simplified approach to the CFD model.

DCD Impact

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