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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 08-647

Docket No. 52-010

October 10, 2008

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

Subject: **Submittal of Response to Portion of NRC Request for Additional Information Letter No. 211 Related to ESBWR Design Certification Application Chapter 18 - Human Factors Engineering - RAI Number 18.2-10 S03 and 18.4-16 S03**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) responses to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAIs) sent by NRC letter No. 211, dated June 3, 2008 (Reference 1).

RAI 18.2-10 S03 was requested by Reference 1 and was previously responded to in Reference 2, as requested by Reference 3. Reference 5 requested the first supplement, responded to by Reference 4. Reference 6 provided the original response, as requested by the NRC in Reference 7.

RAI 18.4-16 S03 was requested by Reference 1 and was previously responded to in Reference 8, as requested by Reference 3. Reference 5 requested the first supplement responded by Reference 4. Reference 6 provided the original response, as requested by the NRC in Reference 7.

Enclosure 1 contains GE Hitachi Nuclear Energy (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.

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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

References:

1. MFN 08-502 - Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request For Additional Information Letter No. 211 Related To ESBWR Design Certification Application, dated June 3, 2008*
2. MFN 08-088 - *Response to Portion of NRC Request for Additional Information Letter Nos. 125 and 135 Related to ESBWR Design Certification Application – Human Factors Engineering - RAI Numbers 18.2-10 S02, 18.2-18, 18.6-13, 18.11-8 S01, 18.11-13 S01, 18.11-25 S01, 18.11-28 S01, 18.11-35, 18.11-37, 18.12-4 S02, and 18.12-7*, dated March 8, 2008
3. MFN 07-702 - Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, GEH, *Request For Additional Information Letter No. 125 Related To ESBWR Design Certification Application*, dated December 14, 2007
4. MFN 07-334 - Submittal of *"ESBWR DCD Chapter 18, Human Factors Engineering - RAI to DCD Roadmap Document"* dated June 27, 2007
5. Email from AE Cubbage to DL Lewis, *List of Chapter 18 RAIs for Roadmap Request*, dated 5/18/07
6. MFN 06-163, *Response NRC Request for Additional Information Letter No. 28 – Human Factors Engineering – RAI Numbers 18.2-1 through 18.2-17*, dated June 16, 2006
7. MFN 06-150, Letter from U.S. Nuclear Regulatory Commission to David Hinds, GE, *Request For Additional Information Letter No. 28 Related To ESBWR Design Certification Application*, dated May 9, 2006
8. MFN 08-154 - *Response to Portion of NRC Request for Additional Information Letter Nos. 125 and 135, Related to ESBWR Design Certification Application – Human Factors Engineering - RAI Numbers 18.2-19, 18.2-20, 18.4-21 S01, 18.4-25 S01, 18.7-7 S02, 18.7-8 S02, 18.7-9 S03, 18.11-32 S01, 18.12-2 S01, 18.4-16 S02, 18.12-3 S01*, dated April 1, 2008

Enclosures:

1. MFN 08-647 – Response to Portion of NRC Request for Additional Information Letter No. 211 Related to ESBWR Design Certification Application Human Factors Engineering - Response to NRC RAIs 18.2-10 S03 and 18.4-16 S03 – Proprietary Version
2. MFN 08-647 – Response to Portion of NRC Request for Additional Information Letter No. 211 Related to ESBWR Design Certification Application Human Factors Engineering - Response to NRC RAIs 18.2-10 S03 and 18.4-16 S03 – Non-Proprietary Version
3. Affidavit – MFN 08-647

cc: AE Cubbage USNRC (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
RM Wachowiak GEH/Wilmington (with enclosure)
RE Kingston GEH/Wilmington (with enclosure)
eDRF 0000-0087-3863 RAI 18.2-10 S03
0000-0087-3867 RAI 18.4-16 S03

Enclosure 2

MFN 08-647

Response to Portion of NRC Request for Additional Information Letter No. 211 Related to ESBWR Design Certification Application

Human Factors Engineering

Response to NRC RAIs 18.2-10 S03 and 18.4-16 S03

Non-Proprietary Version

Do Not Electronically Transmit

For historical purposes, the original text of RAIs 18.2-10 and 18.4-16 and any previous supplemental text and GE responses are included preceding each supplemental response. Any original attachments or DCD mark-ups are not included to prevent confusion.

