

**REQUEST FOR ADDITIONAL INFORMATION 282-1984 REVISION 1**

3/18/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 13.06 - Physical Security

Application Section: Tier 1, Chapter 2, Tier 2, Chapter 13.6, Rev.1, MHI Technical Reports UAP-SGI-08001, Rev.1 (Security Element Report) and UAP-SGI-080002, Rev.0 (HAE)

QUESTIONS for Reactor Security and Programs Branch (NSIR/DRP/RSPLB)

13.06-1

**(U) Request for Additional Information (Security)**

**(U) US-APWR Final Safety Analysis Report**

**(U) Docket No. 52-021**

**(U) Tier 1, Chapter 2,**

**(U) Tier 2, Chapter 13, Conduct of Operations (Section 13.6, Security)**

**(U) U.S. APWR Design Certification physical Security Element Review (UAP-SGI-08001 R1)**

**(U) U.S. APWR – High Assurance Assessment Evaluation Report (UAP-SGI-08002 R0)**

1. **(U) Tier 2, Chapter 13, Section 13.6.2.1 (Page 13-6-1):** Provide clarification on whether the US-APWR physical security design of a physical barrier surrounding the perimeter of the vital area (VA) and protected area (PA), as applicable and within scope of the US-APWR design, includes protection of all underground penetrations (e.g., utilities and piping tunnels or passageways, trenches, etc.), waterway penetrations (e.g., above and below water surface of intake and discharge structures), and above-ground utility or piping chase or enclosures penetrating the vertical plane above the PA. State appropriately the design commitments for completeness and continuity of a physical barrier.

**(U) Regulatory Basis:** Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73. Title 10 CFR 73.55(a) requires an applicant to provide a “physical security system designed to protect against the design basis threat of radiological sabotage.” Design commitments or requirements must clearly address all potential penetrations by-passing the vertical plane of the PA for a continuous physical barrier surrounding the PA to meet regulatory requirements.

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13.06-2

2. **(U) Tier 2, Chapter 13, Section 13.6.2.1 (Page 13.6-2):** Describe MHI's analysis, technical basis and assumptions that accounts for vehicle explosive threat and state the required minimum adequate stand-off distance to protect continuity of safety and security functions. Include discussion of impacts to specific systems and design features and describe analysis of each method of delivery described in RG 5.69, "Guidance for the Application of the Radiological Sabotage Design-Basis Threat in the Design, Development, and Implementation of a Physical Security Program the Meets 10 CFR 73.55 requirements," and design requirements from postulated DBT vehicle explosive threat.

**(U)** Specifically, describe key technical basis and assumptions of MHI analysis for assuring that blast effects at the necessary stand-off distance will not cause destruction of structures housing safety-related systems and components (e.g., Reactor Building, Power Source Buildings, Power Source Fuel Storage Vaults, Essential Service Water Pipe Tunnel, Auxiliary Building, Turbine Building, and Access Building) and the continuity of safety functions of safety-related systems and components (e.g., Emergency Core Cooling System, Safety Injection System, Chemical and Volume Control System, Component Cooling Water System, Residual Heat Removal, Emergency Feedwater System, Gas Turbine Generators, Containment Isolation System, Emergency Diesel Generators, Station Blackout Diesel Generators, Chilled Water System, Fuel Pool Cooling Systems, cable spreading and routing for MCR and Remote Shutdown Station, Reactor Cooling Pumps, Diverse Actuation System, Reactor Protection System, etc.) stated in the DCD. Include description of analysis of survivability for security related systems and functions (i.e., CAS, SAS, Ready Room, DFPs, etc.). Describe in appropriate details for MHI blast analysis in Tier 2 and reference 13-6.7, "High Assurance Assessment Evaluation Report."

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Section 13.6.2.1 describes a design commitment for performance and specific physical protection against the 10 CFR 73.1 required DBT and associate characteristics for vehicle bombs. The MHI stated that "VBS will be located at the necessary stand-off distances to protect against the DBT vehicle bomb," and reference 13.6.7 provides a specific distance as being adequate (Figure 1 of HAE), but no information for the staff to determine adequacy and completeness of analysis as indicated.

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13.06-3

3. **(U) Tier 2, Chapter 13, Section 13.6.2.2 (Page 13.6-2):** Describe assumptions for survivability of proposed defensive fighting positions (DFPs) identified in Figure 1, "US-APWR Proposed Exterior Physical Security Layout," of reference 13.6-7, "High Assurance Assessment Evaluation Report." Specifically, describe design requirements, technical basis, and assumptions for hardened DFPs or locations of DFPs to withstanding blast effects of adversary characteristics described in RG 5.69, "Guidance for the Application of the Radiological Sabotage Design-Basis Threat in the Design, Development, and Implementation of a Physical Security Program that Meets 10 CFR 73.55 requirements." Describe design requirements or commitments for assurance of availability and effectiveness of security response functions to interdict (i.e., interrupt tasks) adversaries at the protected area (PA) and vital areas (VA). Clearly state the assumptions, performance, and design requirements for hardening of DFPs against effects of vehicle bombs scenarios.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The descriptions of security features incorporated in the standard US-APWR design, with application of defense-in-depth, provide a license basis for protection against the DBT. Additional information is needed to understand the technical basis and assumptions for design for protecting against bomb blast for assurance of availability and reliability of response.

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13.06-4

4. **(U) Tier 2, Chapter 13, Section 13.6.2.4 (Page 13.6-4):** Clearly indicate if the US-APWR security design will include the application of fixed engineered systems applying

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low-light technology (i.e., low-light, thermal, infrared, or other imaging camera for assessment and target discrimination) as an alternative approach to meeting minimum lighting of 0.2 foot candle/ft<sup>2</sup>. Provide descriptions of design commitments, performance requirements, and planned configurations of plant security lighting system and low-light technology that address reliability and availability of engineered systems to perform intended security functions. Include discussion on whether low light technology is applicable to planned closed circuit television network (Section 13.6.2.3 and HAE) for assessment, monitoring of locations and movement of adversaries.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The additional information is needed to establish clearly the design features for the standard US-APWR design. Alternatives, not clearly stated will not be certified. Application of low-light technology is acceptable in proposed security final rule.

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13.06-5

5. **(U) Tier 2, Chapter 13, Section 13.6.2.4 (Page 13.6-4):** Delete reference to NEI-03-12 regarding permitted alternative approaches.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Alternative approaches described or acceptable in NEI 03-12, Reversion 4, is the application low-light technologies that have been incorporated in the proposed final security rule. Alternative approaches to the regulatory requirements are addressed on a case by case to determine adequacy for meeting regulatory requirements. NEI 03-12 is not a regulatory requirement and the commitment to an unspecified alternative approaches in the US-APWR design does not provide the technical basis for specific exemption or approval of alternative to current regulation. Each alternative described would be specifically approved by the NRC, either in the form of an NRC-granted exemption, or an NRC-approved "alternative measure" as set forth in § 73.55(r).

13.06-6

6. **(U) Tier 2, Chapter 13, Section 13.6.2.4 (Page 13.6-4):** Describe the US-APWR design requirements for protecting security systems against potential cyber attack in accordance with 10 CFR 73.1(a)(1)(v). Describe specific cyber threat(s) that were considered, the evaluation of potential impact to security systems to perform intended functions, and design considerations in the protection against postulated threats to

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ensure reliability and availability of required security functions. Provide description of conceptual design of security systems and measures that will be incorporated by design to provide a layered-protection to prevent and protect against the cyber threats to provide assurance that engineered systems relied on for security will continue providing required functions of detection, assessment, alarms, activating barriers, and communications. Physical and digital isolation of security systems required by design should be clearly described. Provide reference to the MHI technical report addressing cyber security as applicable to the design of security systems.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Complete and accurate descriptions of security features (i.e., design requirements, performances, technical basis, and assumptions) incorporated in the standard US-APWR design is needed for understanding the approach and how the US-APWR design features will provide or contribute to protecting against the DBT or meet regulatory requirements. The considerations and protection against cyber threat is required. Engineered or design features for protection should be described. Administrative controls that may be a part of a system approach for protecting against cyber threats are programmatic requirement need not be described in detail.

