GE-Hitachi Nuclear Energy

Richard E. Kingston
Vice President, ESBWR Licensing

PO Box 780 M/C A-65
Wilmington, NC 28402-0780
USA

T 910 675 6192
F 910 362 6192
rick.kingston@ge.com

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 09-246

Docket No. 52-010

April 30, 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. 310 Related to ESBWR Design Certification Application Chapter 18 - Human Factors Engineering - RAI Numbers 18.4-16 S04 and 18.5-26 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. 310, dated February 26, 2009 (Reference 1).

RAI 18.4-16 S04 was requested by Reference 1, and was preceded by responses in References 2, 3, 4, and 5 as requested by References 9, 10, 11, and 13, respectively.

RAI 18.5-26 S03 was requested by Reference 1, and was preceded by responses in References 6, 7, and 8 as requested by References 9, 12, and 13, respectively.

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.

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.

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NRO

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

Sincerely,

Charles W. Bagwell
for

Richard E. Kingston
Vice President, ESBWR Licensing

References:

1. MFN 09-151 - Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request For Additional Information Letter No. 310 Related To ESBWR Design Certification Application, dated February 26, 2009*
2. MFN 08-647 - 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, dated October 10, 2008
3. 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, 18.4-16 S02, 18.4-21 S01, 18.4-25 S01, 18.7-7 S02, 18.11-32 S01, 18.12-2 S01, 18.12-3 S01*, dated April 1, 2008
4. MFN 07-334 - Submittal of *"ESBWR DCD Chapter 18, Human Factors Engineering - RAI to DCD Roadmap Document"*, dated June 27, 2007
5. MFN 06-400 - Response to Portion of NRC Request for Additional Information Letter No. 64 – Human Factors Engineering – RAI Numbers 18.4-1 through 18.4-25, dated November 1, 2006
6. MFN 08-662 - 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 Numbers 18.5-5 S03 and 18.5-26 S02, dated October 9, 2008
7. MFN 07-624 - Response to Portion of NRC Request for Additional Information Letter No. 113 Related to E5BWR Design Certification Application - Human Factors Engineering - RAI Numbers 18.5-5 S02, 18.5-19 S01, 18.5-26 S01, 18.5-27 S02, and 18.5-30 S02, dated January 17, 2008
8. MFN 06-401 - Response to Portion of NRC Request for Additional Information Letter No. 64 – Human Factors Engineering – RAI Numbers 18.5-1 through 18.5-32, dated October 28, 2006
9. 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*

10. 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
11. Email from AE Cubbage to DL Lewis - *List of Chapter 18 RAIs for Roadmap Request*, dated 5/18/07
12. MFN 07-557 - Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request For Additional Information Letter No. 113 Related To ESBWR Design Certification Application*, dated October 16, 2007
13. MFN 06-352 - Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request For Additional Information Letter No. 64 Related To ESBWR Design Certification Application*, dated September 25, 2006

Enclosures:

1. MFN 09-246 – Response to Portion of NRC Request for Additional Information Letter No. 310 Related to ESBWR Design Certification Application Human Factors Engineering - Response to NRC RAIs 18.4-16 S04 and 18.5-26 S03 – Proprietary Version
2. MFN 09-246– Response to Portion of NRC Request for Additional Information Letter No. 310 Related to ESBWR Design Certification Application Human Factors Engineering - Response to NRC RAIs 18.4-16 S04 and 18.5-26 S03 – Non-Proprietary Version
3. Affidavit – David H. Hinds, dated April 30, 2009

cc: AE Cubbage USNRC (with enclosure)
JG Head GEH/Wilmington (with enclosures)
DH Hinds GEH/Wilmington (with enclosures)
RM Wachowiak GEH/Wilmington (with enclosures)
RE Kingston GEH/Wilmington (with enclosures)

eDRF Section	0000-0100-4417	RAI 18.4-16 S04
	0000-0099-7715	RAI 18.5-26 S03

Enclosure 2

MFN 09-246

Response to Portion of NRC Request for

Additional Information Letter No. 310

Related to ESBWR Design Certification Application

Chapter 18 - Human Factors Engineering

RAI Numbers 18.4-16 S04, 18.5-26 S03

Non-Proprietary Version

NRC RAI 18.4-16 S04

For RAI 18.4-16 S03, related to the Function Allocation Review Element, Function Allocation Review Criteria, Criterion 1 (NUREG-0711 Section 4.4), GEH provided acceptable additional information in the response, but did not incorporate the information into the DCD. However, when an RAI response contains 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 the MFN into an appropriate source document. One acceptable way to accomplish this expeditiously is to incorporate the information verbatim from the RAI response as an appendix in the Function Allocation implementation plan.

GEH Response

Appendix B will be added to NEDO 33220 that incorporates the content of RAI 18.4-16 S03 response needed to support the Function Allocation Review Criteria, Criterion 1 (NUREG-0711 Section 4.4). In support of Appendix B, a few minor changes will be made to the body of NEDO 33220 for consistency and are included in the attached markup.

DCD Impact

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

LTR NEDO-33220, Rev 2 will be revised as noted in the attached markup.

NRC RAI 18.5-26 S03

For RAI 18.5-26 S02, related to the Task Analysis Review Element, Task Analysis Review Criteria, Criterion 1 (NUREG-0711 Section 5.4), GEH provided acceptable additional information in the response, but did not incorporate the information into the DCD. However, when an RAI response contains 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 the MFN into an appropriate source document. One acceptable way to accomplish this expeditiously is to incorporate the information verbatim from the RAI response as an appendix in the Task Analysis implementation plan.

