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Subject: **Response to NRC Request for Additional Information Letter No. 373 Related to ESBWR Design Certification Application - RAI Number 14.3-440 S01**

Enclosure 1 contains the GE Hitachi Nuclear Energy (GEH) response to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) 14.3-440 S01 (Reference 1).

ESBWR Design Control Document (DCD) markups are provided in Enclosure 2.

If you have any questions about the information provided, please contact me.

Sincerely,

Richard E. Kingston  
Vice President, ESBWR Licensing

Reference:

1. MFN 09-619, Letter from the U.S. Nuclear Regulatory Commission to Jerald G. Head, Request for Additional Information Letter No. 373, Related To ESBWR Design Certification Application, dated September 24, 2009

Enclosures:

1. Response to Portion of NRC Request for Additional Information Letter No. 373 Related to ESBWR Design Certification Application - RAI Number 14.3-440 S01
2. Response to Portion of NRC Request for Additional Information Letter No. 373 Related to ESBWR Design Certification Application - RAI Number 14.3-440 S01 – DCD Markups

cc: AE Cabbage      USNRC (with enclosures)  
J G Head      GEH/Wilmington (with enclosures)  
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eDRF Section      0000-0108-9640

**Enclosure 1**

**MFN 09-668**

**Response to NRC Request for  
Additional Information Letter No. 373  
Related to ESBWR Design Certification Application  
RAI Number 14.3-440 Supplement 1**

### **NRC RAI 14.3-440 Supplement 1**

*GE Hitachi's response to RAI-14.3-440 for physical security hardware ITAAC addressed 10 CFR 73.55 prior to May 26, 2009. Part 73, "Power Reactor Security Requirements" Final Rule became a requirement for all designs that were not certified as of May 26, 2009.*

*1) Revise the physical security ITAAC in the EBWR DCD to address the Part 73 Power Reactor Security Requirements Final Rule and reflect the changes in Tier 1 and Tier 2 of the ESBWR design control document.*

*2) Identify and describe the ITAACs that are not within the scope of the ESBWR design with an associated regulatory reference to identify COL applicant ITAAC for the ESBWR design.*

### **GEH Response**

The ITAAC for Plant Security (Tier 1, Section 2.19) were previously revised in response to RAI 14.3-440 to delete any items that were outside the scope of the certified design (i.e., items that are considered specific to the plant site features for physical security). These changes were included in Revision 6 of the ESBWR Design Control Document (DCD).

In response to this supplemental RAI, the Plant Security ITAAC (Tier 1, Section 2.19) are being further revised to address the requirements imposed by new NRC regulations set forth in 10 CFR 73.55. In revising the ESBWR Physical Security ITAAC, draft NUREG 0800 (SRP) Section 14.3.12 and certain changes recommended to the NRC by the NEI New Plant Security Task Force were used as guidance.

The revised ITAAC in some cases introduce a new lower case letter to denote a new sub part or add a "-1" to an already lettered subpart to indicate where the COL applicant will need to submit corresponding ITAAC to security elements that are not covered by the Design Certification, and this will be addressed through the addition of a COL item in Tier 2, Section 13.6. The combination of the DCD ITAAC and the COLA ITAAC will form a complete set of ITAAC that are consistent with the draft revised SRP 14.3.12.

### **DCD Impact**

DCD Tier 1, Section 2.19 will be revised as noted in the attached markup. (see Enclosure 2)

DCD Tier 2 Section 13.6.3 will add a new COL item 13.6-20-A indicating that the COL will need to submit ITAAC to complete the Physical Security ITAAC described in Draft

NUREG 0800 (SRP) Section 14.3.12, as shown in the attached markup. (see Enclosure 2)

DCD Tier 2, Table 1.10-1 will add COL item 13.6--20-A to the table to conform with the COL item added to Section 13.6 which is described above. (see Enclosure 2)