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13.06-7

7. **(U) Tier 2, Chapter 13, Section 13.6.2.2 (Page 13.6-2):** Provide clarification on whether the vital area building enclosure, specifically walls, floors, and roof, of US-APWR design are credited as a security features that provides the delay or prevents access to the vital area. Specifically describe the assumptions and credited delay functions associated with each building structure components of the vital area boundaries. State the technical bases and assumptions that support MHI's conclusions that these structure components are sufficiently robust to meet the required or minimum delays against mechanical or explosive breaching based on the adversary characteristics of the DBT. Clearly state in the HAE technical report the assumptions, technical basis, summary of evaluation, and conclusions regarding the required security performances and credited vital area enclosure structure components providing or meeting a security delay functions.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The building structures and components of the US-APWR design that will be relied on to meet security functions should be clearly identified. Technical basis and performance requirements must be described to understand how MHI credited these features as

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physical barriers providing specific delay functions.

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13.06-8

8. **(U) Tier 2, Chapter 13, Section 13.6.2.2 (Page 13.6-2):** Describe how the US-APWR design for door penetrations, HVAC, or other penetrations into MCR, CAS, SAS, and last access control point (if it is within scope of design) will address continuity of a bullet-resistance barrier.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design provides the technical basis for determining adequacy of a physical protection system that will protect against the DBT and meeting regulatory requirements. Continuity of a bullet-resistance barrier assures protection of occupants to performing required safety or security functions. Doors and HVAC penetrations through walls provides pathways that must be considered in designing a bullet-resistance enclosure.

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13.06-9

9. **(U) Tier 2, Chapter 13, Section 13.6.2.3 (Page 13-6.2):** Describe how the US-APWR design for security includes the integration of engineered assessment system (i.e., video capture and cameras) with alarm system for completing detection of adversaries. Describe the design and performance for engineered system(s) providing assessment functions (i.e., identifying threat to initiating security response). Include in the descriptions whether features (e.g., secondary power supply, continuity signals, supervision of lines, tamper and trouble indications, etc.) that are similar to security alarm and detection systems will be required for assuring reliability and availability of the system(s) to perform their intended security functions.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The descriptions of security features incorporated in the standard US-APWR design provides

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the technical basis for determining adequacy of a physical protection system that will protect against the DBT and meeting regulatory requirements. A reliable and available engineered assessment system(s) is needed for performing assessment functions and to subsequently initiate a security response.

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13.06-10

10. ***(U) Tier 2, Chapter 13, Section 13.6.2.4 (Page 13-6.4):*** Provide descriptions of design and performance requirements of the US-APWR design of secondary power for assuring reliability and availability of plant security lighting to meet security functions (i.e., assessment and target discrimination for interdicting between adversaries and vital area/equipment). Also describe the design requirements for lighting or other features within the building to assure adequate assessment and target discrimination for security responders. Incorporate MHI response, dated September 18, 2008, to NRC RAI 14.0312.1 that provides additional descriptions of secondary power and uninterruptable power supply in Section 13.6 or appropriate section of the MHI technical report UAP-SGI-08002 R0.

***(U) Regulatory Basis:*** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The security features incorporated in the standard US-APWR design provides the technical basis for determining adequacy of a physical protection system that will protect against the DBT and meeting regulatory requirements. A reliable secondary power supply and uninterrupted transition from primary to secondary is required for assuring reliability and availability of security systems to perform their intended security functions.

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13.06-11

11. ***(U) Tier 2, Chapter 13, Section 13.6.2.3 (Page 13.6-4):*** Describe design and performance requirements for protecting communication systems against adversary

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characteristics of the DBT for assuring reliability and availability needed for security communications. Describe the conceptual design and performance requirements, system features, and assumptions that will be required for a detail design. Describe how communications system(s) design will ensure continuity of two-way communications onsite, within the power-block, and off-site at all times.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The descriptions of security features incorporated in the standard US-APWR design provides the technical basis for determining adequacy of a physical protection system that will protect against the DBT and meeting regulatory requirements. A reliable and available means of communications is essential to implementing a security response. The descriptions of design and performance requirements are within the scope of the DC and provides technical basis for ITAAC commitment.

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13.06-12

12. **(U) Tier 2, Chapter 12, Section 13.6.5 (Page 13.6-5):** Provide reference to 10 CFR 52, Licenses, Certifications, and Approval for Nuclear Power Plants, in lieu of 10 CFR 50, for application requirements for new reactors.

**(U) Regulatory Basis:** Part 52 is the governing regulation for design certification and licensing of new reactors, and should be stated in lieu of Part 50. Example: Applications requirements for license application for security plans are described in 10 CFR 52.3(b)(4), 52.79(a)(35), and 52.79(a)(36).

13.06-13

13. **(U) Section 1.0, Purpose and Scope (Page 1 of HAE Report):** Delete reference to, or provide clarification for why, NRC Order (DBT) dated April 29, 2003.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Regulatory requirements are in 10 CFR 73. 10 CFR Part 73.1 described current requirements of the DBT. NRC Order of April 29, 2003 has not been issued to US-APWR or DC vendors, and is not a regulatory requirement.

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14. **(U)** Section 1.0, Purpose and Scope (Page 1 of HAE Report): Describe how the internal and external defensive strategy would change for a single-unit reactor for a COL applicant referencing the US-APWR design with two-unit configuration (ref. Figure 1) for security. Include the discussion of changes to design requirements, technical basis, and assumptions for adversaries' pathways, adversaries and security response time lines, adequacies of bounding scenarios analyzed to address a single-unit reactor, and applicability of the proposed configuration of external DFPs indicated in Figure 1.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The descriptions of security features incorporated in the standard US-APWR design provides the technical basis for determining adequacy of a physical protection system that will protect against the DBT and meeting regulatory requirements. The protective strategy could change due to configuration changes, such as when the plant footprint is changed from proposed certified design of two-unit to a one-unit. The scope of the DC is for a single-unit plant. The configuration presented in Figure 1 is for a two-unit plant.

**(U)** Note Applicable to All RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-15

15. **(U)** Section 1.0, Purpose and Scope (Page 1 of HAE Report): In addition to the technical aspect of physical security system protection a proposed design configuration for two-unit reactor to a one-unit reactor, discuss MHI assumptions and determination regarding meeting or requiring a departure from certified design for a COL applicant requesting a license for operating a one-unit reactor. Does MHI intend to provide a one-unit layout for physical protection for the certification standard US-APWR design in addition to the configuration of a two-unit layout of physical protection in Figure 1?

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48). The scope of design in Tier 2, Chapter 1 of the DCD should support certification of a two unit-plant configuration proposed in Figure 1.

13.06-16

16. **(U)** Section 1.0, Purpose and Scope (Page 1 of HAE Report): Provide clarification and verify whether the scope of US-APWR design certification in the DCD (e.g., Chapter 1) has clearly established that the scope for security design includes areas that are beyond the structures of the nuclear island/power block (i.e., as proposed configuration of exterior DFPs, PA, VBS, etc.). In addition, clarify that the scope of the design certification of the DCD specifically addresses configuration of a two-unit plant

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and whether a one-unit plant must be also addressed to avoid potential departure from a certified design.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48). The scope of design in Tier 2, Chapter 1 of the DCD should support certification of a two unit-plant configuration proposed in Figure 1.

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13.06-17

17. **(U) Section 3.3, Protective Strategy (Page 4 of HAE Report):** Describe the defense-in-depth protection provided between the vital area (VA) boundaries and the protected area (PA) that will provide assurance to meet MHI's strategy of denial. Illustrate and describe how many layers of protection (minimum) will be provided for a high assurance that adversaries will be neutralized or interrupted (i.e. stopped from completing tasks). Illustrate and describe the fields of fire, the target sets, and the vital area boundaries assigned to each DFPs and credited to defend against each of the postulated bounding attack scenarios. Clarify or discuss how internal DFPs will or will not be integrated with the external DFPs to provide overlapping fields of fire and layered-protection between the VA boundaries and the PA barriers. Illustrate and describe the capabilities of each DFP to provide clear lines of sight of adversaries within responsible fields of fire between the VA and the PA to engage adversaries along travel route and up to the vital area boundaries. Describe any assumptions and illustrate fields of fire and locations of DFPs that will be allow responders to engage adversaries attempting to scale the building walls to access VA boundaries using roof tops.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The descriptions of security features incorporated in the standard US-APWR design provides the technical basis for determining adequacy of a physical protection system that will protect against the DBT and meeting regulatory requirements. Figure 1 of the HAE Report depicts locations of DFPs. Additional information is needed for the technical basis and assumption of defense-in-depth or layered-protections provided for assuring interdiction of DBT adversaries from causing radiological sabotage and provide adequate and reliable protection.