GEH Response

The information provided in response to RAI 18.5-26 S02 will be incorporated into NEDE-33221P Rev. 3 per attachment to this response.

DCD Impact

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

LTR NEDO-33221, Rev 2 will be revised as noted in the attached markup.

RAI Attachments

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

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.

(2) Operating Guidelines

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
- Sequences that serve as both procedure outlines and PAS logic
- Task input to the training development

APPENDIX A WORKLOAD ANALYSIS PROCESS

A.1 PROCESS OVERVIEW

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A.2 STAGE 1 - INITIAL SCREENING

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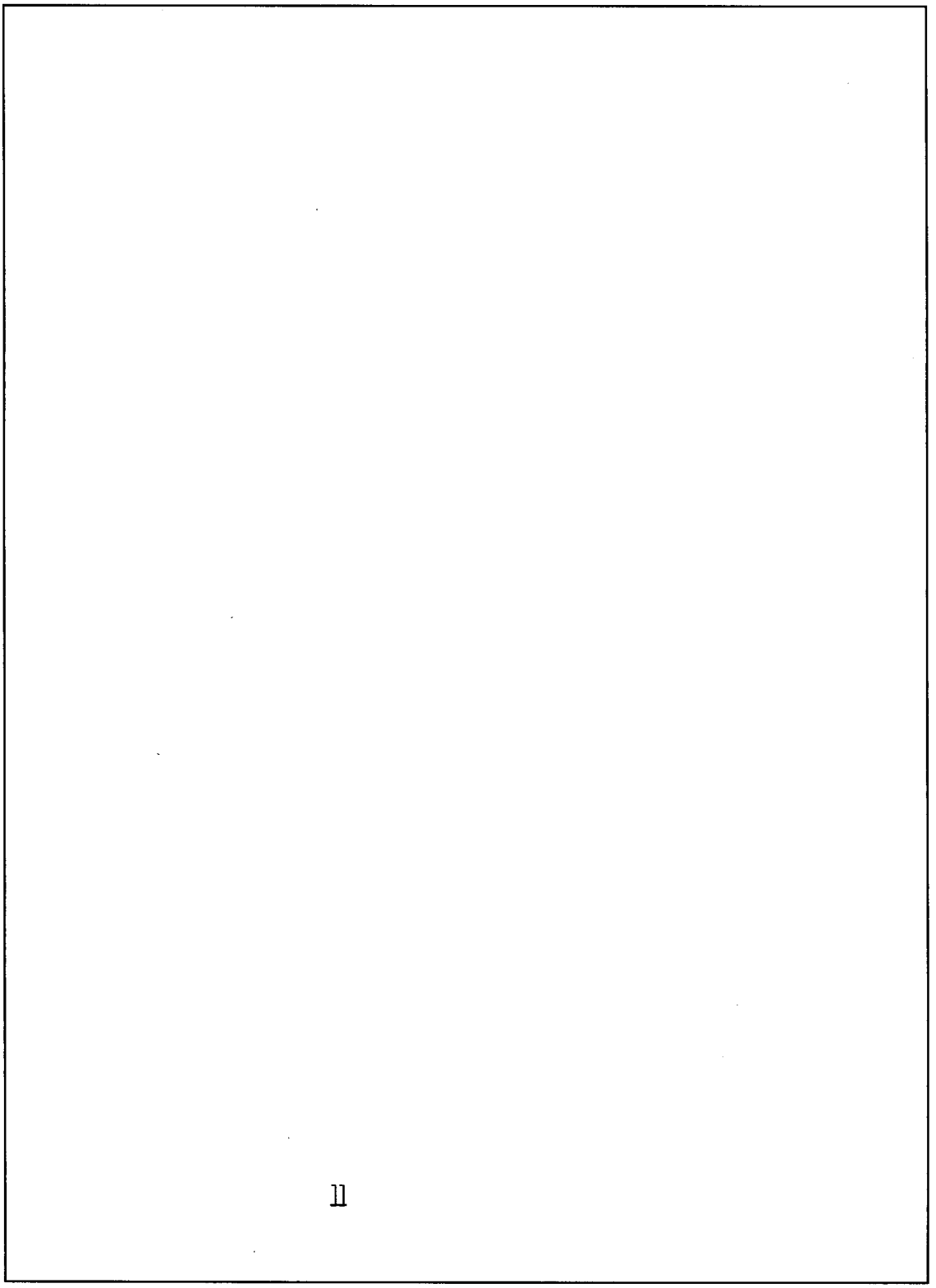