RAI

18.2-10

NRC RAI 18.2-10

In NEDO-33217, 10/05, the GE HFE Implementation Plan in Section 3.2.2(2) addresses general process management tools. The plan identifies these tools as the subject of later documents. Does GE plan to submit these documents for design certification?

GE Response

GE will provide summary reports as part of the design certification process as defined in the applicable ESBWR HFE Licensing Topical Reports and implementation plans. The process management tools and techniques referred to in these documents will utilize review forms and/or checklists to ensure HFE requirements have been correctly implemented and verified. These forms/checklists will not be submitted for design certification but the results will be included in the summary reports.

Any HFE discrepancies identified shall be added to the Human Factors Engineering Issues Tracking System (HFEITS) that will ensure the issue is reviewed, evaluated, and addressed through design, procedures or training. This tracking system will be utilized from the beginning of the design process through the installation, testing and turnover to the COL applicant. This ensures that all HFE issues identified during the design and validation process are traceable and available for review/ verification. Upon completion of the project, the HFEITS design data is turned over to the COL applicant to maintain the HFE program integrity for the life of the plant.

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

NRC RAI 18.2-10 S01

Provide detail information or reference specific items regarding the general process management tools?

GEH Response

Chapter 18 Roadmap Document								
RAI NO	SEC	#	NRC Supplemental	DocName/ Question	Resolved	Plan	Section	Resolution Description
18.2-10	2	10	Y	Provide detail information or reference specific items regarding the general process management tools??	From GE response	33217	3.1.4.2	General process tools are contained in GE internal engineering procedures (EOPs, ESIs,). Some of these titles are provided, the detailed procedures are available for NRC review.

NRC RAI 18.2-10 S02

GEH's response to RAI 18.2-10 does not adequately address the staff's question. GEH has not provided any detail or referenced specific items. NEDO-33217, Rev. 3, Section 3.1.4.2, #6 of the implementation plan identified process management tools and indicates that these are discussed in Section 4 of the document describing the technical program. However, in MFN 07-428, GEH indicated to the staff that they plan to significantly revise the section of the plan addressing the technical program. GEH provided a markup of the plan's table of contents providing a high-level overview of the changes planned. Please submit Rev. 4 of the plan incorporating these changes.

GEH Response

General process management tools (e.g., review forms) to be utilized by the team in the performance of tasks are described in work instructions finalized by the team before work is commenced. NEDO/NEDE-33217 Revision 3 refers to work instructions as work plans. Section 3.1.4.2(6) of the NEDO states:

> "Process Management Tools - Tools and techniques (for example, review forms) to be utilized by the team to verify application of SPE/HFE efforts are identified in the HFE and Software implementation plans described in Section 4, or in their respective work plans."

The team pilots the initial work instruction and makes final adjustments to forms and instructions before launch of the activity.

The staff has reviewed a sample of the work instructions in draft form at the January and July audits. Work instructions are available for the following activities:

Human Factors Issue Tracking System
Operating Experience Review
System Function Requirements Analysis
Plant Function Requirements Analysis
Task Analysis
Human System Interface Design
Human Reliability Analysis

General work instructions with review forms for Staffing and Qualifications, Procedure Development, Training Development, HF V&V, Design Implementation, and Human Performance Monitoring are under development and will be available as part of the design certification.

The work instructions are proprietary documents that are not included in the NEDO plans, but will be made available for staff review.

Revision 4 to the NEDO/NEDE 33217, MMIS and HFE Implementation Plan, will be submitted on a NEDO revision schedule to be completed after the DCD revision 5 in 2nd quarter 2008. The revised document will replace the term "work plans" with "work instructions".