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***to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-18

18. **(U)** Figure 1, US-APWR Proposed Exterior Physical Security Layout (HAE Report): Discuss how MHI evaluation accounts for distance and movement for determining likelihood or probability of hit and kill. Describe what assumptions used in determining locations of DFPs in Figure 1. Include discussion of assumptions for maximum distances that responders will neutralize adversaries. Discuss whether the design (i.e. locations of DFPs) considered operating experiences for fire arms training and qualification for operating reactor security personnel. Discuss whether qualifying testing criteria was considered in determining the likelihood or probability of hit and kill.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The descriptions of security features incorporated in the standard US-APWR design provides the technical basis for determining adequacy of a physical protection system that will protect against the DBT and meeting regulatory requirements. Defense-in-depth or layered protection to provide assurance of interdiction adversaries from causing radiological sabotage and provide adequate and reliable protection.

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13.06-19

19. **(U)** Section 4.3, Identification of Potential Attractive Targets (Page 5 of HAE Report): Describe how and by what means will MHI maintain and update the HAE report to evaluate and address final changes to the physical design of plant layout, and design and configuration of SSCs that may impact current assumptions (i.e., attractive target sets) of the HAE. Similarly, clarify how, other than by means of a specific COLA information or action item, will the COL applicant provide additional evaluation and/or additional design and performance requirements for assessing site specific conditions affecting attractive target sets, including security engineered systems that have not been described in the DCD (e.g., PA barrier and exterior intrusion and detection system, DFPs, VBS, active barriers, etc.) or need further development to address site specific conditions.

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(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The descriptions of security features incorporated in the standard US-APWR design provides the technical basis for determining adequacy of a physical protection system that will protect against the DBT and meeting regulatory requirements. However, SSCs, layout, and current description of design of the US-APWR may change prior to final design certification and may impact security design that will require update of descriptions and assumptions.

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13.06-20

20. (U) Section 4.3, Identification of Potential Attractive Targets (Page 5 of HAE Report): Describe whether it is the intent of MHI to address the need to depart from certified design by a COL applicant by providing the proposed internal and external protective strategy (i.e., required configurations of security engineered features, such as the proposed number and location of DFPs, indicated in Figure 1) as the minimum requirements from a referenced US-APWR design.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Section 13.6.1 and indication of “preliminary listing of SSCs identified in Section 4.3, the final configuration of engineered and administrative controls for may change based on final detail design and as-built conditions. Clarification is needed regarding how MHI intent to maintain design assumptions and basis for security features indicated in the DC. Figure 1 and HAE appears to describe the required security features based on analysis of standard design, but may not sufficiently address all site specific conditions that could require additional evaluations or analysis.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-21

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21. (U) Section 4.3, Identification of Potential Attractive Targets (Page 5 of HAE Report): Provide a description to clarify the designation of vital areas, as stated in the Section 13.6.2.2 of the DCD, that would encompass all the preliminary listing of SSCs indicated in Section 4.3 of the HAE. Clarify whether the identified VA(s) would or would not change as design becomes final or discuss why the currently identified VA(s) are bounding. Also confirm whether it is MHI assumptions that the proposed physical security design, specifically the proposed DFPs, in Figure 1 or US-APWR design features Section 13.6, and Section 5.1 of Reference 13.6-2, would remain unaffected because its protective strategy is the denial of access into key buildings (i.e., the most outer vital area boundaries). Discuss whether a COL information or action item will be provided for COL applicant to further develop and finalize security design features that are site specific or may be changed but not considered a departure from certified design.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Figure 1 and HAE describes the required security features based on evaluation of a standard design, but it may not sufficiently address all site specific conditions that could require additional (or reduced) features for adequate protection. In addition, statements in Section 13.6.2.2 of the DCD and Section 4.3 of the HAE Report suggests that the security design features may change based on final detail design and as-built conditions. Clarification is needed regarding how MHI intend to maintain design assumptions and basis for security features indicated in the DC and how additional evaluations or design would be addressed by a COL applicant

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13.06-22

22. (U) Section 4.4, Determination of Most Attractive Targets (Page 6 of HAE Report): Clarify the statement that “The target set analysis for this evaluation did not exclude any of the potential targets identified in Section 4.3 above because they were considered unachievable.” Clarify if it should be because they were not considered unachievable.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Clarification is need for text indicated for accurate and completeness of information in the application.

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***the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-23

23. **(U)** Section 4.4, Determination of Most Attractive Targets (Page 7 of HAE Report): Provide additional descriptions of MHI systematic process used to determine attractiveness target sets from the all identified target sets for the US-APWR design. Describe the technical bases for eliminating certain target sets as unachievable or the adversaries would not choose because of extensive level of effort, beyond capabilities, or time. Specifically how did the process and expert panel consider: (a) adversaries' task times and the specific criteria used; (b) what were assumptions and screening criteria used regarding readily available plant heavy equipment and tools (cranes, forklifts, welding and cutting tools) that could supplement adversaries' capabilities to cause destruction or disabling SSCs or breaching, and (c) whether readily available plant flammable liquids and gases were considered (e.g., causing destruction, diversion, or delaying security responders) and (d) what criteria were used for determining achievable or attractive target. Include the discussion of key assumptions that the expert panel used for screening and criteria regarding limitation of available time for adversaries to complete tasks within facilities or out of fields of fire from fixed DFPs and whether assumptions for response include plans and availability of responders for pursuit to interrupt and interdict adversaries.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). An adequate systematic process that provides a complete and accurate determination of the US-APWR design standard target sets is the building blocks for determining required and adequate protection against the DBT. The thorough and systematic approach of how MHI determined final or attractive target set provides assurance for adequate determination of target sets that must be protected.

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13.06-24

24. **(U)** Section 4.4, Determination of Most Attractive Targets (Page 7 of HAE): Describe the technical basis, assumptions, systematic process, and criteria applied by MHI HAE expert panel in determining values for "estimated time to core damage" for screening and determination of the most attractive target. Include the technical rationale and basis of referenced industry guidance that was specifically applied for excluding

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target sets that would result in postulated accident sequences where time to core damage is in excess of specified hours. Discuss assumptions for using time to core damage and implication to planned strategy (e.g., unprotected target sets or components for sequences leading to core damage). Discuss whether defense-in-depth protection would include security capabilities to interdict (i.e., room entry and clearing) to allow recovery from such scenario if the adversaries are able to achieve the targets excluded and still remain effective. Discuss expert panel considerations of plans or requirements to pursue and neutralize adversaries, providing plant conditions that allow operators or emergency responders to implement safety recovery actions.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). An adequate systematic process that provides a complete and accurate determination of the US-APWR design standard target sets is the building block for determining required and adequate protection against the DBT. Defensible basis for determining standard target sets based on time to core damage time has not been provided. Industry's guidance for conduct of force-on-force exercise within context of inspection (i.e., constraints and artificiality) does not provide a defensive basis for licensing basis and postulating all credible scenarios for core damage.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-25

25. **(U) Section 4.4, Determination of Most Attractive Targets (Page 7 of HAE):** Discuss the technical basis and assumptions of why the adversaries would be limited to a specific duration. Confirm whether it is MHI's assumption that security features (i.e., DFPs) have been incorporated in proposed external strategy such that security personnel would have clear lines of sight and overlapping fields of fire covering perimeters of the vital area boundaries to interdict adversaries' tasks. If so, illustrate using Figures of DFPs to demonstrate or show and describe whether the fields of fire covering perimeters of the VA walls and roof from the indicated DFPs.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect standard target sets from the DBT. Line of sights and fields of fire is fundamental to a defensible technical basis for adequate locations of DFPs or deployment of security officers to effective response and meet regulatory requirement to interdict between adversaries.

