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Proprietary Notice
This letter forwards proprietary information in accordance with 10 CFR 2.390. Upon the removal of Enclosure 2, the balance of this letter may be considered non-proprietary.

MFN 09-346

Docket No. 52-010

June 2, 2009

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. 309 Related to ESBWR Design Certification Application Chapter 18 - Human Factors Engineering - RAI Number 18.5-5 S05**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to a portion of the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) Letter No. 309, dated April 16, 2009 (Reference 1).

Enclosure 1 provides the GEH response to the subject RAI as requested in Reference 1. Enclosures 2 and 3 provide the associated document markups. Verified LTR changes associated with this RAI response are identified in the enclosed markups by enclosing the text within a black box.

Enclosure 2 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 3.

The affidavit contained in Enclosure 4 identifies that the information contained in Enclosure 2 has been handled and classified as proprietary to GEH. GEH hereby requests that the information of Enclosure 2 be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390 and 9.17.

DC08
NRO

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 09-276 - Letter from U.S. Nuclear Regulatory Commission to Jerald G. Head, *Request for Additional Information Letter No. 309 Related to ESBWR Design Certification Application*, dated April 16, 2009

Enclosures:

1. MFN 09-346 - Response to Portion of NRC Request for Additional Information Letter No. 309 Related to ESBWR Design Certification Application Chapter 18 - Human Factors Engineering - RAI Number 18.5-5 S05
2. MFN 09-346 - Markups for Response to Portion of NRC Request for Additional Information Letter No. 309 Related to ESBWR Design Certification Application Chapter 18 - Human Factors Engineering - RAI Number 18.5-5 S05 – Proprietary Version
3. MFN 09-346 – Markups for Response to Portion of NRC Request for Additional Information Letter No. 309 Related to ESBWR Design Certification Application Chapter 18 - Human Factors Engineering - RAI Number 18.5-5 S05 – Non-Proprietary Version
4. Affidavit – Larry J. Tucker, dated June 2, 2009

cc:	AE Cubbage	USNRC (with enclosure)
	JG Head	GEH/Wilmington (with enclosure)
	DH Hinds	GEH/Wilmington (with enclosure)
	eDRF Section	0000-0102-1078 (RAI 18.5-5 S05)

Enclosure 1

MFN 09-346

Response to Portion of NRC Request for

Additional Information Letter No. 309

Related to ESBWR Design Certification Application

Chapter 18 - Human Factors Engineering

RAI Number 18.5-5 S05

NRC RAI 18.5-5 S05

In MFN 09-087, GEH provided considerable detailed information about their task analysis (TA) methodology in response to RAI 18.5-5 S04. The RAI response presented excerpts from the TA work instruction (WI) that provided the detailed methodology. However, several issues need clarification.

1. Clarify implementation plan (IP) and WI inconsistency.

   Clarify the following inconsistency between the IP and WP. IP Section 4.1.2 lists "system configurations from the SFRA (System Functional Requirements Analysis)" and "SFRA function flow data structure" as inputs to the Task Analysis, while the WI Section 7.1 does not address either of these sources of information. The WI does list "OER (Operating Experience Review)/BRR (Baseline Review Record)" which is not mentioned in the IP.

2 Explain the repeated use of TA's

   The flow of task analysis activities is hard to follow. This is in part due to the reuse of the same aspects of the work instruction. For example, to address "Task Identification," TA-1 requires the analyst to address task characteristics such as the parameters that indicate that an activity has been accomplished (see page 3 of the MFN enclosure). Yet a couple of pages later, TA-1 is again used under "Parameters" and the very same aspects of the task are addressed (see page 7 of the MFN enclosure). What is the difference between the two? In fact TA-1 is identified approximately seven times in the MFN, often apparently seeking the same information. TA-1 is just an example. Please explain the reuse of the same TA's multiple times, seemingly repeating the same activities.

