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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 07-448

Docket No. 52-010

August 20, 2007

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. 66 Related to ESBWR Design Certification Application – RAI Numbers 21.6-63, 21.6-78, 21.6-81, 21.6-83**

Enclosures 1, 2 and 3 contain GEH's response to the subject NRC RAIs transmitted via the Reference 1 letter.

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. A non-proprietary version is provided in Enclosure 2.

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 regarding the information provided here, please contact me.

Sincerely,

James C. Kinsey

James C. Kinsey
Project Manager, ESBWR Licensing

D068

NRO

Reference:

1. MFN 06-377, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 66 Related to the ESBWR Design Certification Application*, October 10, 2006

Enclosures:

1. MFN 07-448 – Response to Portion of NRC Request for Additional Information Letter No. 66 – Related to ESBWR Design Certification Application –RAI Numbers 21.6-63, 21.6-78, 21.6-81, 21.6-83 – GEH Proprietary Information
2. MFN 07-448 – Response to Portion of NRC Request for Additional Information Letter No. 66 – Related to ESBWR Design Certification Application –RAI Numbers 21.6-63, 21.6-78, 21.6-81, 21.6-83 – Non-Proprietary Version
3. Affidavit – James C. Kinsey – dated August 20, 2007

cc:	AE Cubbage	USNRC (with enclosures)
	DH Hinds	GEH Wilmington (with enclosures)
	BE Brown	GEH Wilmington (with enclosures)
	eDRF	-0068-7529, -0071-6080, -0072-2145, -0068-7522

Enclosure 2

MFN 07-448

Response to Portion of NRC Request for

Additional Information Letter No. 66

Related to ESBWR Design Certification Application

RAI Numbers 21.6-63, 21.6-78, 21.6-81, 21.6-83

Non Proprietary Version

NRC RAI 21.6-63

Provide a description of all of the differences in the analyses performed in Chapter 4 of in NEDE-33083P (MFN 05-017 and MFN 04-109) and Chapter 15 of ESBWR DCD Tier 2.

GEH Response

Key differences in analyses performed in Chapter 4 of NEDC-33083P (MFN 05-017 and MFN 04-109) and Chapter 15 of ESBWR DCD Tier 2 are listed in Table 21.6-63-1.

Table 21.6-63-1 – Comparison of Analysis Section 4 of Ref. [1] , [2] with DCD Tier 2 Ch. 15

Category	Analysis in Section 4 of Ref [1], and Ref [2]	Analysis in Ch. 15 DCD Tier 2
1. Analysis Cases	Baseline demonstration calculation for ESBWR AOOs; includes three pressurization transient cases: Subsection 4.7.1.1 Load Rejection No Bypass (LRNB); Section 4.7.1.2 Feedwater Controller Failure, FWCF, (Maximum Demand at 150% of Rated); Subsection 4.7.1.3 Main Steamline Isolation Valve (MSIV) Closure.	The events are classified in Table 15.0-2 and include Anticipated Operational Occurrences, Infrequent Events, Accidents, and Special Events. The events analyzed in DCD Tier 2 are listed in Table 15.1-7 and represent the Analysis of Record for ESBWR Abnormal events.
2. Core Analyzed	In MFN 05-017, Ref [1], the core analyzed had 1132 bundles loaded with GE12 10x10 fuel with a 9 ft (2.743 m) active core height and a rated thermal power of 4000 MWth. The core had an F-lattice with the wide control blade design. In MFN 04-109, Ref [2], the core analyzed had 1132 bundles with a 10 ft active core height and a rated thermal power of 4500 MWth. An N-lattice equilibrium core with 10 ft (3.048 m) GE14 10x10 fuel was analyzed and has 269 cruciform control blades.	The core analyzed has 1132 bundles with a 10 ft (3.048 m) active core height and a rated thermal power of 4500 MWth. The core has an N-lattice with 269 cruciform control blades.