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***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-26

26. **(U) Section 5.1, US-APWR Design Features (Page 9 of HAE):** Describe technical assumptions and estimated minimum required adversaries' task time(s) to penetrate the US-APWR designed exterior and interior walls that consists of varying construction (as stated) of steel reinforced and concrete thicknesses (as stated) using mechanical and explosive breaching capabilities within the adversarial characteristics of the DBT. Specifically, provide the technical basis for why walls of the vital areas may be credited as delays (short or long durations) that support the assumptions certain structural components would "lessen the plant's vulnerability" or should channel adversaries paths to defended locations.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits designed features of the US-APWR such as structural components for delays. Additional information is needed on the assumptions of design features that provide security functions.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-27

27. **(U) Section 5.1, US-APWR Design Features (Page 9 of HAE):** Describe MHI's assumptions regarding adversaries' task time based on the planned US-APWR design for construction of the roofs and floors of the vital area boundaries. Include the evaluation and technical assumptions that credited these building structure components to provide delays against mechanical or explosive breaching. Describe how penetrations are protected to provide needed delay functions.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-

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APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits features of the US-APWR design for safety, such as structural components for delays. Additional information is needed on the assumptions of design features that provide security functions.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-28

28. ***(U) Section 5.2, Physical Security Design Features and Systems (Page 9-10 of HAE Report):*** Provide discussion of the minimum acceptable standoff distance for the continued availability of required plant shutdown and security response functions. Describe, in summary, the systematic approach applied, key assumptions and technical basis for postulated explosives blast effects (including expected human fragility, postulated damage to VA structures, impacts to DFPs). Describe computer model(s) applied and calculations to support required distance for placement of VBS as indicated in Figure 1, "US-APWR Proposed Exterior Physical Security Layout."

***(U) Regulatory Basis:*** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect against DBT vehicle bombs. Additional information is needed to determine adequacy of MHI evaluation that establish safe standoff distance of VBS that assure availability of safety and security response within the power block and DFPs.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-29

29. ***(U) Section 5.2, Physical Security Design Features and Systems (Page 10 of HAE Report):*** Describe design and performance requirements for intrusion detection system (IDS). Describe MHI evaluation and design considerations of complementary systems to compensate for weaknesses of detection methods to provide assurance of a high

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probability of detecting attempts or breach the PA. Discuss application of defense-in-depth in the design of detection system for ensuring a high assurance of detecting intrusions.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect against DBT. MHI assumes a security response upon detection and describes IDS as a design feature. Additional information is needed to determine how MHI intend to design the IDS to ensure detection. Discuss application of Regulatory Guide 5.44, Perimeter Intrusion Detection System, for conceptual design of IDS.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-30

30. **(U) Section 5.2, Physical Security Design Features and Systems (Page 10 of HAE Report):** Describe design and performance requirements for providing detection where utility penetrations below or above ground (e.g., tunnels, chase, ducts, structures, etc.), including water ways (above and below surface) that may cross the plane of the PA boundary.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect against DBT. MHI assumes a security response upon detection of adversaries and describes IDS as a design feature. Additional information is needed to determine how MHI intend to design IDS to ensure detection along all penetrations at the PA.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-31

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31. **(U)** Section 5.2, Physical Security Design Features and Systems (Page 11 of HAE Report): Security Communications Systems: Describe the US-APWR design requirements to ensure maintenance of continuous capabilities of two-way communications to withstand the adversarial characteristics of the DBT to disrupt communications. Discuss how continuity of communications between security's command control (CAS, SAS, MCR – Main Control Room) and the deployed or fixed responders and the communications between responders will be maintained.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates commitments and proposed design that include security communications. MHI assumes a security response upon detection and assessment of adversaries. Communications is required to initiate and implement effective response, deploy or re-deploy responders, and to obtain offsite assistance.

**(U)** Note Applicable to RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-32

32. **(U)** Section 5.2, Physical Security Design Features and Systems (Page 11 of HAE Report): Security Communications Systems: Describe design requirements for assurance of communications between DFPs and continuity of communications under tactical capabilities of the DBT adversaries which may be deployed prior to or during an attack.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates commitments and proposed design that include security communications. MHI assumes a security response upon detection and assessment of adversaries. Communications is required to initiate and implement effective response.

**(U)** Note Applicable to RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

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13.06-33

33. (U) Section 5.2, Physical Security Design Features and Systems (Page 11 of HAE Report): Security Communications Systems: Provide clarification regarding the statement that “plant public address system may be used in some case as a backup means of communications.” Specifically, describe capabilities of the plant address system to permit continuity of two way communications, the design requirements to provide audibility above ambient noise of plant operating environment, design to ensure availability power supply, and any limitations for providing security communications.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates commitments and proposed design that includes security communications. MHI assumes security response upon detection and assessment of adversaries. Communications is required to initiate and implement effective response. PA systems may not permit two-way communications for meeting regulatory requirements.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-34

34. (U) Section 5.2, Physical Security Design Features and Systems (Page 11 of HAE Report): Dedicated Security Computer System: Describe design or performance requirements of the dedicated security computer system to provide protection and reliability of continued operations against cyber threat. Specifically, describe the layered-protection for the dedicated computer security system by means of engineered and physical controls by design.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR HAE Report or Section 13.6 of the DCD did not specifically address evaluation and postulated scenarios for cyber attacks or identified reference to standard design requirements for protection of security systems against cyber threats. The staff assumes that administrative controls relied on protection are COL applicant’s action, but within the scope of the DC, the vendor must describe any design requirements or features that provide the engineered controls to protect security systems against postulated cyber threats.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate***

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***to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-35

35. (U) Section 5.2, Physical Security Design Features and Systems (Page 11 of HAE Report): Secondary Power Supply: Describe the technical basis regarding the adequacy of minimum hours of secondary power supply stated for security systems, and whether the capabilities will sustain required security functions (e.g., detection, alarm assessment, communications, activate barriers, etc.). Clarify whether this minimum power supply is in addition to US-APWR design requirement or the configuration also interconnects security systems to secondary power supply from plant systems or emergency/security lighting stated in MHI response to RAI 14.03.12-1 (i.e., non-safety gas turbine generators will be designed to provide the independent secondary security power supply for security significant systems, etc.). Discuss the assumption regarding the durations expected until plant condition or security actions could allow operations to safely move about onsite or offsite to restore primary power.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates commitments and proposed design requirements for secondary power supply. Additional information is needed to understand assumptions and technical basis for the minimum capacity specified and whether it was based on postulated or required performance based (i.e., possible real event time). The minimum hours indicated in this section appears to be typical capacity for loss of power under normal conditions that would allow for initiating operator actions to return to primary power. Under security events, the operator actions may be delayed because of a need to secure the plant.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-36

36. (U) Section 5.2, Physical Security Design Features and Systems (Page 11 of HAE Report): Describe design and performance requirements for system configurations of secondary power supply to security systems, such as the intrusion detection systems and security lighting. Describe how the reliability and availability of security functions and the duration of secondary power supply will be provided by the standard design.

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**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates commitments and proposed design requirements for secondary power supply. Additional information is needed for standard design requirements for secondary power supply to systems relied on for performing security functions.

**(U) Note Applicable to RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-37

37. **(U) Section 5.3 US-APWR Design Enhancement (Page 12 of HAE Report):** Provide clarification on what is “a small opening” regarding blast resistant vault doors as a consequence of indicated explosive charge. Discuss whether the expected opening exceeds 96 square inches (i.e., smallest opening from laboratory tests that would allow a small person to pass through).

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits features of the US-APWR design for safety, such as structural components for delays. Additional information is needed on the assumptions of design features that provide security functions.