3. Explain/correct inconsistent Linking of WI steps to IP bullets

   There are places where the WI steps provided do not seem well connected to the IP bullet they are meant to expand on. For example, on page 19 of the MFN Enclosure, WI steps are provided for assessing operator vigilance. Yet the WI steps do not seem to address vigilance at all and instead address response requirements (TA-16). One aspect of what is addressed is the force to be applied by a person conducting a task. This does not seem to be related to vigilance, but does seem to be related to a different aspect of task analysis listed on page 21 -"physical workload." But force is not mentioned there. A second example is on page 24 of the MFN Enclosure, where WI steps are provided for addressing work allocation. The WI

steps provide instructions for workload screening and do not specifically relate to work allocation.

Explain or correct the links between WI and IP.

4. Clarify the meaning of interdependency.

   It is not clear how the concept of interdependency is used in the TA process. Interdependency usually refers to aspects of one task that are needed by or shared with another task. The WI steps listed for interdependency appear to address the various requirements for task performance. such as control requirements. response requirements, indication requirements. etc. The use of interdependency needs to be clarified.

5. Incorporate applicable information into the implementation plan.

   Note that since this RAI requests direction on how work will be done, then that information needs to be included in the DCD (or a document incorporated by reference). Therefore, the staff requests that GEH incorporate the information contained in MFN 09-087 as augmented or modified by this supplement into an appropriate source document. One acceptable way to accomplish this expeditiously is to incorporate the information as an appendix in the Task Analysis implementation plan.

GEH Response

1. LTR NEDO-33221 Rev. 2 will be revised to add the system task analysis development work process as Appendix B to the document. This appendix includes the system functional requirements analysis (SFRA) function flow data structure and System Configurations from SFRA as work process inputs per the attached markup..

   The operating experience review and baseline review record (OER/BRR) are inputs to the task analysis (TA) as noted in the overview Section 1 of the implementation plan (IP); however, to better resolve this discrepancy OER/BRR has been added to the TA inputs Section 4.1.2 per the attached markup.

2. The IP was written to list all of the elements considered in implementation of the TA, while the work process is written to perform the TA in an efficient manner. In writing the process it was found that several areas of the IP could be addressed within the same step or through the use of logical sub steps within a step. The numbered steps in the work process, for example TA-1, are comprised of multiple elements. These elements comprise separate fields within the database, all under TA-1. GEH prepared the response to RAI 18.5-5 S04 intending to help the reviewer better understand where each of the IP elements were addressed within the work process.

For clarification this RAI includes a table (see question 3 below) to help the reviewer find where each IP item is addressed within the work process.

3. This question is concerned with several items within the operator workload section of the IP. The response to RAI 18.5-5 S04 provided process steps that address the overall topic, however, some of the steps do not line up well with the specific bulleted elements. Overall the process steps do address all the bulleted items, however, as noted in the response to item 2 above, it is difficult to map them with precision while avoiding overlaps. The elements of vigilance, and situational awareness, are further clarified by changes to Appendix A, Workload Analysis Process. Appendix A sections A.1, A.2, A.2(4), and A.3(2) will be modified per the attached markup to better indicate where these elements of the IP are addressed. The work process attempts to establish and maintain meaningful allocation within a balanced crew workload by:

    - Understanding what the performer must do to perform a task – Appendix B Section B.2(17)
    - Assigning tasks to the appropriate personnel – Appendix B Step B.2(6)
    - Identifying special workload demands and evaluating tasks to determine whether the operator is over or under loaded – Appendix B Step B.2(7).and Appendix C Step C.2(6)
    - Writing a HFEITS issue to resolve workload issues such that the balance between meaningful allocation and crew workload is maintained. Appendix A Step A.2(4) and Figure A-2.

The table below shows the IP elements mapped to Appendices A (added to the IP by RAI 18.5-26 S03 and modified as noted above), B (new), and C (new). Notes have also been added to the IP sections indicated to better describe how these items will be developed.