**Enclosure 2**

**MFN 09-668**

**Response to NRC Request for**

**Additional Information Letter No. 373**

**Related to ESBWR Design Certification Application**

**RAI Number 14.3-440 S01**

**DCD Markups**

**Table 1.10-1**  
**Summary of COL Items**

<b>Item No.</b>	<b>Subject / Description of Item</b>	<b>Section</b>
13.6-9-A	Operational Alarm Response Procedures	13.6.1.1.3
13.6-10-A	Operational Surveillance Test Procedures	13.6.1.1.8
13.6-11-A	Maintenance Test Procedures	13.6.1.1.8
13.6-12-A	Operational Response Procedures to Security Events	13.6.3
13.6-13-A	Operational Alarm Response Procedures	13.6.1.1.3
13.6-14-A	Administrative Controls to Sensitive Cabinets	13.6.1.1.5
13.6-15-A	Administrative Controls to Sensitive Equipment	13.6.1.1.5
13.6-16-A	External Bullet Resisting Enclosures	13.6.3
13.6-17-A	Site-Specific Locations of Security Barriers	13.6.3
13.6-18-A	Ammunition for Armed Responders	13.6.3
13.6-19-A	Site-Specific Update of the ESBWR Safeguards Assessment Report	13.6.3
<a href="#">13.6-20-A</a>	<a href="#">Physical Security ITAAC</a>	<a href="#">13.6.3</a>
14.2-1-A	Description – Initial Test Program Administration	14.2.2.1
14.2-2-A	Startup Administrative Manual	14.2.2.1
14.2-3-A	Test Procedures	14.2.2.2
14.2-4-A	Test Program Schedule and Sequence	14.2.7
14.2-5-A	Site-Specific Tests	14.2.9
14.2-6-A	Site-Specific Test Procedures	14.2.9
14.3-1-A	Emergency Planning Inspections, Tests, Analyses and Acceptance Criteria (ITAAC)	14.3.8
14.3-2-A	Site-Specific ITAAC	14.3.9
14.3A-1-1	Establish a Schedule for Design Acceptance Criteria ITAAC Closure	14.3A.1
15.2-1-A	Initial Core Design Anticipated Operational Occurrences (AOOs)	Deleted
15.2-2-H	Reload Core Design AOOs	Deleted
15.2-3-A	Assumptions	Deleted
15.3-1-A	Potentially Limiting Infrequent Events for Initial Core	Deleted

available to the adversaries utilizing the Design Basis Threat (DBT) toolkit (defined in Reference 13.6-8).

#### ***13.6-17-A Site-Specific Locations of Security Barriers***

The COL Applicant will provide a site arrangement drawing that shows the location of the Protected Area (PA) fence, the isolation zone on either side of the PA fence, the Vehicle Barrier System (VBS), any Red Zone or Delay Fences, and any buildings or structures inside the PA that are not part of the Certified Design. In addition the COL will identify a milestone for demonstrating that the security strategy described in the ESBWR Safeguards Assessment Report (Reference 13.6-6) remains valid.

#### ***13.6-18-A Ammunition for Armed Responders***

The COL Applicant will identify a milestone for determining if armed responders require ammunition greater than the amount normally carried to provide reasonable assurance of successful engagement of adversaries from various engagement positions. This will include developing the necessary procedures to assure adequate ammunition is available.

#### ***13.6-19-A Site-Specific Update of the ESBWR Safeguards Assessment Report***

The COL Applicant will identify a milestone for updating the ESBWR Safeguards Assessment Report (Reference 13.6-6) to reflect site-specific locations of engagement positions including fields of fire. This applies for the external Bullet Resisting Enclosures as well as any internal positions that also have external engagement responsibilities. The report will be updated to demonstrate that the Security Strategy can be implemented as described in the report and results in neutralization of the adversaries before significant radiological sabotage can occur.

#### ***13.6-20-A Physical Security ITAAC***

Features of the physical security system are covered, in part, by the standard ESBWR design, while other features are plant and site specific. Accordingly, the ESBWR standard ITAAC cover the physical plant security system and address those features that are part of the standard design. NRC guidance provides suggested ITAAC that cover both the standard design and the plant and site-specific features. The COL Applicant shall provide the plant and site specific Physical Security ITAAC not covered by Tier 1, Section 2.19[JAB63].