**(U) Note Applicable to RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-38

38. **(U) Section 5.3 US-APWR Design Enhancement (Page 12 of HAE Report):** Describe the design and performance requirements for manually deployable DFPs (i.e., bullet and blast resistant capabilities). Also discuss specifically whether design of

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manually deployable DFPs and fixed DFPs includes features to protect against possible hand thrown explosives or include a complementary deployment of engineered systems to protect responders against hand thrown explosives.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates commitments and proposed design requirements for DFPs and barriers within the VA and PA to protect target sets. Additional information provides for determining whether design features address protection from hand thrown explosives for assurance of continued availability of responders.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-39

39. **(U) Section 6.0 Evaluation of US-APWR Protective Strategy and Security Response to the DBT (Page 13 of HAE Report):** Describe what conservative assumptions or margin for security response have been incorporated in determining and verification of “sufficient protection” and the assurance of reliable security response. Specifically, discuss how environmental or human factors were considered in the determining reliability and effectiveness of security responders to perform responsible security functions (i.e., under suppressive gun fire and heightened state of stress of a life and death). Discuss assumptions and resulting margin for the following: (a) recovery from physical exertion of travel to a ready physical state, (b) possible delays in route of travel, (c) effectiveness of a security responder to acquire and engage targets under suppressive fire from a DFP, (d) possible failure of response such as whether an isolated security responder would engage adversaries under fire, and (e) performing tasks under heightened state of stress or resolving equipment problem (donning of gas mask or PPE, clearing of misfired round, etc.). Describe how MHI assumptions considered environmental or human factors related to neutralization and application of defense-in-depth for implementing a denial strategy to vital areas.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Human performance are affected by environmental and physical conditions, along with heightened state of stress. Uncertainties are addressed by incorporating margin of time and redundancies to provide defense-in-depth for reliability and availability of protection.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must***

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***be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-40

40. **(U)** Section 6.0, Evaluation of US-APWR Protective Strategy and Security Response to the DBT (Page 13 of HAE Report): Describe MHI assumptions and margin considered for uncertainties for equipment failures (i.e., a weapon jamming, night vision equipment failure, personnel protective equipment, communications equipment failure or in-operability, damage to a weapon exposed through fire port, etc.) that could increase response times or impact effectiveness of performing response functions.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Human performance is affected by environmental and physical conditions; along with heightened state of stress. Uncertainties are address by incorporating margin of time or assuming unavailability or failures as defense-in-depth for evaluating response required.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-41

41. **(U)** Section 6.0, Evaluation of US-APWR Protective Strategy and Security Response to the DBT (Page 13 of HAE Report): Describe the specific DFPs that are credited in providing cross-fire coverage and which DFPs may be assumed unavailable due to suppressive fire or other adversaries' actions for postulated attack scenarios. Describe responder's opportunities to acquire or engage adversaries (i.e., time adversaries are in view and distances within field of fire) before obstructions or loss of target due to cover and concealment from the proposed locations of each DFP. Describe evaluations of each sector of the plant (i.e., N,S, E, W, NE, NW, SE, and SW) what obstructions would be of concern for unobstructed lines of sight from DFPs for overlapping fields of fire and the DFP's responsible fields of fire. Illustrate overlapping fields of fire for the proposed DFPs.

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**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Overlapping fields of fire from DFPs provides for reliability of interdiction of adversaries' tasks and implementation of MHI denial of access to a VA. Additional information and MHI depictions of fields of fire relied is needed for determining adequacy of proposed placement of DFPs (Figure 1) to understand and evaluate the layered protection and reliability of response between the PA and VA.

**(U) Note Applicable to RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-42

42. **(U) Section 6.0 Evaluation of US-APWR Protective Strategy and Security Response to the DBT (Page 13 of HAE):** Describe the maximum distance for target acquisition in each responsible field of fire from each DFP indicated in Figure 1. Clarify how vertical distances of DFPs above ground (if provided) were considered in determining maximum distance and provide assumptions regarding probabilities of hit or kill assumed in the expert panel evaluation on neutralizing adversaries.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Overlapping fields of fire from DFPs provides for reliability of interdiction of adversaries tasks and implementation of MHI denial of access to a VA. Additional information and MHI depictions of fields of fire relied is needed for determining adequacy of proposed placement of DFPs (Figure 1) to understand and evaluate the layered protection and reliability of response between the PA and VA.

**(U) Note Applicable to RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-43

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43. (U) Section 6.2, General Assumptions for the Evaluation (Page 14 of HAE Report): Describe technical basis, assumptions, and time lines that support statements that certain tactical attack scenarios evaluated were determined to “be not advantageous” to the adversaries. Describe what attack scenarios were identified and eliminated based on what criteria. Discuss how physical layout and arrangement of most attractive target sets provides the basis for eliminating the tactical approach for adversaries and whether proposed layout of DFPs contributed or is credited in that determination. Clarify whether these scenarios, considered not advantageous, are bounded within defensive strategy of scenarios that were considered to be most challenging to responders or most advantageous to the adversaries.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. MHI postulated adversaries attack scenarios that were considered credible and determined others to be not credible and were not further developed. Additional information is needed on how MHI’s evaluation considered all credible scenarios specific to the US-APWR design and how it was systematically eliminated to arrive at the final set of credible scenarios for determining protection against the DBT. Provide sufficient details of MHI’s evaluation to allow the NRC staff to understand how MHI arrived at the conclusion of not advantageous or if applicable bounded by scenarios that were considered.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-44

44. (U) Section 6.2, General Assumptions for the Evaluation (Page 14 of HAE): Describe the technical basis and assumptions for the statement in Section 6.2.1 regarding the DBT vehicles (i.e., all types described in RG 5.69). Include design and performance requirements and assumptions for the PA barriers that prevent effective applications of certain DBT type vehicles. Discuss how the design requirements of the VBS address or provide robustness against possible defeat methods within the capabilities of the DBT. Include discussion of MHI assumptions for rate of travel by vehicles, compared to foot travel, as it relates to affecting probability neutralization of moving targets.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect standard target sets from the adversarial characteristics of the DBT. Additional information is needed to determine how MHI considered all types of DBT vehicles that may be used by

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adversaries and how the design would prevent use or protect against the various types of vehicles.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-45

45. ***(U) Section 6.2, General Assumptions for the Evaluation (Page 14 of HAE Report):*** Describe MHI's design and performance requirements for protection of DFPs against suppressive fire. Include assumptions and standard design requirements for providing required lines of sight horizontally and vertically within the responsible fields of fire from proposed DFPs indicted in Figure 1.

***(U) Regulatory Basis:*** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design proposed design features to protect target sets from the DBT. Additional information is needed on MHI design requirements and assumptions for assuring availability and effectiveness of DFPs under suppressive fire.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-46

46. ***(U) Section 6.2.2, General Assumptions for the Evaluation (Page 15, 3<sup>rd</sup> bullet, of HAE Report):*** Provide descriptions regarding what "systems, equipment, components, and structures located outside of the protected area/VA can be rendered inoperable." Specifically clarify that all US-APWR vital equipment are located within a VA barrier, and would be protected by two barriers in accordance with regulatory requirements.

***(U) Regulatory Basis:*** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Complete and accurate information is needed to determine regulatory requirements for vital equipment are met

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***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-47

47. ***(U) Section 6.2.2, General Assumptions for the Evaluation (Page 15, 5<sup>th</sup> bullet, of HAE Report):*** Describe design and performance requirements for the interface of the design of the plant security system with other plant systems (such as elevator recall as stated in this bullet) and security features (e.g., active barriers, assessment cameras, primary and secondary power supply, etc.) credited for meeting design commitments and assumptions for implementing responses of postulated attack scenarios.

***(U) Regulatory Basis:*** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)).

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-48

48. ***(U) Section 6.2.2, General Assumptions for the Evaluation (Page 15, 6<sup>th</sup> bullet, of HAE Report):*** Provide description of design requirements of plant public address (PA) system for assurance of audibility of voice communications over ambient noise of plant systems. Describe capabilities available of the PA systems to provide continuity of two communications between responders and CAS (or SAS) and between responders. Clearly state whether the PA system would or would not be subject to DBT adversarial characteristics for disrupting communications.

***(U) Regulatory Basis:*** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)).

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information***

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*should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-49

49. **(U)** Section 6.2.2, General Assumptions for the Evaluation (Page 15, 7<sup>th</sup> bullet, of HAE Report): Describe the technical basis and assumptions regarding the west, east, and south sectors of the physical layout US-APWR design. Include description of MHI's technical basis for the assumptions in this section of the report and how the US-APWR design would affect tactical approaches from these sectors. Include MHI's evaluation and assumptions regarding the availability of cover and concealment, lines of sight, and opportunities for engagement.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Overlapping fields of fire from DFPs provides for reliability of interdiction of adversaries' tasks and denial of access to a vital area.

**(U)** Note Applicable to RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-50

50. **(U)** Section 6.2.2, General Assumptions for the Evaluation (Page 15, 8<sup>th</sup> bullet, of HAE): Provide the minimum distance determined to be "appropriate safe standoff distance." Provide clarification of last statement in this bullet. Specifically address the technical basis for how the design of the VBS would preclude tactics or equipment that is available to the person and not associated with a vehicle.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design proposed design features to protect target sets from the DBT. Additional information is needed on MHI design requirements and assumptions for a VBS.