IP Section	**Section Title/Task Statement**	**Appendix Section**
4.1	SYSTEM-LEVEL TASK ANALYSIS	B
4.1.1	Assumptions	N/A
	Tasks required to start-up and shutdown the ESBWR automation	N/A
	Common sequence, priority, and logic are employed by the SOPs and each system's automatic control	N/A
4.1.2	Inputs	
	System configurations from SFRA	B.1(1)
	Configuration changes from SFRA	B.1(1)
	SFRA function flow data structure	B.1(1)
	OER/BRR	B.1(1)
	Functions allocated during AOF	B.1(1)
	HRA/PRA	B.1(1), B.2(1)

IP Section	Section Title/Task Statement	Appendix Section
4.1.3	Process	
4.1.3.1	Identify Tasks	(Based on inputs)
4.1.3.2	Sequence Tasks Considering:	B.2(8)
	System requirements	B.2(8)
	System limitation	B.2(8)
	Industrial safety	B.2(8)
	Nuclear Safety	B.2(8)
	Resource allocation	B.2(8)
4.1.3.3	Identify parameters	B.2(2)
	Assess what information is necessary for task completion	B.2(2)
	Determine how information is provided	B.2(2), B.2(9)
4.1.3.4	Identify Interdependency	B.2(2), B.2(25), B.2(27), B.2(28)
	Identify requirements not identified by the system	B.2(2), B.2(11), B.2(24)
	Identify criteria for successful task completion	B.2(2), B.2(21)
	Identify criteria for task termination	B.2(2)
4.1.3.5	Operating Guidelines	
(1)	Develop System Operating Guidelines	
	Identify prerequisites and limitations	B.2(4), B.2(5)
	List subtask steps	B.2(8)
	Identify cues used by operators or automation to start, stop, or control plant equipment Provision of operator and/or PAS cues	B.2(3), B.2(22)
	Incorporate completion and termination criteria	B.2(2)
(2)	Evaluate Operating Guidelines	
	Validate Prerequisites and limitations	See note in IP
	Validate Task sequence	See note in IP
	Validate Task timing	See note in IP
	Validate Initiation, completion, and termination criteria	See note in IP
4.1.3.6	Assess Operator Workload	
	Address Operator vigilance	A.2(4), B.2(7), B.2(17)
	Address Physical workload and cognitive workload	A.2(2), Figure A-2, B.2(7)
	Crew-member skills, knowledge, and ability	B.2(6)
	Situational awareness during transients and abnormal operation	A.2(4), A.3(2), B.2(7)

IP Section	Section Title/Task Statement	Appendix Section
	Meaningful work allocation	A.2(4), Figure A-2, B.2(6), B.2(7), B.2(17)
4.1.4	Outputs	
	Communications requirements	B.2(27)
	HSI descriptors	B.2(2), B.2(3)
	Availability and arrangement of indicators	B.2(2), B.2(14)
	Display requirements	B.2(2), B.2(4), B.2(5), B.2(9), B.2(14)
	Control requirements	B.2(11)
	Alarm requirements	B.2(26)
	List of instruments meeting Reg. Guide 1.97 criteria along with the respective variable Type	B.2(2), B.2(24)
	Data processing requirements	B.2(3)
	Access requirements	B.2(15)
	Workplace and workstation design considerations	B.2(15), B.2(17)
	Environmental considerations	B.2(16)
	Equipment requirements	B.2(28)
	Activities required for successful completion of tasks	B.2(21)
	Sequences that serve as both procedure outlines and automation logic	B.2(8)
	Task input to the training development	All
	Task input to the staffing and qualification process	B.2(6)
4.2	PLANT-LEVEL TASK ANALYSIS	C
4.2.1	Assumptions	
	Tasks required to start-up and shutdown the ESBWR automation	
	Common sequence, priority and logic are employed by the IOPs and plant automation	
4.2.2	Inputs	
	Plant configurations from PFRA	C.1(1)
	Configuration changes from PFRA	C.1(1)
	PFRA function flow data structure	C.1(1)
	Functions allocated during AOF	C.1(1)
	HRA/PRA	C.1(1)
	System level TA	C.1(1)
4.2.3	Process	
4.2.3.1	Task Identification	(Based on inputs)