Category	Analysis in Section 4 of Ref [1], and Ref [2]	Analysis in Ch. 15 DCD Tier 2
3. Nodalization	In MFN 05-017, Ref [1], the vessel modeling is illustrated in Figure 2.7-1. There are 21 axial levels in the vessel, with three rings, and one-azimuthal sector. The nodalization is identical except for the height of core In MFN 04-109, Ref [2], the vessel nodalization is similar to Figure 2.7-1 of Ref. [1] except for the number of bundles modeled (1132) and minor elevation changes consistent with changes in vessel design. The 3-D VSSL option was employed with twenty-one axial levels, and six azimuthal (theta) sectors at 15, 97.5, 180, 195, 277.5, and 360 degrees, respectively. Twenty-six channel groups were used.	Nodalization is shown in Figures 21.6-65-2, 21.6-65-3, and 21.6-65-4 of Ref [3]. A 3-D VSSL option was employed with twenty-four axial levels, and six azimuthal (theta) sectors at 15, 97.5, 180, 195, 277.5, and 360 degrees, respectively. Twenty-eight and forty channel groups were used. As mentioned in Ref [3], the vessel azimuthal nodalization is same as that in Reference [4]. This azimuthal nodalization allows modeling individual chimney partitions, and the associated channels and regions, in each of the two smaller, 15-degree azimuthal sectors.
4. Cycle State Point analyzed	Equilibrium core, EOC (End of Cycle) conditions, as indicated in Section 4.7 of References [1] and [2].	Equilibrium core, EOC conditions used for the following abnormal events: Generator Load Rejection With Total Turbine Bypass Failure, Feedwater Controller Failure-Maximum Demand, and Closure of all Main Steamline Isolation Valves. Equilibrium core EOC or MOC conditions were used, as appropriate, in other abnormal events listed in Table 15.1-7.
5. Key Input Parameters	100% power and 100% flow was used for analysis. Three of the four Isolation Condensers were assumed to be available. For the FWCF case, the analysis in Ref [1] used maximum feedwater flow demand of 150% of rated, and the analysis in Ref. [2] used maximum demand of 168% of rated.	Table 15.2-1 lists the key input parameters and initial conditions used in AOO, and Infrequent Event analyses.

<table>
<tr><th>Category</th><th>Analysis in Section 4 of Ref [1], and Ref [2]</th><th>Analysis in Ch. 15 DCD Tier 2</th></tr>
<tr><td>6. Sequence of Events</td><td>Table 4.7-1 (LRNB)

Table 4.7-2 (FWCF)

Table 4.7-3 (MSIV Closure)</td><td>Table 15.3-6a (Generator Load Rejection With Total Turbine Bypass Failure)

Table 15.3-3 (Feedwater Controller Failure – Maximum Demand)

Table 15.2-13 (Closure of all MSIV).</td></tr>
<tr><td rowspan="2">7. Results</td><td>Results of LRNB, FWCF, MSIV Closure events are discussed in Section 4.7 of References [1] and [2].</td><td>Table 15.3-1 includes the corresponding results summary of the Feedwater Controller Failure – Maximum Demand, the Generator Load Rejection with Total Turbine Bypass Failure, and other Infrequent Events.

Table 15.2-5 includes the results summary for the Closure of all MSIV, and other Anticipated Operational Occurrence Events.</td></tr>
<tr><td colspan="2">In GE response to RAI 21.6-62 (MFN 07-008), Ref. [5], it was stated that the CPR for the FWCF transient in the DCD Tier 2 is lower than that in Reference [2]. Also, the CPR for FWCF for DCD Tier 2 is lower than that in Reference [1]. The following reasons were listed for the differences in CPR:

i) In the ESBWR DCD, the turbine bypass capacity is 110%. This mitigates the pressurization in a FWCF event after the turbine trip, such that significant compression waves are not traversing the main steam lines. Most of the CPR changes in the DCD are due to slow changes in core inlet temperature and core power.

ii) In the FWCF analysis, MFN 04-109, Ref [2], the BPV opened at the beginning of the transient but closed immediately due to inappropriate inputs; the closure of the BPV for this case led to higher vessel pressures and higher change in CPR than that in the DCD calculation.

iii) The DCD Tier 2 calculations correctly model the control system inputs related to the turbine control valve and bypass valves to achieve the target vessel pressure of 7.17 MPa during TCV and BPV operation.</td></tr>
</table>

References

1. MFN 05-017, Letter from Robert E. Gamble to U.S. Nuclear Regulatory Commission, Enclosure 1, *"NEDC-33083P-A "TRACG Application for ESBWR" Licensing Topical Report.*