**(U)** Note Applicable to RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

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13.06-51

51. **(U)** Section 6.2.2, General Assumptions for the Evaluation (Page 15, 9<sup>th</sup> bullet, of HAE Report): Describe design and performance requirements supporting the assumptions for detection. Specifically describe the design requirements that ensure detection under all environment factors and prevent physical defeat (i.e., by-pass) or system by-pass. Discuss whether design requirements include applying complementary detection systems to provide assurance of reliability and robustness of a detection system to meet MHI assumption for detection.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)).

**(U)** Note Applicable to RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-52

52. **(U)** Section 6.2.2, General Assumptions for the Evaluation (Page 14 of HAE Report): 10<sup>th</sup> bullet. Assumptions stated (first and second sentence) are not consistent with regulatory requirements and do not sufficiently considered capabilities of the DBT (i.e., active and passive insider assistance in accordance with 10 CFR 73.1(a)(1)(B)). Describe assumptions and physical design features or systems that are credited to facilitate physical access controls. Discuss design features that MHI plans to provide for protection of security significant systems, including active barriers and/or weapon systems.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Regulatory Guidance 5.69 should be considered in addressing insider assistance.

**(U)** Note Applicable to RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

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13.06-53

53. **(U)** Section 6.2.2, General Assumptions for the Evaluation (Page 16 of HAE Report): Describe technical basis and assumptions for how MHI addresses effectiveness of response and the probabilities for neutralization. Include discussions of margin to address uncertainties for outcomes that are an advantage or disadvantage to a responder or an adversary. Assumptions stated based on force-on-force exercise may not adequately or fully provide outcomes of postulated scenarios based on the adversarial characteristics of the DBT. Detailed evaluation of the postulated scenarios based on evaluating expected physical and environmental conditions and human factors that must be considered in the effectiveness of response and the determination of likely outcome for the probability of neutralization (i.e., probabilities of hits and kills) analyzed. Example: There is lower probability of interdiction by a responder in a DFP that is under suppressive fire and result in a different outcome than the one indicated in the third sub-bullet, due to ineffectiveness.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Human performance is affected by environmental and physical conditions. Uncertainties are address by incorporating margin of time or assuming unavailability as defense-in-depth for evaluating response actions to provide a defensible technical basis for reliability of security response.

**(U)** Note Applicable to RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-54

54. **(U)** Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy (Page 17, 1<sup>st</sup> and 2<sup>nd</sup> bullet, of HAE): Describe assumptions for responders that may be performing non-response functions or deployed within the VA at any give time with varying distance from designated deployment locations. Specifically discuss travel distances and associated times for travel (horizontal and vertical) from the most remote location that is addressed in time line calculations.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Reasonable assumptions are needed to reflect performance of tasks. The US-APWR proposed design features to protect standard target sets from the DBT and discussed time lines associated with deployment of responders to designated DFPs.

**(U)** Note Applicable to RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should*

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***portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-55

55. **(U)** Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy (Page 17, 1<sup>st</sup> and 2<sup>nd</sup> bullets, of HAE): Describe assumptions for building structures and protection of penetrations that would allow MHI to conclude that the adversaries would be channeled to proposed fixed DFPs indicated in Figure 3. Describe assumptions and design and performance requirements for fixed DFPs within VAs. Illustrate the fields of fire required for the design and locations of the DFP to provide effective coverage of access routes and possible bypass (e.g., cat walk, pipe chases).

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Overlapping fields of fire from DFPs provides for interdiction of adversaries and denial of access. Additional information and clarification of fields of fire relied on for determining adequate placement of internal DFPs are needed to understand and evaluate the reliability of the security response.

**(U)** Note Applicable to RAI Responses: ***The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-56

56. **(U)** Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy (Page 17, 3<sup>rd</sup> bullet, of HAE): Clarify whether the intent of the proposed protective strategy requires the assignment to the “one commanding security officer” to perform both security incident command functions and perform functions of monitoring the security systems and communications (e.g., assessment, alarm response, radio dispatching, communicating off-site, etc.). Discuss how MHI intends on meeting regulatory requirements and the assurance of the CAS (and SAS) operator to perform required functions in the event of a security event.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Clarification is needed to understand statement indicated in the DCD.

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***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-57

57. ***(U) Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy (Page 17, 4<sup>th</sup> bullet, of HAE):*** Provide detailed descriptions and assumptions for the fields of fire and provision for overlapping fields of fire for the physical US-APWR design and location for each exterior DFPs indicated in Figure 1. Describe any engineered delay barrier systems that would be considered in the physical layout of plant and location of DFPs to ensure adequate opportunities for security responders to acquire and engage adversaries and the assurance of overlapping fields of fire. Describe the defense-in-depth (i.e., layered-protection) for assuring that an adversary is engaged along its path of travel beginning at PA boundary, isolation zone, plant area between the VA and isolation zone, and outer boundaries of the VA, with overlapping fields of fire. Specifically describe how locations of DFPs will allow security responders to engage adversaries along path of travel from the PA toward VA. In addition, clarify that the proposed locations of DFPs is bounding for all modes of operation (e.g., refueling outage) or whether certain modes of operation would be addressed as a site specific condition in a COL application (i.e., COL action or information item).

***(U) Regulatory Basis:*** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to assist in protection of target sets. Overlapping fields of fire from DFPs allows for interdiction of adversaries and achieves MHI strategy of denying access to a vital area. Additional information is needed to determine adequacy of DFPs described in Figure 1 and evaluate the adequacy of the security response.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-58

58. ***(U) Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy (Page 17 of HAE):*** Describe MHI assumptions regarding a security responder

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acquisition of target (i.e., physical profile – front or side view) based on varying angles of view from DFPs on determining the probabilities for neutralizing adversaries.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets. Overlapping fields of fire from DFPs provides for reliability of interdiction and denial of access. Additional information is needed to determine adequacy of Figure 1 DFPs and evaluation of the reliability of security response.

**(U) Note Applicable to RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-59

59. **(U) Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy (Page 17 of HAE):** Describe assumptions and technical basis and details for lines of sight and fields of fire for DFPs located in the south, east, west, southeast and southwest sectors of the US-APWR proposed exterior physical security layout (Figure 1). Specifically, discuss assumptions regarding the ability of designated DFPs interior of the perimeter DFPs to engage and provide overlapping fields of fire. Include discussion of how proposed DFPs would have clear lines of sight for a layered protection and provide assurance of ability to interdict adversaries. Describe and clarify whether any given portions of the VA barriers are within line of sight from one or multiple DFPs to ensure abilities to interdict adversaries.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Overlapping fields of fire from DFPs provides for reliability of interdiction and denial of access. Additional information is needed to determine adequacy of Figure 1 DFPs and evaluate the reliability of security response between the PA and VA.

**(U) Note Applicable to RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-60

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60. (U) Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy (Page 18, 1<sup>st</sup> bullet, of HAE): Provide location of the “Response Leader” and clarify whether he/she is an additional security responder to the proposed numbers indicated in previous discussions.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). In addition, 10 CFR 73.45(b) through (g) requires physical protection system performance capable of protecting against the DBT. Clarification is needed to understand statements indicated in the DCD.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-61

61. (U) Attachment 2, (Page 35 of HAE) Discuss design requirements and assumptions of DFPs to protect occupants from the use of chemical agents that could affect security response capabilities and/or performance tasks of times/rates indicated in Attachment 2.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets. Adequate design of DFPs provides for reliability of interdiction. Additional information is needed to determine whether the adversary characteristics of DBT were fully considered for design of DFPs

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-62

62. (U) Attachment 2 (Page 35 of 59 HAE): Describe task times (i.e., rate per linear feet or meters) for vertical travel for security responders and adversaries up and down stairs. Provide clarification and assumptions for differences of rate of travel for security responders and adversaries (e.g., what is the margin for uncertainties, what can be

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expected typical industry training and qualification requirements for armed responders). Clarify how rates of travel are applied for an adversary (or a responder with equipment) moving using cover and concealment (i.e., an increase tasks time for a distance traveled) and whether MHI postulated time lines considered such movements.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Reasonable assumptions are needed to reflect performance of tasks.