A.3 STAGES 2 & 3 - WORKLOAD ASSESSMENT

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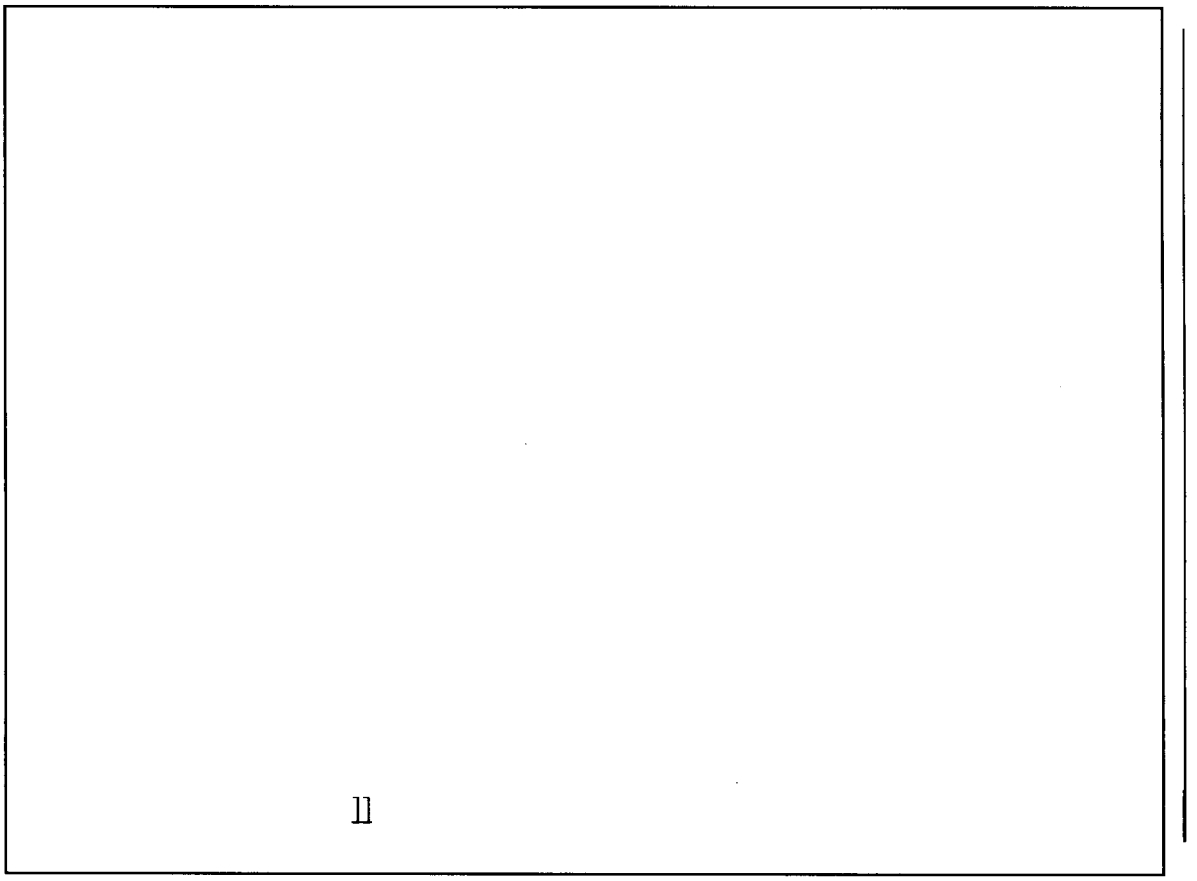

Table A-1
Workload Measurement Tools

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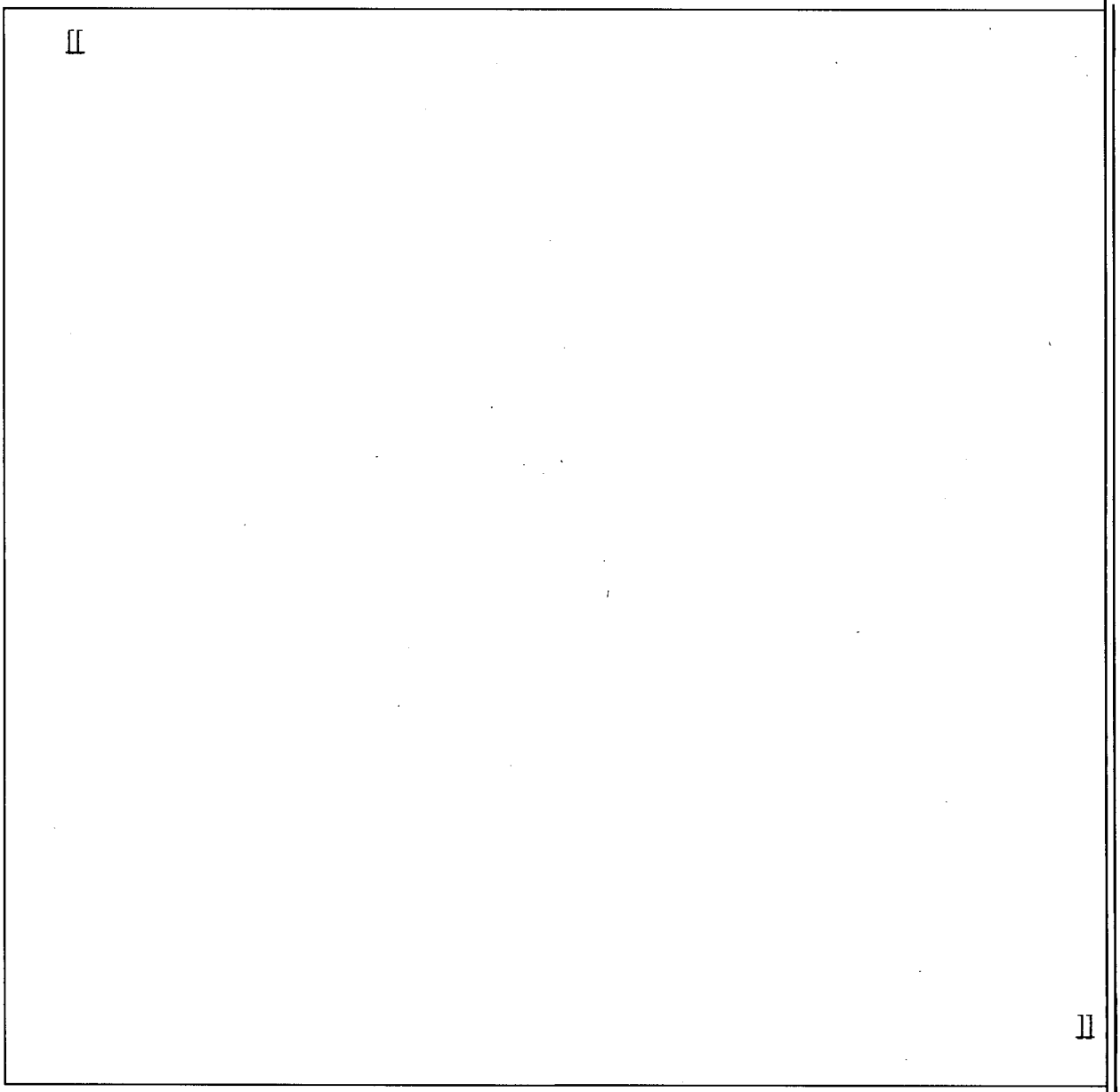