2. MFN 04-109, Letter from Robert E. Gamble to U.S. Nuclear Regulatory Commission, Section 4.7, *"Demonstration Calculations for ESBWR AOOs," of NEDC-33083P, "TRACG Application for ESBWR".*

3. MFN 07-347, Letter from James C. Kinsey to U.S. Nuclear Regulatory Commission, Enclosure 1, *"Response to Portion of NRC Request for Additional Information Letter No. 66 Related to ESBWR Design Certification Application RAI Numbers 21.6-65 and 21.6-85".*

4. *TRACG Application for ESBWR Stability Analysis,* NEDC-33083P Supplement 1.

5. MFN 07-008, Letter from James C. Kinsey to U.S. Nuclear Regulatory Commission, Enclosure 1, *"Response to Portion of NRC Request for Additional Information Letter No. 66 Related to ESBWR Design Certification Application Safety Analysis RAI Numbers 21.6-57, 21.6-60 through 21.6-62"*

Affected Documents

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

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

NRC RAI 21.6-78

Explain the two options for calculating the CPR for transient conditions.

Reviewer Summary: On page 7-47 of NEDE-32176P, Rev. 3 you state: "Two options exist for the calculation of the critical power ratio (CPR) for transient conditions."Why do you have two options for calculation of transient CPR? Is one method more accurate than the other? What are your guidelines for when to use which method for transient CPR calculations? Which method is used during an AOO calculation and during an ATWS calculation? On page 7-48 of the same document you state: "The assessment of the critical power calculation can be found in Section 3.6 of the TRACG Qualification LTR." The staff does not have Reference 6 (Rev. 3 of the TRACG Qualification LTR) which you state is to be published in June 2006. Provide the information from this document that may answer the above questions on the CPR calculation options for transient conditions.

GEH Response

Two options exist for the calculation of the transient CPR response in TRACG. In the first option the transient CPR is calculated using the traditional [[ ]]. In the second option the transient CPR is calculated by performing an [[ ]] in the calculation. The second method is [[ ]], but is also more compute intensive. The two transient CPR methods are both approved and are described in detail in the approved LTR supplement "TRACG Application for Anticipated Operational Occurrences Transient Analyses", NEDE-32906P Supplement 2-A, March 2006.

Affected Documents

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

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

NRC RAI 21.6-81

Please address the following questions related to distribution of channel power:

A. *Eq. 9.4-11 in NEDE-32176P, Rev. 3, includes Fco, which is the fraction of direct moderator heating that appears in the coolant in the bypass, water rod, and bundle coolant. In TRACG, the water rod coolant, the core bypass coolant, and the bundle coolant are simulated as separate flow paths. How is the direct moderator heating associated with Fco split up for these three different coolant regions within the BWR core? Please describe the basis of the model.*

B. *Page 62 of NEDC-32965P, Rev. 0 (UM-0149, Rev. 0), describes the user input fractions for fission power and decay heat for direct moderator heating, fuel clad gamma heating and water rod(s) clad gamma heating as described in NEDC-32176, Rev. 3, page 9-35. The description for FDMN2 (direct moderator heating fraction for decay heat power) states "The prior practice of setting FDMH2=FDMH1 is discouraged since it is non-conservative with respect to post-scram evaluations of peak clad temperature." Where FDMH1 is the direct moderator heating fraction for fission power. Please explain why you have set FDMH1=FDMH2 for all of the CHANs in the ESBWR TRACG decks for LOCA, AOO, ATWS and Stability given this statement in the user's guide.*

C. [[

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D. *How does the direct moderator heating model change based on the control fraction for a given CHAN component? How specifically is the user input for BPAPC (bypass area per channel) used in the direct moderator heating model?*

E. *The fission power distribution model presented in section 9.4 in NEDE-32176P, Rev. 3, appears to assume no gamma heat of the pressure vessel walls. Explain how gamma heating of the pressure vessel walls is considered.*

F. *a and b in Eq. 9.4-13 in NEDE-32176P, Rev. 3, are assumed constant for calculating the fractional deposition of fission power in the fuel clad, water rod clad, control blades, and channel wall.* [[

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G. *What is the normalization formula used to normalize Eq. 9.4-11 in NEDE-32176P, Rev. 3? If the energy distribution fraction Fco is decreasing because the moderator density is decreasing, how are the other fractions in Eq. 9.4-11 in NEDE-32176P, Rev. 3, adjusted to ensure that they sum to one?*

H. Does TRACG uncertainty analysis include uncertainty associated with a and b for c, f, w, bl, ch, and co?

GEH Response

The letters denoting the paragraphs in the request will be followed in the responses that follow.