IP Section	Section Title/Task Statement	Appendix Section
4.2.3.2	Sequence Tasks considering:	C.2(7)
	Plant and system level requirements	C.2(7)
	Plant and system limitations	C.2(7)
	Industrial safety	C.2(7)
	Nuclear safety	C.2(7)
	Resource allocation (time, staff, and urgency)	C.2(7)
4.2.3.3	Parameters	C.2(11)
	Assessing task requirements	C.2(11)
	Determining how this is provided	C.2(13)
4.2.3.4	Interdependency	
	Identify requirements not identified by the system level task analyses	C.2(12)
	Identify criteria for successful task completion	C.2(1)
	Identify criteria for task termination	C.2(1)
	Identify and coordinate system and plant level requirements and limitations	C.2(2), C.2(3)
4.2.3.5	Operating Guidelines	
(1)	Develop Integrated Operating Guidelines	
	Identify prerequisites and limitations	C.2(2), C.2(3)
	List subtask steps	C.2(7)
	Identify cues used by operators or automation to start, stop, or control plant equipment Provision of operator and/or PAS cues	C.2(9), C.2(10)
	Incorporate completion and termination criteria	C.2(1)
(2)	Operating Guidelines	
	Prerequisites and limitations	See note in IP
	Task sequence	See note in IP
	Task timing	See note in IP
	Initiation, completion, and termination criteria	See note in IP
4.2.3.6	Operator Workload	
	Operator vigilance	C.2(6), A.2(5)
	Crew members' physical and cognitive workload	C.2(6)
	Crew members' skills	C.2(5)
	Tasks and control room activities	C.2(6)
	Situational awareness during transients and abnormal operation	C.2(6), A.2(4), A.3(2)
	Monitoring and control tasks	C.2(6)
	Meaningful work allocation	A.2(4), Figure A-2, C.2(6)
4.2.4	Outputs	
	Communications requirements	C.2(15)

IP Section	Section Title/Task Statement	Appendix Section
	HSI descriptors	C.2(2), C.2(3), C.2(8), C.2(13)
	Availability and arrangement of indicators	C.2(11)
	Display requirements	C.2(2), C.2(3), C.2(8), C.2(13)
	Control requirements	C.2(9), C.2(10)
	Alarm requirements	C.2(14)
	Data processing requirements	C.2(7)
	Access requirements	C.2(16)
	Workplace and workstation design considerations	B.2(15), B.2(17)
	Environmental considerations	C.2(17)
	Equipment requirements	B.2(28)
	Activities required for successful completion of tasks	C.2(1)
	Sequences that serve as both procedure outlines and PAS logic	C.2(7)
	Task input to the training development	All
	Task input to the staffing and qualification process	C.2(5)

4. Interdependencies in the TA are items outside of the system or process being evaluated that impact performance of the task. The GEH process for developing the task analysis is focused on the task rather than the system being analyzed. That is, the TA looks at the system or process to determine the system configuration changes that are to be performed then continues to evaluate the supporting features or interdependencies that will be required to perform the task. The interdependencies are considered and defined as necessary crew interfaces, controls, indications, logic, communications, and special equipment requirements that are required to perform the task. The work process steps, included in the new Appendix B to the IP, direct the performer to consider elements outside the system or process being analyzed (sections B.2(2), B.2(11), B.2(21), B.2(24) B.2(25), B.2(27), and B.2(28)). Interdependencies are also addressed during the plant level TA as it addresses the overall plant tasks and thereby the interdependencies between system functions. LTR NEDO-33221 will be revised to add this work process as Appendix C.