Figure A-1. Stress/Workload Screening Questionnaire

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Figure A-2 Workload Analysis

data structure provides system lineups, component manipulations, and process control requirements as inputs to the AOF.

(3) The System Functional Gap Analysis SFGA links the PFRA and SFRA data structures creating a data structure that describes the plant function requirements down to the component level. The SFGA generates design inputs to ensure that design fulfills the ESBWR mission and goals. This data structure provides inventories of required parameters, indications and controls, and outline sequences to be processed by AOF.

4.1.3 Process

Plant safety and reliability are enhanced by exploiting the strengths of personnel and system elements, including improvements that can be achieved through assigning control to these elements with overlapping and redundant responsibilities. Allocations of functions are based upon HFE principles using a structured and well-documented methodology that provides personnel with logical, coherent, and meaningful tasks. It is not based solely on technology considerations that allocate to plant personnel everything the designers cannot automate. The technical basis for all allocations is documented, including the allocation criteria, rationale, and analysis method used. The technical basis for function allocation can be one factor, or a combination of factors. [compiled and adapted from NUREG-0711, Rev 2]

Allocation of function is a qualitative process relying heavily on the judgment of the expert teams and their analysis of available data. Multi-disciplined teams perform the allocation of function analyses and make the appropriate decisions. These teams contain the minimum skills and experience specified in the ESBWR Man-Machine Interface System And Human Factors Engineering Implementation Plan, NEDO 33217. The teams are comprised of members from operations, engineering, and HFE who present their expert opinions. The team utilizes the structured process shown in Figures 2, 3, and 4, the descriptions and criteria presented in this section, and Tables A.1 and A.2 in Appendix A when making allocation decisions. In addition, Appendix B provides additional contextual information and guidance for the technical bases being considered. This process ensures that:

- Conservatism is fundamental to the judgment process, and allocations:
  - Result in safe, reliable, and efficient operation of the ESBWR, in compliance with regulations
  - Place reasonable demands on and provide reasonable support of personnel
  - Meet HFE principles
  - Take advantage of human strengths and avoid human weaknesses
- All available information is gathered and made available, including:
  - Past performance of analogous systems including OER/BRR results
  - Quantified engineering predictions including PRA results
  - Human factors experimental data
  - Previous system cost data and future cost estimates

evaluated, automation is preferred unless otherwise precluded. If any of the uniquely human capabilities presented in Table A2 are part of the function being evaluated, human participation is required. Some technical bases considered when determining if machine control is practical include:

- OER/BRR ~~findings~~significance
- Technical feasibility
- Economic feasibility
- Reliability
- Predictability
- Development time
- Component availability
- Cost

(3) **Human Backup Desired** – Aspects of the shared functions allocated to the machine that, due to their importance or nature require either concurrent or supporting human action as specified by regulatory requirement, design, or expert judgment. These supporting human actions take the form of either limitations requiring human action for automation to proceed or human backup in the form of human execution of functions allocated to the machine but which were not completed. This logic block is used when deciding between human backup and human limitations to machine functions. Appendix A is referenced when making this determination. If any of the human limitations presented in Table A1 are part of the function being evaluated, automation is preferred unless otherwise precluded. If any of the uniquely human capabilities presented in Table A2 are part of the function being evaluated, human participation is required. Some technical bases considered when determining whether to allocate human backup or human limitation include:

- Regulatory requirement
- Design requirement
- PRA basis assumption
- Economic risk
- OER/BRR significance
- Consequence of automation failure
- Vesting ultimate control in the human
- Ensuring the human retains necessary emergency control
- Qualitative, discretionary, or deductive decision making required
- Human workload
- Human limitations/machine capabilities
- Cognitive overload