A. Additional detail for the direct moderator heating (DMH) model is available in subsection C3DX of Section 5.1 of NEDE-32906P-A, Revision 3. The total DMH fraction for a kinetics node kij is calcualted from Equation (9.4-14) of NEDE-32176P, Rev. 3 using a nodal density ρ_m that is calculated in the way indicated in the response to RAI 21-b for NEDE-32906P-A, Revision 3. Each node can contain three regions J denoted by the subscripts AC for active channel, BP for bypass, and WR for water rod. The defining equation for ρ_m is repeated here.

$$\rho_m = F_{AC}\rho_{AC} + F_{BP}\rho_{BP} + F_{WR}\rho_{WR} \tag{21.6-81.1}$$

where

$$\rho_J = \left[(1-\alpha)\rho_\ell + \alpha\rho_v\right]_J \quad \text{for } J \in \{AC, BP, WR\}, \tag{21.6-81.2}$$

and F_J is the volume fraction in region J,

α_J is the void fraction in region J,

ρ_ℓ is the liquid density in region J,

ρ_v is the vapor density in region J.

When the dynamic water rod model is active, the value for ρ_{WR} is calculated from the TRACG hydraulic solution, otherwise $\rho_{WR} = \rho_{BP}$ for each axial location. For all cases, all quantities are defined for each kij kinetics node. For each such node the volume fractions satisfy the relationship

$$F_{AC} + F_{BP} + F_{WR} = 1.0 \tag{21.6-81.3}$$

Equations (21.6-81.2) and (21.6-81.3) apply for either a controlled or uncontrolled node since the value of F_{BP} depends on the whether a control blade is present or absent in determining the nodal values for ρ_m used to drive the cross section model.

Using ρ_m from Equation (21.6-81.1), the total DMH fraction $F_{co}(t)$ is calculated from Equation (9.4-14) of NEDE-32176P, Rev. 3 and then split among the three regions proportional to the water density fraction from the uncontrolled condition so that

$$F_{co} = \left[\gamma_{AC} + \gamma_{BP} + \gamma_{WR}\right]_{uncontrolled} \tag{21.6-81.4}$$

where $$\gamma_J = \frac{\rho_J}{\rho_m}\left[F'_J\right]_{uncontrolled} \quad \text{for } J \in \{AC, BP, WR\}. \tag{21.6-81.5}$$

Please see the response to part **H** for additional discussion related to controlled conditions.

The TRACG DMH model is based on the fact that the largest component of DMH is due to neutron scattering off of hydrogen atoms in water molecules and that this effect is proportional to the number density of hydrogen atoms and thus proportional to the water density. This fact was supported by detailed MCNP analyses that assessed both the neutron and photon components of DMH in each of the three regions for different fuel types. The results are shown in Figures 5-11, 5-12 and 5-13 of NEDE-32906P-A, Revision 3.

B. The context for which setting FDMH2=FDMH1 is nonconservative is with respect to calculating the peak cladding temperature (PCT) during a LOCA event in an operating BWR. That was the purpose for which the comment in the User's Manual (UM) was made. The UM comment does not apply for AOO, ATWS and stability scenarios. For a postulated LOCA in an operating BWR, it would be conservative to assume that most or all of the DMH component attributed to decay heat is due to gamma heating in the fuel since this will result in the maximum heat flux through the cladding and maximize the calculated PCT. In other words, with respect to impact on the calculated PCT, setting FDMH2=0.0 is the most conservative choice. PCT is not a key parameter except for LOCA scenarios in operating BWRs. For LOCA scenarios in the ESBWR, PCT is only nominally a key parameter since fuel heatup does not occur for the design basis accident; therefore, setting FDMH1=FDMH2 is acceptable.

C. [[

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D. [[

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E. TRACG does not explicitly account for gamma heating in the vessel wall.