5. GEH will add the system task analysis and plant level task analysis work processes to the IP as Appendices B and C respectively as described above and per the attached markup.

DCD Impact

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

LTR NEDO-33221, Rev 2, Subsections 4.1, 4.1.2, 4.1.3.5, 4.2, 4.2.3.5, A.1, A.2, A.3 will be revised and Appendices B and C will be added as noted in the attached markups.

Enclosure 3

MFN 09-346

Markups for Response to Portion of NRC Request for Additional Information Letter No. 309 Related to ESBWR Design Certification Application

Chapter 18 - Human Factors Engineering

RAI Number 18.5-5 S05

Non-Proprietary Version

4. IMPLEMENTATION

4.1 SYSTEM-LEVEL TASK ANALYSIS

The TA process is illustrated in Figure 3 while Appendix B provides the detailed system level TA process.

4.1.1 Assumptions

System level assumptions include:

- Tasks required to start-up and shutdown the ESBWR automation
- Common sequence, priority, and logic are employed by the SOPs and each system's automatic control

4.1.2 Inputs

Task analysis inputs include:

- System configurations from SFRA
- Configuration changes from SFRA
- SFRA function flow data structure
- OER/BRR
- Functions allocated during AOF
- HRA/PRA

4.1.3 Process

4.1.3.1 *Task Identification*

Convert functions and configuration changes identified in the SFRA into tasks.

4.1.3.2 *Sequence Tasks*

Order tasks logically considering:

- System requirements
- System limitations
- Industrial safety
- Nuclear safety
- Resource allocation (time, staff, and urgency)

4.1.3.3 *Parameters*

Identify Parameters through:

- Assessing what information is necessary for task completion, including which parameters meet Reg. Guide 1.97 criteria

- Determining how information is provided

4.1.3.4 *Interdependency*

Identify Interdependency:

- Identify requirements not identified by the system
- Identify criteria for successful task completion
- Identify criteria for task termination

4.1.3.5 *Operating Guidelines*

(1) Develop System Operating Guidelines

Generate system operations guidelines such as:

- Identify prerequisites and limitations
- List subtask steps
- Identify cues used by operators or automation to start, stop, or control plant equipment
- Incorporate completion and termination criteria

(2) Evaluate Operating Guidelines

Note: The elements in this subsection rely on simulations that are initially performed during HSI development per Reference 2.1.2(9), and later fully validated during validation and verification (V&V) testing per Reference 2.1.2(12).

Using system level simulation validate:

- Prerequisites and limitations
- Task sequence
- Task timing
- Initiation, completion, and termination criteria

4.1.3.6 *Operator Workload*

Assess operator workload by addressing issues such as:

- Operator vigilance
- Physical and cognitive workload
- Crew-member skills, knowledge, and ability
- Situational awareness during transients and abnormal operation
- Meaningful work allocation

See Appendix A for more detailed work process.

4.1.4 Outputs

System-level task analysis outputs include:

- Communications requirements
- HSI descriptors
- Availability and arrangement of indicators
- Display requirements
- Control requirements
- Alarm requirements
- List of instruments meeting Reg. Guide 1.97 criteria along with the respective variable Type
- Data processing requirements
- Access requirements
- Workplace and workstation design considerations
- Environmental considerations
- Equipment requirements
- Activities required for successful completion of tasks
- Sequences that serve as both procedure outlines and automation logic
- Task input to the training development
- Task input to the staffing and qualification process

4.2 PLANT-LEVEL TASK ANALYSIS

Appendix C provides the detailed plant level task analysis process.

4.2.1 Assumptions

Plant level assumptions include:

- Tasks required to start-up and shutdown the ESBWR automation
- Common sequence, priority and logic are employed by the IOPs and plant automation

4.2.2 Inputs

Task analysis inputs include:

- Plant configurations from PFRA
- Configuration changes from PFRA
- PFRA function flow data structure
- Functions allocated during AOF

- HRA/PRA
- System level TA

4.2.3 Process

4.2.3.1 *Task Identification*

Convert plant functions and configuration changes identified in the PFRA into tasks.