(4) **Machine Control Desired** – Aspects of the shared functions that can be carried out by either human or machine assigned the machine due to design or expert judgment. Later steps in the allocation of function logic will determine what human actions are also required to support successful completion of the function. Appendix A is referenced when making this determination. If any of the human limitations presented in Table A1 are part of the function being evaluated, automation is preferred unless otherwise precluded. If any of the uniquely human capabilities presented in Table A2 are part of the function being evaluated, human participation is required. Some technical bases considered when determining if machine control is desired include:

- PRA ~~risk significance~~basis assumption
- HRA/PRA risk significance
- OER/BRR significance
- Human cognitive limitations
- Human response time limitations
- Human physical limitations
- Hostile environment including atmosphere, temperature, and radiation
- Risk to the operator
- Degree to which function is predictable or repeatable
- Impact on vigilance and situational awareness
- Human limitations for:
  - Functions which are lengthy
  - Functions which require high consistency
  - Functions which require high accuracy
  - Functions which involve boredom or monotony for the operator

(5) **Error Consequence Acceptable** – Aspects of the shared functions for which machine control is neither required nor desired that are to be carried out by the human due to design or expert judgment. This logic block is used when deciding whether the consequences of potential human errors of omission or commission are acceptable. Later steps in the allocation of function logic will determine what machine actions are also required to support successful completion of the function. Some technical bases considered when determining if potential human error consequences are acceptable include:

- Can the error be corrected to eliminate adverse consequences?
- Could the error cause a scram, turbine trip, or initiate a transient?
- Could the error prevent the performance of a safety-related function?
- Could the error result in a release of radionuclides?
- Could the error result in unplanned radiation exposure?

- Could the error result in exceeding environmental or other regulatory limits?
- Cognitive overload ~~should an error occur~~
- Human workload ~~should an error occur~~
- Economic risk
- Regulatory margin
- HRA/PRA risk significance ~~results~~

(6) **Human Control Practical** – Aspects of the shared functions for which machine control is neither required nor desired that are to be carried out by the human due to design or expert judgment. The consequences of potential human errors of omission or commission have been evaluated and found acceptable. This decision point evaluates whether or not functions allocated to the human can be realistically carried out. Later steps in the allocation of function logic will determine what machine actions are also required to support successful completion of the function. Appendix A is referenced when making this determination. If any of the human limitations presented in Table A1 are part of the function being evaluated, automation is preferred unless otherwise precluded. If any of the uniquely human capabilities presented in Table A2 are part of the function being evaluated, human participation is required. Some technical bases considered when determining if human control is practical include:

- Human ~~C~~cognitive ~~abilities of humans~~limitations
- Human ~~P~~physical ~~capabilities of humans~~limitations
- Human response time limitations
- Economic feasibility
- ~~Impact on operator~~Human workload
- Hostile environment including atmosphere, temperature, and radiation
- Risk to the operator
- Economic risk
- Degree to which function is predictable or repeatable
- Impact on vigilance and situational awareness
- Human limitations for:
  - Functions which are lengthy
  - Functions which require high consistency
  - Functions which require high accuracy
  - Functions which involve boredom or monotony for the operator

(7) **Error Mitigated by Human** – Aspects of the shared functions for which machine control is neither required nor desired that are to be carried out by the human due to design or

expert judgment. The consequences of potential human errors of omission or commission have been evaluated and found acceptable. Human control of the function has been evaluated and found to be practical. This decision point evaluates whether or not the human can mitigate the consequences of potential errors of omission or commission. Some technical bases considered when determining if the human provides error mitigation include:

- Information and controls available to the operator
- Time period between the error and unacceptable consequence
- Speed with which error consequences manifest themselves
- Methods by which error can be identified
- Error type: active or latent
- Is error reversible prior to the occurrence of an undesired result?
- Human ~~C~~cognitive ~~abilities of humans~~limitations
- Human response time limitations
- Impact on vigilance and situational awareness
- Qualitative, discretionary, or deductive decision making required
- Human ability to properly diagnose and respond to the error

(8) **Error Mitigated by Machine** – Aspects of the shared functions for which machine control is neither required nor desired that are to be carried out by the human due to design or expert judgment. The consequences of potential human errors of omission or commission have been evaluated and found to be unacceptable. This decision point evaluates whether or not the machine can mitigate the consequences of potential errors of omission or commission. Some technical bases considered when determining if the machine provides error mitigation include:

- Speed with which error consequences manifest themselves
- Ability of the machine to detect the error
- Error type: active or latent
- Is error reversible prior to the occurrence of an undesired result?
- HRA/PRA risk significance
- OER/BRR significance
- Technical feasibility
- Economical feasibility
- Impact on vigilance and situational awareness
- Vesting ultimate control in the human
- Ensuring the human retains necessary emergency control

APPENDIX B ALLOCATION OF FUNCTION CRITERIA

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B.1 REGULATORY REQUIREMENT

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B.2 DESIGN REQUIREMENT

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B.3 PRA BASIS ASSUMPTION

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B.4 PRA/HRA RISK SIGNIFICANCE

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B.5 OER/BRR SIGNIFICANCE

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B.6 HUMAN COGNITIVE LIMITATIONS

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B.7 HUMAN RESPONSE TIME LIMITATIONS

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B.8 HUMAN PHYSICAL LIMITATIONS