F. The constants *a* and *b* are used to account for the fact that fission gammas and decay heat gammas have different energies that may impact how their energies are deposited. Gamma energy is primarily deposited into materials with larger atomic numbers like fuel and structural materials so their deposition is insensitive to the moderator density. In any case, gamma energy primarily gets redeposited into the fuel itself. The other major component of directly deposited energy is energy from neutrons. Unlike gamma energy, neutron energy is primarily deposited in the moderator as neutrons scatter with hydrogen in water. Eventually most of the neutrons are moderated to thermal energy and end up being absorbed in the fuel. [[

]] simulations confirm that total energy deposition in the moderator is modeled well within an uncertainty of [[ ]] as indicated in Figure 5-11 of NEDE-32906P-A, Revision 3.

G. The value for $F_f(t)$ is calculated as unity minus the sum of all the other fractions. As $F_{co}(t)$ decreases the value of $F_f(t)$ increases. Similarly, changes in the other fractions with time will also result in a change in $F_f(t)$ so that all the fractions will continue to sum to unity.

H. The TRACG uncertainty does not explicitly consider the uncertainties in all the components of the model. The total uncertainty of [[ ]] in the total DMH is sufficient to encompass all of these other minor uncertainties. To put everything in the correct perspective, a [[ ]] change in the total DMH results in less than a [[ ]] impact in the calculated ΔCPR/ICPR. A change of [[ ]] in CPR is considered to be negligible.

Affected Documents

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

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

NRC RAI 21.6-83

Provide nodalization studies justifying your axial nodalization described in NEDC-33083P, Supplement 2, of the vessel bypass in relation to boron transport and mixing for the ESBWR ATWS event.

GEH Response

A TRACG axial nodalization sensitivity calculation has been performed for an ESBWR ATWS event to assess the effect of [[
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[[

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ATWS MSIVC baseline analysis (Base Case), which is identical to the case reported in Section 8.1.1 of Ref [1] differing only by an updated MCPR of 1.2, is repeated with an axially renodalized vessel bypass (Renodalized Case).

[[

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Table 21.6-83-1 Axial Elevations for the Base Case and the Renodalized Case

[[					
					]]

[[

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Key ATWS output parameters [[

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These results indicate [[
]] This observation is elaborated below.

a) [[
]]

b) The calculated [[
]]

c) In Reference [2], [[
]]

It is concluded from this bypass renodalization sensitivity study that boron-mixing analysis in the ESBWR ATWS MSIVC Base Case, Ref [1], remains conservative.

Table 21.6-83-2 Comparisons of Key ATWS Output Parameters

[[		
		]]

References

1. TRACG Application for ESBWR Anticipated Transient Without Scram Analyses, *NEDE-33083P Supplement 2, neDRF 0000-0035-0987, neFile 0000-0047-8465, January 2006.*
2. *MFN 07-055*, Letter from James C. Kinsey to U.S. Nuclear Regulatory Commission, Enclosure 1, "Response to Portion of NRC Request for Additional Information Letter No. 31 – RAI Numbers 21.6-8 and 21.6-41".

Affected Documents

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

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

Enclosure 3

MFN 07-448

Response to Portion of NRC Request for

Additional Information Letter No. 66

Related to ESBWR Design Certification Application

RAI Numbers 21.6-63, 21.6-78, 21.6-81, 21.6-83

Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, James C. Kinsey, state as follows:

(1) I am Project Manager, ESBWR Licensing, 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.

(2) The information sought to be withheld is contained in enclosure 1 of GEH's letter, MFN 07-448, Mr. James C. Kinsey to U.S. Nuclear Energy Commission, entitled "*Response to Portion of NRC Request for Additional Information Letter No. 66 Related to ESBWR Design Certification Application – RAI Numbers 21.6-63, 21.6-78, 21.6-81, 21.6-83*", dated August 20, 2007. The proprietary information in enclosure 1, which is entitled "*Response to Portion of NRC Request for Additional Information Letter No. 66 Related to ESBWR Design Certification Application – RAI Numbers 21.6-63, 21.6-78, 21.6-81, 21.6-83 – 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 details of GEH's evaluation methodology.

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 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 20th day of August 2007.

James C. Kinsey

James C. Kinsey
GE-Hitachi Nuclear Energy Americas LLC