DCD/LTR Impact

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

A revision to NEDO/NEDE 33217 will be submitted as described in response to this RAI.

NRC RAI 18.2-10, S03

In RAI 18.2-10 S02, the staff requested that GEH provide specific details the on process management tools that will be used by the human factors engineering (HFE) team. The GEH response stated that the process management tools are described in the work instructions and identified seven work instructions:
(1) Human Factors Issue Tracking System,
(2) Operating Experience Review,
(3) System Function Requirements Analysis,
(4) Plant Function Requirements Analysis,
(5) Task Analysis,
(6) Human System Interface Design, and
(7) Human Reliability Analysis.

The staff position is that the HFE Implementation plan needs to specifically describe the process management tools. Please include this information in the HFE implementation plan or submit the appropriate work instructions for staff review.

GEH Response

GEH's previous responses to this RAI were based on the premise that the individual Human Factors Engineering (HFE) work instructions would integrate the GEH process management procedures contained in generic engineering operating procedures (EOPs) into their work instructions as applicable. Subsequently, a separate HFE work instruction has been prepared to establish a consistent management process for the Human Factors activities.

The Human Factors Engineering management process is defined in the HFE Project Management Work Instruction and supported by higher level engineering work control documents and GEH engineering operating procedures (EOPs). These supporting documents include:

- Responsible Manager Project Work Plan (RM PWP) for implementation of activities defined in the MMIS and HFE Implementation Plan (NEDE-33217P)
- EOP 25-5, Work Planning and Scheduling
- EOP 40-7, Design Reviews
- EOP 42-6, Independent Design Verification
- EOP 42-10, Design Record File
- EOP 42-8, Document Initiation or Change by ERM/ECN

The RM PWP describes the functions performed by the manager responsible for the conduct of the HFE activities. This includes maintaining the list of qualified individuals who may serve team roles on project work activities.

This response provides excerpts from the GEH proprietary HFE Project Management (HFE PM) work instruction, for the purpose of providing specific details on the process management tools that will be used by the human factors engineering (HFE) team. Abstracts are provided in Attachment 1 for the EOPs that are referenced in the HFE PM work instruction. Attachments 4, 5, 6, and 7 are excerpts from EOP 40-7, Design Reviews, intended to highlight the tools and review forms for design review.

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DCD/LTR Impact

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

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

RAI

18.4-16

NRC RAI 18.4-16

NEDO-33220 Section 4.2 addresses the process for allocating functions.
a) The decision guidelines on page 26 appear to be incomplete. The first bullet addresses allocation to multiple regions in Figure 9. Are decision guidelines needed for allocation to each region of the figure? Clarify second bullet decision guideline.
b) This section contains many criteria for allocating functions. Most are stated at a very general level. Are there more specific criteria available for analysts to use as part of the decision making process?
c) Figure 17 identified criteria for allocating a function to humans. One is "Objective of Function is Maintain ON/OFF control." Please clarify what this means.
d) On page 34 the following criterion is provided: "1. Automated Data Display. Examine each function and function segment and specify points where automated 9 display will simplify the core performance requirements for detecting, monitoring, planning or executing." Clarify the meaning of this statement.
e) Figure 21, the second diamond appears to be mislabeled. It should contain a title per the description on page 40.

GE Response

(a) The first bullet says "...follow the process for the rest of the function..". The process is covered in Sections 4.2.1 through 4.2.3.
(b) No "more specific" criteria are available. Specificity typically originates on a case-because basis as the system design is developed and detailed, or new requirements come about (e.g., severe accident guidelines).
(c) Control room operators need to physically perform the ON/OFF action either by hard switch/button or Software/Touch Screen interface.
(d) Core Performance is described in Section 3.3.3. Core performance is the working categorization for describing the steps to process data from sensors to control signals, whether performed by human or machine. They consist of Detection, Monitoring, "Planning and Decision Making" and Control.
(e) The wording will be changed to "Man meets human performance requirements" in the next revision of NEDO-33220.