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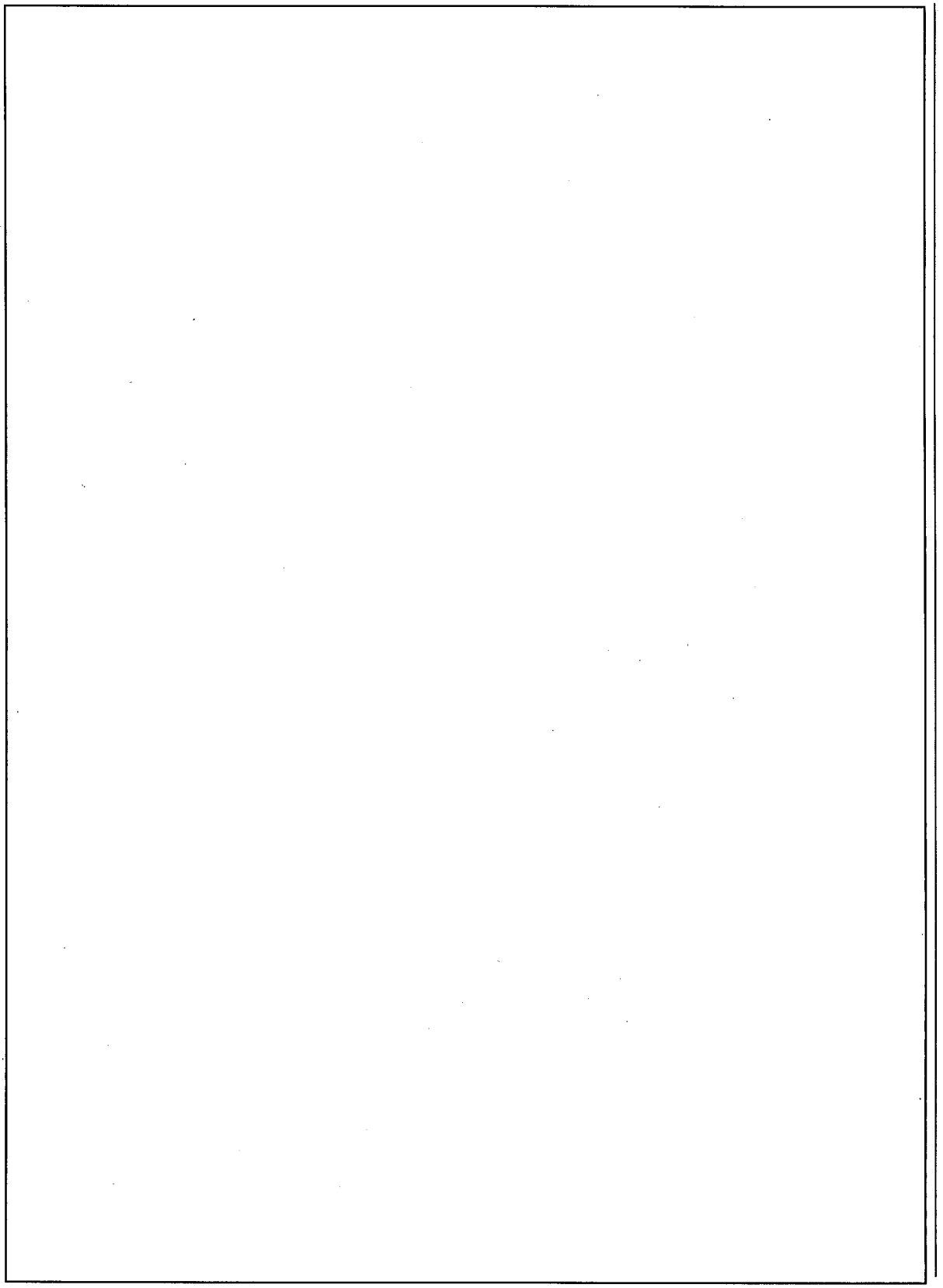

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B.9 HOSTILE ENVIRONMENT INCLUDING ATMOSPHERE, TEMPERATURE, AND RADIATION

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B.10 ECONOMIC RISK

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B.11 CONSEQUENCE OF AUTOMATION FAILURE

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B.11.1 HUMAN BACKUP REQUIRED

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B.11.2 HUMAN BACKUP DESIRED

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B.12 VESTING ULTIMATE CONTROL IN THE HUMAN

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B.13 ENSURING THE HUMAN RETAINS NECESSARY EMERGENCY CONTROL

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B.14 QUALITATIVE, DISCRETIONARY, OR DEDUCTIVE DECISION MAKING REQUIRED

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B.15 CONSEQUENCE OF HUMAN FAILURE