***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-63

63. **(U) Attachment 2, Scenarios 1 – 7 (Pages 38-57):** Describe in each scenario the security responder's actions in the affected sectors of the plant to the attack of adversaries. Provide detailed assumptions of responders engaging adversaries in the column identified as "Security Response." Describe and illustrate the following information on the evaluation of the time lines as applicable for both adversaries and responders:

- numbers available and their tasks or responsibilities
- target sets protected by security force or that being targeted by adversaries
- the most likely pathways of travel using tactical movement (shorter time/higher risk)
- the most likely pathways using cover and concealment (longer time/lower risk)
- time-lines of responders who are deployed or required (primary locations) to be redeployed (secondary locations)
- identify areas of cover and concealment for deploying responders or adversaries
- margin provided in time-lines for responders and adversaries (e.g., weigh of carried equipment, clearing weapon, loading weapon, switching and opening shooting portals, donning gas mask, etc.)

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets. Overlapping fields of fire from DFPs provides for reliability of interdiction and denial of access. Additional information is needed to understand and evaluate the adequacy of the security response.

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***(U) Note Applicable to RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-64

64. **(U)** In Mitsubishi Heavy Industries (MHI) “US-APWR Physical Security Element Review Report,” dated September 2008, UAP-SGI-08001 R1, Section 2.0, MHI states that vital equipment is any equipment, system, device, or material, where failure, destruction, or release could directly or indirectly endanger the public health and safety by exposure to radiation. MHI further states that vital equipment includes equipment or systems which would be required to function to protect public health and safety following such failure, destruction, or release. The vital equipment list provided in Appendices B, C and D.

- **(U)** Describe the process and assumptions used to generate the vital equipment list.
- **(U)** Clarify how MHI addressed the containment and reactor coolant system as vital equipment, as these are not included in the Appendices, but is included in summary list contained in Section 2.1.
- **(U)** Confirm that the list of fire areas contained in Appendix A and the addition of the locations shown in Figure 11 represent the complete list of plant equipment locations. If not, provide a list the remaining locations that were excluded and identify any safety-class equipment that is included in these remaining areas (safety-class equipment that is not considered to be vital).

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Title 10 CFR 73.2 defines vital equipment as “equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. To adequately protect against the DBT of radiological sabotage, a design applicant must first identify a complete and accurate list of vital equipment and subsequently target sets for which the design of a physical protection systems and COL security programs are provided to meet general performance requirements of 10 CFR 73.20, 73.45, and 73.55.

13.06-65

66. **(U)** in the “US-APWR Physical Security Element Review Report,” dated September 2008, UAP-SGI-08001 R1, Appendices B, C and D, MHI did not address equipment

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associated with containment isolation. Provide additional justification for the apparent exclusion of protective or mitigating capabilities associated with containment isolation as vital equipment.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Title 10 CFR 73.2 defines vital equipment as “equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. To adequately protect against the DBT of radiological sabotage, a design applicant must first identify a complete and accurate list of vital equipment and subsequently target sets for which the design of a physical protection systems and COL security programs are provided to meet general performance requirements of 10 CFR 73.20, 73.45, and 73.55.

13.06-66

72. **(U)** In the “US-APWR High Assurance Evaluation Assessment,” dated September 2008,” UAP-SGI-08002 R0, MHI does not describe the systematic process used to develop target set analysis. Provide descriptions for the following:

- (U)** - Target identification process including how the process was risk-informed
  - Methodologies used to determine and group the target set equipment
  - Screening criteria for achievable targets
  - Process for target set generation
  - Characterization and screening process used for identification of attractive target sets
  - Description of alternative approaches used such as prevention set analysis (if applicable)
  - Target Set Analysis Team qualification
  - List of input documents used in target set analysis (i.e., site layout drawings, PRA analyses, table-top analyses, etc.)
  - Process for considering cyber attacks on target sets.
  - Screening criteria and bases for attractive targets sets and achievable targets

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Title 10 CFR 73.2 defines vital equipment as “equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. To adequately protect against the DBT of radiological sabotage, a design applicant must first identify a complete and accurate list of vital equipment and subsequently target sets for which the design of a physical protection systems and COL security programs are provided to meet general performance requirements of 10 CFR 73.20, 73.45, and 73.55. The results of the target set analysis and the analyses and methodologies used to determine and group the target set equipment or elements should be contained in the applicant’s security assessment submittal for determining completeness and accuracy.

**(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must**

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***be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-67

73. **(U)** In the “US-APWR High Assurance Evaluation Assessment,” dated September 2008,” UAP-SGI-08002 R0, MHI states that it identifies the complete list of achievable targets. List and describe those targets considered not achievable with their basis for exclusion from achievability.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Title 10 CFR 73.2 defines vital equipment as “equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. To adequately protect against the DBT of radiological sabotage, a design applicant must first identify a complete and accurate list of vital equipment and subsequently target sets for which the design of a physical protection systems and COL security programs are provided to meet general performance requirements of 10 CFR 73.20, 73.45, and 73.55.

**(U) Note Applicable to All RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-68

76. **(U)** In “US-APWR High Assurance Evaluation Assessment,” dated September 2008,” UAP-SGI-08002 R0, MHI does not appear to identify whether all plant modes were considered in the target set analysis. Describe how each plant operating mode is assessed in the target set analysis.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Title 10 CFR 73.2 defines vital equipment as “equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. To adequately protect against the DBT of radiological sabotage, a design applicant must first identify a complete and accurate list of vital equipment and subsequently target sets for which the design of a physical protection systems and COL security programs are provided to meet general

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performance requirements of 10 CFR 73.20, 73.45, and 73.55. All modes of plant operations must be considered for completeness and accuracy of target sets

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-69

77. **(U)** In “US-APWR High Assurance Evaluation Assessment,” dated September 2008,” UAP-SGI-08002 R0, MHI does not describe how equipment maintenance is considered in the target set analysis. Describe how equipment maintenance is considered in the target set analysis. Include in your response a list of major maintenance activities associated with vital equipment and how these were considered in the target set analysis.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Title 10 CFR 73.2 defines vital equipment as “equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. To adequately protect against the DBT of radiological sabotage, a design applicant must first identify a complete and accurate list of vital equipment and subsequently target sets for which the design of a physical protection systems and COL security programs are provided to meet general performance requirements of 10 CFR 73.20, 73.45, and 73.55.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-70

80. **(U)** Discuss how the results and insights of the US-APWR probabilistic risk assessment (PRA) were used in preparing the vital equipment list.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Title 10 CFR 73.2 defines vital equipment as “equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health

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and safety by exposure to radiation. To adequately protect against the DBT of radiological sabotage, a design applicant must first identify a complete and accurate list of vital equipment and subsequently target sets for which the design of a physical protection systems and COL security programs are provided to meet general performance requirements of 10 CFR 73.20, 73.45, and 73.55.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-71

90. (U) The following are suggested clarifications, verification to ensure consistency, or editorial changes to various texts in section of the HAE Report:

- (U) Section 4.4, Evaluation of US-APWR Protective Strategy and Security Response to the DBT (Page 6 of HAE Report): Verify consistency and the use of acronym for SSC or SSCs.
- (U) Section 5.2, Physical Security Design Features and Systems (Page 10, 4<sup>th</sup> full bullet, of HAE Report): Clarify that vehicle searches for contrabands and explosives would be performed prior to admittance to the PA, along with MHI assumptions indicated that search of personnel, material and packages.
- (U) Section 5.2, Physical Security Design Features and Systems (Page 11, 2<sup>st</sup> full bullet, of HAE Report): Indicate capabilities for communications with local law enforcement.
- (U) Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy, (Page 17, 1<sup>st</sup> bullet, of HAE Report): Clarify whether a MHI assumption is that the SAS will be manned, in accordance with 10 CFR 73.55(e) and (f).
- (U) Attachment 2, Plant Security Response to DBT – Assumptions (Page 35, 1<sup>st</sup> bullet, of HAE Report): Reference of Sandia Laboratory publications should indicate Section 10 in lieu of “Section 8.6.”

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Clarification is needed for text indicated for accurate and completeness of information in the application.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must***

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***be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-72

91. **(U)** Section 4.4, Evaluation of US-APWR Protective Strategy and Security Response to the DBT (Page 7 of HAE Report): Clarify whether the determination of the initial target sets (prior to determining attractiveness that results in a final target sets) included postulated scenarios that exceed the threshold hours indicated in the second paragraph of Page 7 and describe how the initial set was reduced based on the criteria of time to core damage.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). An adequate systematic process that provides a complete and accurate determination of the US-APWR design standard target sets is the building blocks for determining required and adequate protection against the DBT. The thorough and systematic approach of how MHI determined attractive and final target sets, and what was eliminated, provides the assurance for adequate determination of target sets that must be protected. A defensible technical basis for determining standard target sets based on time to core damage time has not been provided. Industry's guidance for conduct of force-on-force exercise within context of inspection (i.e., constraints and artificiality) does not provide a defensible licensing basis that requires to postulate all credible scenarios for core damage based on the full compliment of the DBT.