DCD/LTR Impact

LTR NEDO-33220, Rev. 0 will be revised as noted above.

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

NRC RAI 18.4-16 S01

Subquestion C - The response defined what an ON/OFF control is. To further clarify the question: What does it mean to say the "objective" of a function is to maintain ON/OFF control? An example may help to clarify this aspect.

GEH Response

Chapter 18 Roadmap Document								
RAI NO	**SEC**	**#**	**NRC Supplemental**	**DocName /Question**	**Resolved**	**Plan**	**Section**	**Resolution Description**
18.4-16	4	16	N	LTR NEDO-33220	From GE response	33220		Figure 21 deleted
18.4-16	4	16	Y	Function Allocation Process Clarifications	From GE response	33220		The statement has been removed from the revised plan.

NRC RAI 18.4-16 S02

The staff asked for additional information in RAI 18.4-16. Some parts were addressed, but the following parts of the original RAI are still open:

(b) This is a follow-up to RAI 18.4-16. This section contains many criteria for allocating functions. Most are stated at a very general level. Are more specific criteria available for analysts to use as part of the decision making process?

(f) This is a follow-up to RAI 18.4-16. For non-safety functions for which configuration change is required during normal or emergency operations, the methodology assumes the function will be handled by the Plant Automation System (see Figure 3). It would seem that the same set of human performance considerations should be made here as for safety functions. Please clarify the rationale for using the Plant Automation System as this is not clearly presented in NEDO-33220, Rev 1.

GEH Response

(b) RAI 18.4-16 was originally written against Rev 0 of NEDO-33220. Revision 1 of NEDO-33220 refined the Allocation of Function (AOF) process to support the top-down approach to human factors engineering adopted by the ESBWR design team. As a result of this refinement, the allocation process was clarified and presented in flow chart form with supporting descriptive paragraphs providing amplifying detail for each step in the process.

NEDO-33220, Rev 1, Section 4.1.3 contains descriptions for each decision block in the AOF process that presents the concept being evaluated and, where needed, a listing of specific criteria and technical bases to be considered when making the requisite determinations. Additional criteria and guidance for use during the AOF process is provided in NEDO-33220 Appendix A. Currently this appendix is not referenced in the body of the NEDO. The GEH response to NRC RAI 18.4-21 S01 (provided in this correspondence) (and associated change to NEDO-33220) links these additional criteria and guidance to the AOF process steps.

The criteria and guidance of NEDO-33220 is implemented in a systematic and consistent manner through the use of a work instruction. The HFE Design Team supports this implementation. The design team is a multi-disciplined group of industry personnel with experience in plant operations, human science, engineering, procedure development, and personnel training. The HFE Design Team can also draw from the broader ESBWR and GEH engineering teams when necessary to support allocation decision-making.

Subsequent steps of the HFE top-down HFE process build upon, validate, and can motivate reconsideration of the allocations made in AOF. The detailed analyses performed in Task Analysis re-examine many of the same criteria and considerations that factor into allocation decisions and provide feedback to the AOF process.

Verification and Validation will validate allocation decisions and provide feedback if allocations need to be revised.

(g) NEDO-33220, Rev 1, section 4.1.1 lists as one of the plans assumptions that:

"The control systems for the ESBWR have a high degree of automation. All systems are automated unless regulation or HFE analysis results dictate otherwise."

It is the ESBWR concept of operations that all non-safety related functions are automated unless precluded as noted above. In the limited number of cases where automation is precluded, the HFE design team documents the basis for deviation from the normal allocation process as shown in NEDO-33220, Rev 1, Figure 3.

Additionally, the detailed analyses performed in Task Analysis examine the task details relating to allocation decisions and provides feedback to the AOF process if revision is warranted. The HFE V&V activity will validate allocation decisions and provide feedback if the allocations require revision.