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B.16 HUMAN LIMITATIONS/MACHINE CAPABILITIES

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B.17 COGNITIVE OVERLOAD

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B.18 HUMAN WORKLOAD

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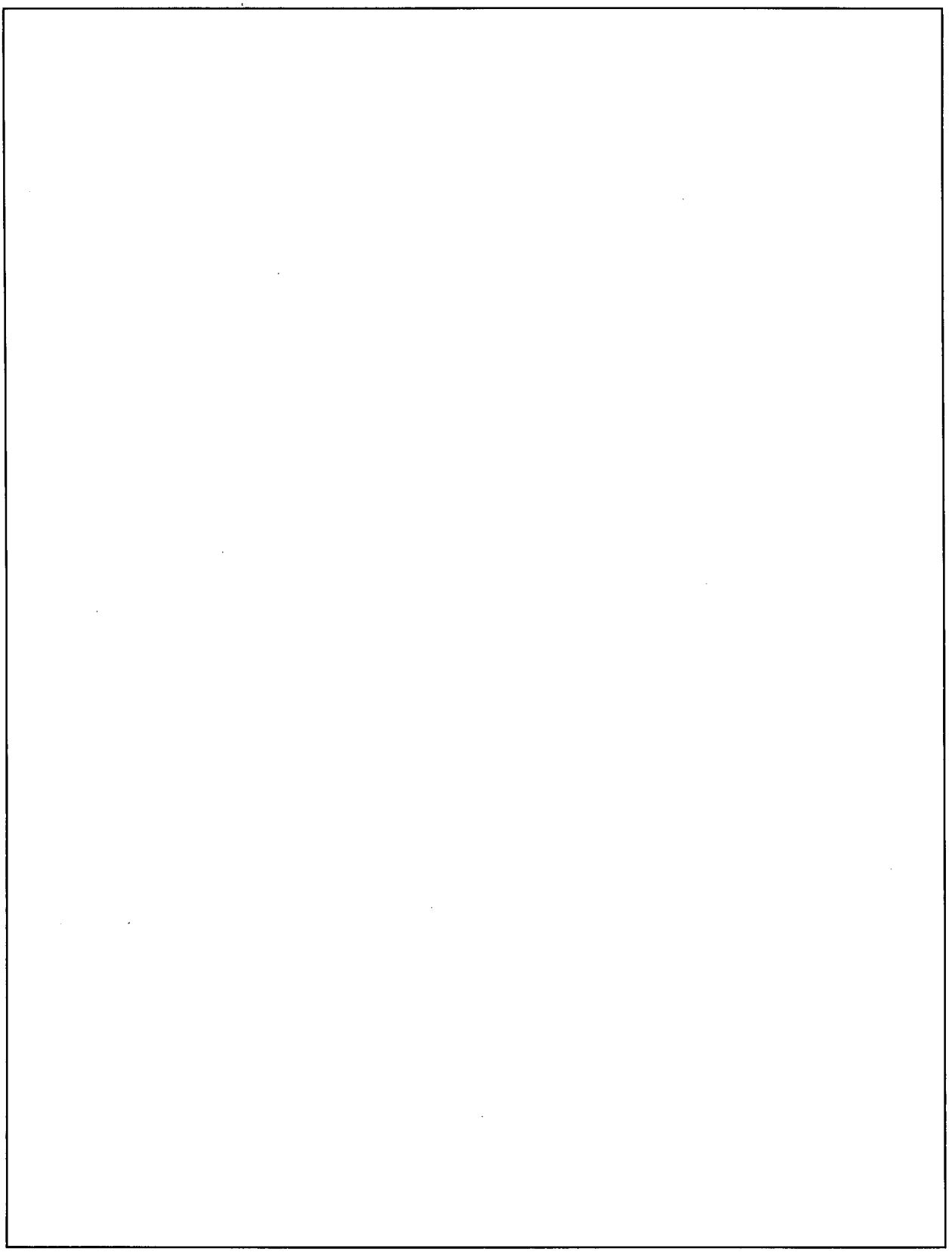

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B.19 DESIGN LAYOUT – IS THE SSC ACCESSIBLE?

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B.20 BROADER PLANT CONTROL OR MONITORING REQUIREMENTS THAN IS AVAILABLE LOCALLY

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B.21 SAFETY OR ECONOMIC RISK ASSOCIATED WITH LOCAL OPERATION

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B.22 ECONOMIC BENEFIT – CENTRALIZED WORK LOCATION, FEWER HUMANS REQUIRED, OR OTHER CONSIDERATIONS

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B.23 TECHNICAL FEASIBILITY

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B.24 ECONOMIC FEASIBILITY

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B.25 RELIABILITY

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B.26 PREDICTABILITY

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B.27 DEVELOPMENT TIME

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B.28 COMPONENT AVAILABILITY

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B.29 COST

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B.30 RISK TO THE OPERATOR

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B.31 DEGREE TO WHICH FUNCTION IS PREDICTABLE OR REPEATABLE

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B.31 IMPACT ON VIGILANCE AND SITUATIONAL AWARENESS

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B.32 HUMAN LIMITATIONS

B.33 CAN THE ERROR BE CORRECTED TO ELIMINATE ADVERSE CONSEQUENCES?

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B.34 COULD THE ERROR CAUSE A SCRAM, TURBINE TRIP, OR INITIATE A TRANSIENT?

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B.35 COULD THE ERROR PREVENT THE PERFORMANCE OF A SAFETY-RELATED FUNCTION?

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B.36 COULD THE ERROR RESULT IN A RELEASE OF RADIONUCLIDES?

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B.37 COULD THE ERROR RESULT IN UNPLANNED RADIATION EXPOSURE?

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B.38 COULD THE ERROR RESULT IN EXCEEDING ENVIRONMENTAL OR OTHER REGULATORY LIMITS?

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B.39 REGULATORY MARGIN

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B.40 INFORMATION AND CONTROLS AVAILABLE TO THE OPERATOR

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B.41 TIME PERIOD BETWEEN THE ERROR AND UNACCEPTABLE CONSEQUENCE

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B.42 SPEED WITH WHICH ERROR CONSEQUENCES MANIFEST THEMSELVES

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B.43 METHODS BY WHICH ERROR CAN BE IDENTIFIED

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B.44 ERROR TYPE: ACTIVE OR LATENT

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B.45 IS ERROR REVERSIBLE PRIOR TO THE OCCURRENCE OF AN UNDESIRED RESULT?