4.2.3.2 *Sequence Tasks*

Order tasks logically considering:

- Plant and system level requirements
- Plant and system limitations
- Industrial safety
- Nuclear safety
- Resource allocation (time, staff, and urgency)

4.2.3.3 *Parameters*

Identify parameters through:

- Assessing task requirements
- Determining how this is provided

4.2.3.4 *Interdependency*

Identify interdependency:

- Identify requirements not identified by the system level task analyses
- Identify criteria for successful task completion
- Identify criteria for task termination
- Identify and coordinate system and plant level requirements and limitations

4.2.3.5 *Operating Guidelines*

(1) Develop Integrated Operating Guidelines

Generate system-operating guidelines such as:

- Identify prerequisites and limitations
- List subtask steps
- Identify cues used by operators or automation to start, stop, or control plant equipment
- Incorporate completion and termination criteria

(2) Operating Guidelines

Note: The elements in this subsection rely on simulations that are initially performed during HSI development per Reference 2.1.2(9), and later fully validated during V&V testing per Reference 2.1.2(12).

Using plant level simulation validate:

- Prerequisites and limitations
- Task sequence
- Task timing
- Initiation, completion, and termination criteria

4.2.3.6 *Operator Workload*

Assess operator workload by addressing issues such as:

- Operator vigilance
- Crew members' physical and cognitive workload
- Crew members' skills
- Tasks and control room activities
- Situational awareness during transients and abnormal operation
- Monitoring and control tasks
- Meaningful work allocation

See Appendix A for more detailed work process.

4.2.4 Outputs

- Communications requirements
- HSI descriptors
- Availability and arrangement of indicators
- Display requirements
- Control requirements
- Alarm requirements
- Data processing requirements
- Access requirements
- Workplace and workstation design considerations
- Environmental considerations
- Equipment requirements
- Activities required for successful completion of tasks

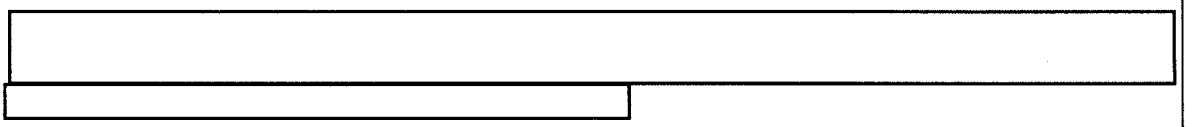
APPENDIX A WORKLOAD ANALYSIS PROCESS

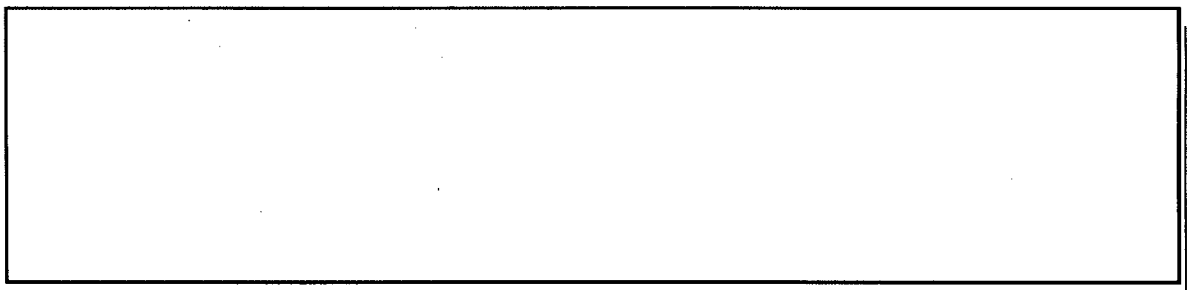
A.1 PROCESS OVERVIEW

[redacted]