DCD/LTR Impact

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 18.4-16 S03

In RAI 18.4-16(b) S02, the staff noted that while the NEDO-33220 contains many criteria for allocating functions, most are stated at a very general level. The staff requested the applicant to provide the more specific criteria available for analysts to use as part of the decision making process. GEH's response stated that the NEDO contains descriptions for each of the decision blocks for the allocation process figures and those descriptions contain the specific criteria to be used. The staff agrees, however, this does not address the question. For example, for NEDO-33220, Section 4.1.3.1, Item (2), "Automatic Actuation Required," the description instructs the analyst to consider nine criteria when determining if automatic actuation is required. The nine criteria are presented in a bullet list. The bullets are typically only a few words, such as "human cognitive limitations" and "human response time limitations." This is where the staff's concern lies. These bullet lists do not actually provide criteria or methods that can be used by an analyst to make decisions. They are lists of things to consider. How would the analyst decide that a particular actuation should be automated based on human cognitive limitations? The staff realizes that precise and objective criteria for many of these considerations are beyond the state-of-the-art. And the staff recognizes that the methodology is based on "a qualitative process relying heavily on judgment of the expert teams." However, it is expected that the plan will provide the analyst with guidance to help evaluate the items presented in the bullet lists.

GEH's response further indicated that "The criteria and guidance of NEDO-33220 is implemented in a systematic and consistent manner through the use of a work instruction." The staff position is that the HFE Allocation of Function Implementation plan needs to provide the specific criteria the analysts will use in the decision making process. Please include this information in the implementation plan or submit the appropriate work instructions for staff review.

GEH Response

As a result of the clarifications received in the 8/6/08 conference call between GEH and NRC human factors engineering representatives, the following excerpts from the Allocation of Function work instruction are submitted for the staff's review. The information provided below is the current internal work guidance written to support the analysis presented in NEDO-33220, ESBWR HFE Allocation of Function Implementation Plan and referred to in this RAI. The information provided below is included in the AOF work instruction to assist analysts during performance of the AOF process. When considering decision points in the allocation process, analysts are provided with bulleted lists of applicable considerations. The following information provides detail, context, and criteria for each of these considerations.

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DCD/LTR Impact

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

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

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Attachment 2 for RAI 18.2-10 S03

HITACHI	Project Work Plan
GE Hitachi Nuclear Energy	Issue Date: DRAFT Sheet 1 of 4
Project	<PWP name>

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Project	<PWP name>

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Support Plan

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Support Plan

Support Plan

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GE-Hitachi Nuclear Energy Americas LLC *Design Review Notification*	*(Reference EOP 40-7.00)*

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MFN 08-647

Enclosure 3

Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, David H. Hinds, state as follows:

(1) I am the General Manager, New Units Engineering, GE-Hitachi Nuclear Energy Americas LLC ("GEH"). I 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 08-647, Richard E Kingston to Nuclear Regulatory Commission, entitled *Submittal of Response to Portion of NRC* Request *for Additional Information Letter No. 211 Related to ESBWR Design Certification Application Chapter 18 - Human Factors Engineering - RAI Number 18.2-10 S03 and 18.4-16 S03*, October 10, 2008. GEH text proprietary information in Enclosure 1, which is entitled "Response to Portion of NRC Request for Additional Information Letter No. 211 Related to ESBWR Design Certification Application - Human Factors Engineering - Response to NRC RAIs 18.2-10 S03 and 18.4-16 S03", is identified by a dark red dotted underline inside double square brackets [[This sentence is an example.{3}]]. Figures and large equation objects containing GEH proprietary information 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 identifies details of GEH ESBWR methods, techniques, information, procedures, and assumptions related to the application of human factors engineering to the GEH ESBWR.

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.

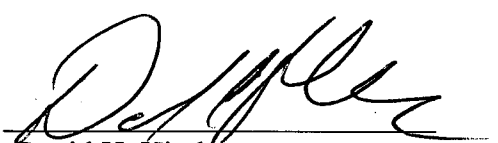
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

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 10th day of October, 2008.



David H. Hinds
GE-Hitachi Nuclear Energy Americas LLC