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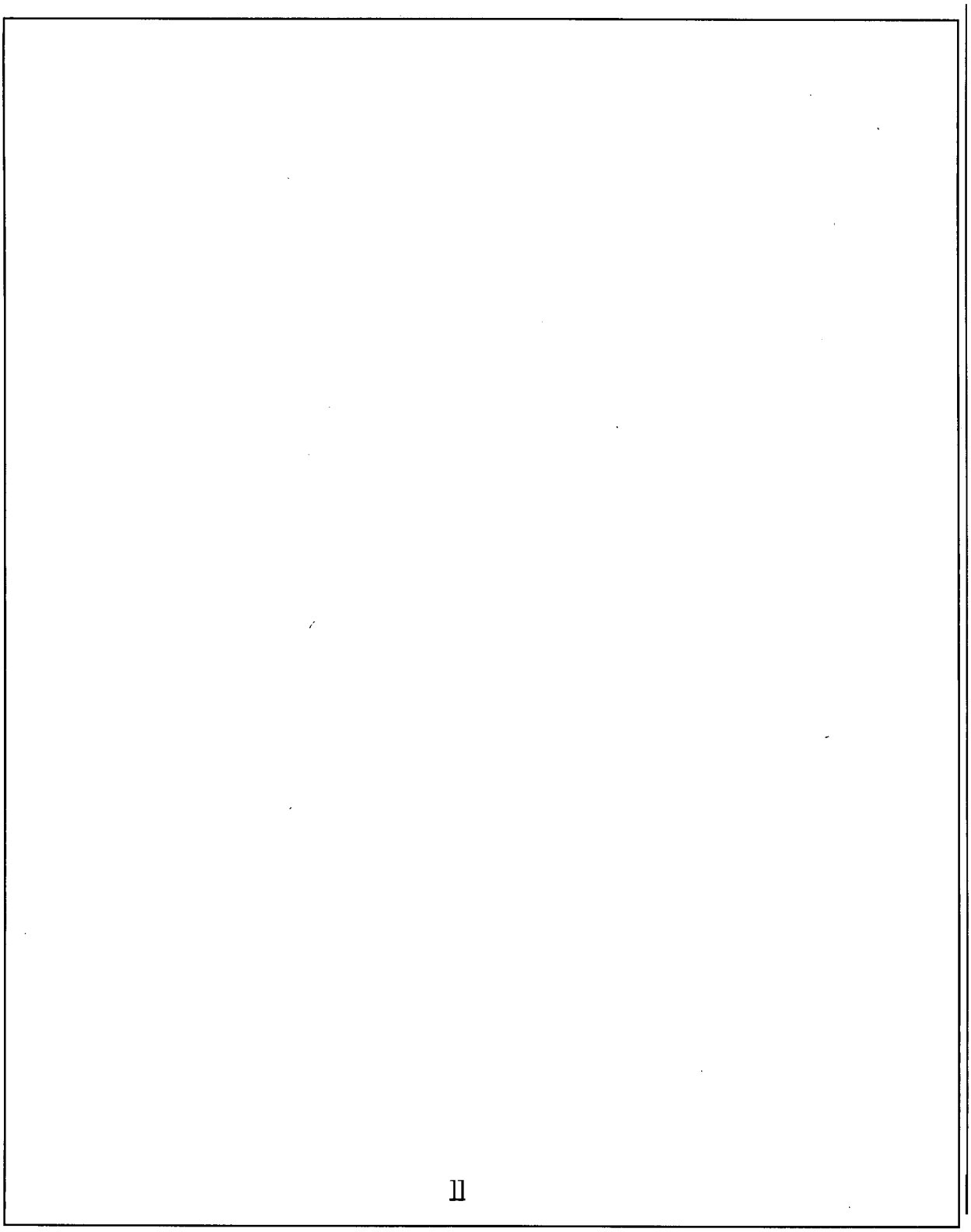

B.46 HUMAN ABILITY TO PROPERLY DIAGNOSE AND RESPOND TO THE ERROR

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B.47 ABILITY OF THE MACHINE TO DETECT THE ERROR

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MFN 09-246

Enclosure 3

Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, David H. Hinds, state as follows:

(1) I am the Manager, New Units Engineering, GE-Hitachi Nuclear Energy (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 09-246, Richard E Kingston to Nuclear Regulatory Commission, entitled *Submittal of Response to Portion of NRC* Request *for Additional Information Letter No. 310 Related to ESBWR Design Certification Application Chapter 18 - Human Factors Engineering - RAI Numbers 18.4-16 S04 and 18.5-26 S03*, April 30, 2009. GEH text proprietary information in Enclosure 1, which is entitled "Response to Portion of NRC Request for Additional Information Letter No. 310 Related to ESBWR Design Certification Application - Human Factors Engineering - Response to NRC RAIs 18.4-16 S04 and 18.5-26 S03", is identified by 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.

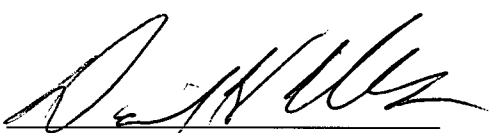
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

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 30th day of April, 2009.



David H. Hinds
GE-Hitachi Nuclear Energy Americas LLC