A.2 STAGE 1 - INITIAL SCREENING

[redacted]





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A.3 STAGES 2 & 3 - WORKLOAD ASSESSMENT

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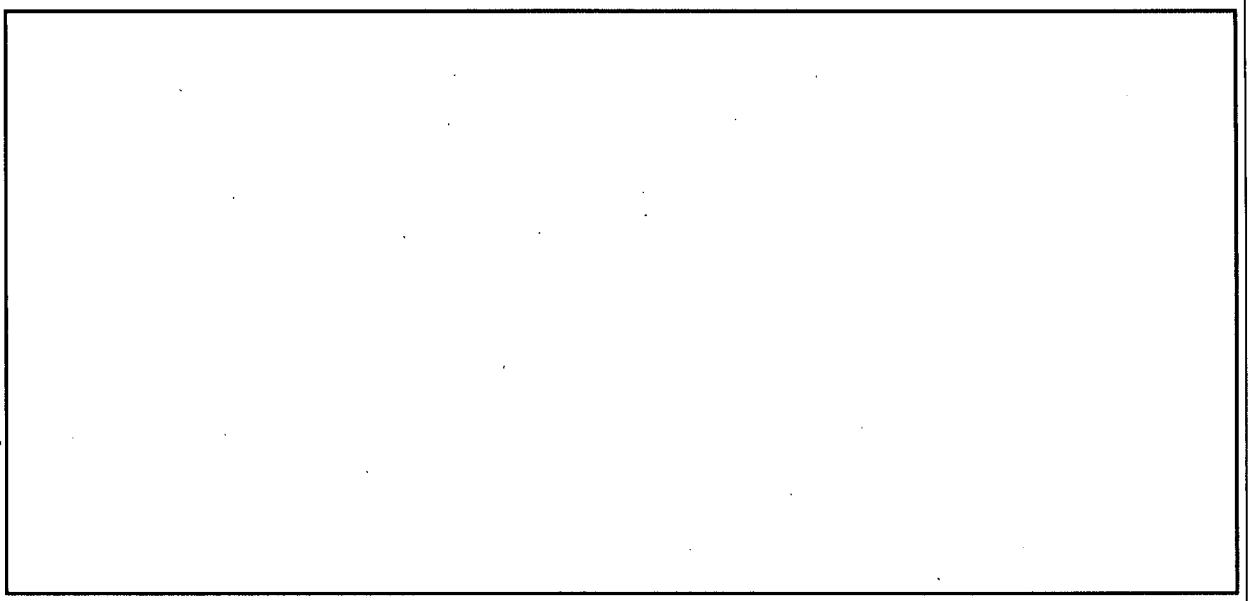

APPENDIX B SYSTEM TA DEVELOPMENT WORK PROCESS

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B.1 TA INPUTS

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B.2 TA DEVELOPMENT

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APPENDIX C PLANT LEVEL TA DEVELOPMENT WORK PROCESS

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C.1 PLTA INPUTS

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C.2 TA DEVELOPMENT

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Enclosure 4

MFN 09-346

Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, Larry J. Tucker, state as follows:

(1) I am Manager, ESBWR 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 2 of GEH's letter, MFN 09-346, Richard E Kingston to Nuclear Regulatory Commission, entitled *Submittal of Response to Portion of NRC Request for Additional Information Letter No. 309 Related to ESBWR Design Certification Application Chapter 18 - Human Factors Engineering - RAI Number 18.5-5 S05*, June 2, 2009. GEH text proprietary information in Enclosure 2, which is entitled "*Markups for Response to Portion of NRC Request for Additional Information Letter No. 309 Related to ESBWR Design Certification Application Chapter 18 - Human Factors Engineering - RAI Number 18.5-5 S05*", is identified by a 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 2nd day of June, 2009.

Larry J. Tucker
GE-Hitachi Nuclear Energy Americas LLC