### **13.6.4 References**

- 13.6-1 10 CFR 73, "Physical Protection of Plants and Materials."
- 13.6-2 10 CFR 11, "Criteria and Procedures for Determining Eligibility for Access to or Control Over Special Nuclear Material."
- 13.6-3 10 CFR 26, "Fitness for Duty Programs."
- 13.6-4 10 CFR 75, "Safeguards On Nuclear Material--Implementation of US/IAEA Agreement."
- 13.6-5 IEEE 692-1997, "Standard Criteria for Security Systems for Nuclear Power Generating Stations."
- 13.6-6 GE Hitachi Nuclear Energy, "ESBWR Safeguards Assessment Report," NEDE-33391, Revision 2, July 2009, Safeguards Information.

## 2.19 PLANT SECURITY SYSTEM

### Design Description

The physical security system of the standard plant provides physical features to detect, delay, assist response to, and defend against the design basis threat (DBT) for radiological sabotage. The physical security system consists of physical barriers and an intrusion detection system. The details of the physical security system are categorized as Safeguards Information. The physical security system provides protection for vital equipment and plant personnel.

- (1) a. Vital equipment ~~shall be~~ is located only within a vital area.
  - b-1. Access to vital equipment requires passage through a vital area barrier ~~with a capability to prevent unauthorized entry.~~
- (2) (Deleted)
- (3) (Deleted)
- (4) (Deleted)
- (5) (Deleted)
- (6) a. The external walls, doors, ceiling and floors in the Main Control Room and Central Alarm Station are bullet resistant to at least ~~a~~ Underwriter's Laboratories (UL) 752 (2006) Level 4 ~~round~~.
- (7) (Deleted)
- (8) a. (Deleted)
  - b. (Deleted)
- (9) (Deleted)
- (10) a. Unoccupied vital areas are locked and alarmed with activated intrusion detection systems that annunciate in the Central Alarm Station ~~upon intrusion into a vital area.~~
- (11) a. ~~(Deleted) Security alarm annunciation occurs in the Central Alarm Station.~~
  - b-1. The Central Alarm Station is located inside a protected area and the interior is not visible from the perimeter of the protected area.
- (12) a. The secondary security power supply system for alarm annunciator equipment contained in the Central Alarm Station and non-portable communications equipment contained in the Central Alarm Station is located within a vital area.
- (13) a. Security alarm devices including transmission lines to annunciators are tamper indicating and self-checking, (e.g. an automatic indication is provided when failure of the alarm system or a component occurs, or when on standby power) and alarm annunciation ~~shall indicate~~ the type of alarm (e.g., intrusion alarms, emergency exit alarms) and location.
  - b-1. Intrusion detection and assessment systems provide visual display and audible annunciation of the alarm in the Central Alarm Station.

- (14) a. Intrusion detection systems recording equipment exists to record onsite security alarm annunciation including the location of the alarm, false alarm, alarm check, and tamper indication and the type of alarm, location, alarm circuit, date, and time.
- (15) a. Emergency exits through the vital area boundaries are alarmed and secured by locking devices that allow prompt egress during an emergency.
- (16) a-1. The central Alarm Station has conventional (land line) telephone service ~~and other communication capabilities~~ with the control room and local law enforcement authorities.
  - b-1. The central Alarm Station is capable of continuous communication with security personnel.
  - c-1. Non-portable communications equipment in the Central Alarm Station must remain operable from an independent power source in the event of the loss of normal power.

### **Inspections, Tests, Analyses, and Acceptance Criteria**

Table 2.19-1 provides a definition of the inspections, tests and analysis, together with associated acceptance criteria for physical security system.

**Table 2.19-1  
ITAAC For The Plant Security**

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1a. Vital equipment <del>shall be</del> <u>is</u> located only within a vital area.	Inspections will be performed <del>to confirm that of all</del> vital equipment <del>is located within a vital area</del> <u>locations</u> .	Vital equipment is located only within a vital area.
1b-1. Access to vital equipment requires passage through a vital area barrier <del>with a capability to prevent unauthorized entry</del> .	Inspections will be performed <del>to confirm that access to of all</del> vital equipment <del>requires passage through a vital area barrier with a capability to prevent unauthorized entry</del> <u>locations</u> .	<del>Access to the</del> Vital equipment <u>is located such that access to the</u> <del>requires passage through a vital</del> <u>equipment requires passage through a vital</u> area barrier <del>with a capability to prevent unauthorized entry</del> .
2. (Deleted)		
3. (Deleted)		
4. (Deleted)		
5. (Deleted)		
6a. The external walls, doors, ceiling and floors in the Main Control Room and Central Alarm Station are <u>bullet</u> resistant to at least <del>a</del> Underwriter's Laboratories (UL) 752 <u>(2006)</u> Level 4 <del>round</del> .	<u>Type test, analysis or a combination of type test and analysis of</u> <del>Analyses will be performed for</del> the external walls, doors, ceilings, <u>and</u> floors, <del>and any windows in the walls</del> in the Main Control Room <u>and</u> Central Alarm Station <del>to ensure they are resistant to at least a UL-752 level 4 round</del> <u>will be performed</u> .	The <u>external</u> walls, doors, ceilings, <u>and</u> floors in the Main Control Room and the Central Alarm Station are bullet resistant to at least <del>a</del> UL 752 Level 4 <del>round</del> .
7. (Deleted)		
8a. (Deleted)		

**Table 2.19-1**  
**ITAAC For The Plant Security**

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
8b. (Deleted)		
9. (Deleted)		
10a. Unoccupied vital areas are locked and alarmed with activated intrusion detection systems that annunciate in the Central Alarm Station <del>upon intrusion into a vital area.</del>	Tests, <del>and inspections,</del> <u>or a combination of tests and inspections</u> <del>will be performed to verify that of</del> unoccupied vital area <u>intrusion detection equipment and locking devices</u> <del>areas are locked and that intrusion will be detected and annunciated in the Central Alarm Station</del> <u>performed.</u>	Unoccupied vital areas are locked and <del>that</del> intrusion <del>will be</del> <u>is</u> detected and annunciated in the Central Alarm Station.
11a. <del>(Deleted) Security alarm annunciation occurs in the Central Alarm Station.</del>	<del>Tests of the installed systems will be performed to ensure that security alarms annunciate in the Central Alarm Station.</del>	<del>Plant security alarms annunciate in the Central Alarm Station.</del>
<u>11b-1. The Central Alarm Station is located inside a protected area and the interior is not visible from the perimeter of the protected area.</u>	<u>Inspections of the Central Alarm Station location will be performed.</u>	<u>The Central Alarm Station is located inside a protected area and the interior is not visible from the perimeter of the protected area.</u>
12a. <u>The secondary</u> security power supply system for alarm annunciator equipment <u>contained in the Central Alarm Station</u> and non-portable communications equipment contained in the Central Alarm Station is located within a vital area.	Inspections <u>of the secondary security power supply</u> will be performed <del>to verify that the secondary security power supply for alarm annunciator equipment and non-portable communications equipment contained in the Central Alarm Station is located within a vital area.</del>	The <u>secondary</u> security power supply for alarm annunciator equipment <u>contained in the Central Alarm Station</u> and non-portable communications equipment contained in the Central Alarm Station is located within a vital area.

**Table 2.19-1**  
**ITAAC For The Plant Security**

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
<p>13a. Security alarm devices including transmission lines to annunciators are tamper indicating and self-checking, (e.g. an automatic indication is provided when failure of the alarm system or a component occurs, or when on standby power) <u>and</u> alarm annunciation <del>shall</del><u>s</u> indicate the type of alarm, (e.g., intrusion alarms, emergency exit alarms) and location.</p>	<p>Tests will be performed <del>to verify that</del><u>on all</u> security alarms <del>including devices and transmission lines to annunciators are tamper indicating and self-checking, (e.g. an automatic indication is provided when failure of the alarm system or a component occurs, or when on standby power) and that alarm annunciation shall indicate the type of alarm, (e.g., intrusion alarms, emergency exit alarm) and location.</del></p>	<p>Security alarm devices including transmission lines to annunciators are tamper indicating and self-checking (e.g., an automatic indication is provided when failure of the alarm system or a component occurs, or when the system is on standby power) and that alarm annunciation <del>shall</del><u>s</u> indicate the type of alarm, (e.g., intrusion alarms, emergency exit alarms) and location.</p>
<p><u>13b-1. Intrusion detection and assessment systems provide visual display and audible annunciation of the alarm in the Central Alarm Station.</u></p>	<p><u>Tests will be performed on intrusion detection and assessment systems.</u></p>	<p><u>The intrusion detection and assessment systems provide a visual display and audible annunciation of alarms in the Central Alarm Station.</u></p>
<p>14a. <u>Intrusion detection systems recording</u> equipment exists to record onsite security alarm annunciation including the location of the alarm, false alarm, alarm check, and tamper indication and the type of alarm, location, alarm circuit, date, and time.</p>	<p>Tests will be performed <u>on the intrusion detection systems recording equipment.</u> <del>to ensure that equipment is capable of recording each onsite security alarm annunciation including the location of the alarm, false alarm, alarm check, and tamper indication and the type of alarm, location, alarm circuit, date, and time.</del></p>	<p><u>Intrusion detection systems recording</u> equipment is capable of recording each onsite security alarm annunciation including the location of the alarm, false alarm, alarm check, and tamper indication and the type of alarm, location, alarm circuit, date, and time.</p>

**Table 2.19-1**  
**ITAAC For The Plant Security**

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
15a. Emergency exits through vital area boundaries are alarmed <u>and secured by locking devices that allow prompt egress during an emergency.</u>	Tests, <del>and</del> inspections, <u>or a combination of tests and inspections will be performed to verify that of</u> emergency exits through vital area boundaries <del>are alarmed</del> <u>will be performed.</u>	Emergency exits through vital area boundaries are alarmed <u>and secured by locking devices that allow prompt egress during an emergency.</u>
16a-1. <u>The</u> Central Alarm Station has conventional (land line) telephone service <del>and other communication capabilities</del> with <u>the control room</u> and local law enforcement authorities.	Tests, <del>and</del> inspections, <u>or a combination of tests and inspections will be performed to verify the alarm station of the Central Alarm Station is equipped with the</u> conventional (land line) telephone service <del>and other capability to communicate with local law enforcement authorities</del> <u>will be performed.</u>	The <del>alarm station</del> <u>Central Alarm Station</u> is equipped with conventional (land line) telephone service <del>and other capability to communicate</del> with <u>the control room and</u> local law enforcement authorities.
16b-1. <u>The</u> Central Alarm Station is capable of continuous communication with security personnel.	Tests, <u>inspections, or a combination of tests and inspections of the Central Alarm Station continuous communication capability</u> will be performed <del>to verify the capability to continuously communicate with each security officer, watchman or armed response individual, or any security personnel that have responsibilities during a contingency event.</del>	<u>The Central Alarm Station is capable of continuous communication with security officers, watchmen or armed response individuals, or other security personnel that have responsibilities during a contingency event. The alarm station is equipped with the capability to continuously communicate with each security officer, watchman or armed response individual, or any security personnel that have responsibilities during a contingency event.</u>

**Table 2.19-1**  
**ITAAC For The Plant Security**

<b>Design Commitment</b>	<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
<u>16c-1. Non-portable communications equipment in the Central Alarm Station must remain operable from an independent power source in the event of the loss of normal power.</u>	<u>Tests, inspections or a combination of tests and inspections of the non-portable communications equipment will be performed.</u>	<u>Non-portable communication devices (including conventional telephone systems) in the Central Alarm Station are wired to an independent power supply that enables those systems to remain operable (without disruption) during the loss of normal power.</u>