**(U)** Note Applicable to All RAI Responses: ***The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-73

92. **(U)** Section 5.1, US-APWR Design Features (Page 9 of HAE Report): Provide and clarify the design and performance requirements for VA boundary walls. Clearly state the specific thickness of walls, ceiling, and floor constructions credited for security delay (i.e., function as a barrier) and their locations. Describe the design and performance requirements of the walls and doors for resisting breaching and blast resistance. Identify VA boundary walls or doors that do not meet minimum performance indicated and what design features will be provided for equivalent security functions.

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**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits designed features of the US-APWR such as structural components for delays. Additional information is needed to understand the assumptions of design features that have been credited to provide security functions. MHI appears to state in the text that not all components of the VA boundary, walls, or doors are at least of certain minimum thickness or is constructed for resisting breaching or blast for delay of adversaries.

**(U) Note Applicable to All RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-74

93. **(U) Section 5.2, Physical Security Design Features and Systems (Page 9, Footnote No.1, of HAE Report):** Provide design and performance requirements for protection of equipment hatches that may provide a means of penetration at the VA boundary. Clarify how they are protected to provide the same security barrier integrity as the remaining VA boundary.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits designed features of the US-APWR such as structural components for delays. Additional information is needed on the assumptions of design features that provide security functions.

**(U) Note Applicable to All RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-75

94. **(U) Section 5.2, Physical Security Design Features and Systems (Page 10 of HAE Report):** Provided minimum standoff distance required for placement of VBS to protect VA and equipment needed for safe shutdown or maintaining integrity of system and

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availability of CAS/SAS and response force, against characteristics of the DBT land and water borne vehicles.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits designed features of the US-APWR such as structural components for delays. Additional information is needed on the assumptions of design features that provide security functions. Figure 1 of the HAE identifies proposed location of VBS, but no technical basis has been provided of its adequacy for stand off distance to protect required safety and security functions.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-76

95. **(U) Section 5.2, Physical Security Design Features and Systems (Page 10, 1<sup>st</sup> full bullet, of HAE Report):** Clarify whether the statement applies to water-based assault or only to land-based assault. Clearly state that the minimum distance that adversaries must travel in postulated scenario and figures would be the minimum design requirement for the locations of PA fencing, to ensure validity of assumptions and technical basis of postulated bounding attack scenarios.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits design features of the US-APWR, such as structural components, for delays. Additional information is needed on the assumptions of the design features that provide security functions and the proposed location of the PA.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-77

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96. **(U)** Section 5.2, Physical Security Design Features and Systems (Page 11, 1<sup>st</sup> full bullet, of HAE Report): Provide location of SAS for US-APWR design of a single unit reactor. Describe the design and performance requirements for a single-unit reactor that would protect the functions of both the CAS and SAS.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Additional information is needed on design requirements to provide protection of SAS against the DBT. MHI describes design requirements for locating CAS and SAS for a two unit reactor, which would not be fully applicable for a single unit reactor.

**(U)** Note Applicable to All RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-78

97. **(U)** Section 5.2, Physical Security Design Features and Systems (Page 11, 1<sup>st</sup> full bullet, of HAE Report): Provide clarification of the design and performance requirements for providing redundancy of security functions of CAS at the SAS. In addition, clarify whether the MHI assumptions for a COL is that the SAS would be continuously manned.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). MHI describes design requirements for locating CAS and SAS for a two-unit plant configuration, which would not be fully applicable for a single unit reactor. Additional information is needed on the assumptions of related to CAS and SAS.

**(U)** Note Applicable to All RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-79

98. **(U)** Section 5.3, US-APWR Design Enhancements (Page 12, 1<sup>st</sup> full bullet, of HAE Report): Provide the design and performance requirements, including specific assumptions, for blast resistant vault doors incorporated for access control and delay. In

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addition, clarify whether door number V7 in Figure 3 is a door meeting assumptions of the 1<sup>st</sup> bullet.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits designed features of the US-APWR such as structural components for delays. Additional information is needed on the assumptions of design features that provide security functions.

**(U) Note Applicable to All RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-80

99. **(U) Section 5.3, US-APWR Design Enhancements (Page 12, 4<sup>th</sup> full bullet, of HAE Report):** Provide the design and performance requirements, including specific assumptions, for internal defensive fighting positions (DFPs) and barriers systems that have been identified as design enhancements. Include descriptions of the design characteristics such as elevation, bullet resistant rating, and fields of fire for each DFP. Describe the design characteristics and performance of fixed and deployable barrier systems for the delay and the assumption of delay time(s). Clarify how deployable barriers are design and functions to provide delays.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits designed features of the US-APWR such as structural components for delays. Additional information is needed on the assumptions of the design features that provide security functions.

**(U) Note Applicable to All RAI Responses:** *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-81

100. **(U) Section 6.2.1, Scope and Approach for Evaluation (Page 14, 1<sup>st</sup> paragraph, of HAE Report):** Provide analysis of postulated scenarios for adversaries attack that

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include access point from the north direction of the US-APWR design plant and proposed layout of DFPs in Figure 1. Provide assumptions and technical basis for MHI assessment and conclusions regarding postulated scenarios from the north, northeast, and northwest sectors of the proposed two-unit plant layout. Describe and clearly indicate how would MHI's postulated scenarios for two-unit bound or changes for a one-unit plant for the design certification.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. MHI postulated adversaries attack scenarios that were considered credible and determined others to be not credible and were not further developed. Additional information is needed to understand how MHI evaluation considered all credible scenarios specific to the US-APWR design and how it systematically eliminated certain avenues of approach to arrive at the final set of credible bounding scenarios for determining protection against the DBT.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-82

101. **(U) Section 6.2.2, General Assumptions for the Evaluation (Page 15, 2<sup>nd</sup> bullet, of HAE Report):** Provide clarification and basis for the assumption stated regarding “coincident with an independent single failure or independently initiated design basis event.” Describe how MHI considered or addressed insider knowledge of plant conditions related to possible single failure and the initiation of or on-going design basis event.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. MHI postulated adversary attack scenarios that were considered credible and determined others to be not credible and were not further developed. Additional information is needed on how MHI evaluation considered all credible scenarios specific to the US-APWR design and assumptions for systematically arriving at a final set of credible scenarios for determining protection against the DBT.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information***

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***should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-83

102. **(U)** Section 6.2.2, General Assumptions for the Evaluation (Page 15, 7<sup>th</sup> bullet, of HAE Report): Provide technical basis and assumptions regarding “not advantageous” for the use of terrain vehicles (all types) based on the design of the VBS and physical terrain. Describe the design assumptions for the characteristic of the VBS and the terrain characteristics that are required to meet the stated design assumption. Clarify whether there would be a COL action item for preparing site specific physical terrain in accordance with design assumptions indicated.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits designed features of the VBS and terrain such that certain off-road vehicles of DBT adversarial characteristics need not be considered in postulated scenarios. Additional information is needed on the design and performance requirements and credited features (site terrain) that provide security functions.

**(U)** Note Applicable to All RAI Responses: ***The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-84

103. **(U)** Section 6.2.2, General Assumptions for the Evaluation (Page 15, 9<sup>th</sup> bullet, of HAE Report): Provide design and performance requirements of an intrusion detection system that meets the stated hypothetical probability of detection. The probability indicated is that 100% of the time, the adversaries will be detected at the PA. Clarify whether the assumptions include administrative controls (i.e., security officers observations of PA boundaries) along engineered systems to provide the stated probability of detection and describe how weather and environmental conditions are addressed by design.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Proposed physical security design credits designed features of the US-APWR such as structural components for delays. Additional information is needed on the

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assumptions of design features that provide security functions, including that IDS cannot be disabled without detection and the timely response by plant security force.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-85

104. ***(U) Section 6.2.2, General Assumptions for the Evaluation (Page 16, 5<sup>th</sup> bullet, of HAE Report):*** Provide assumptions (analogous with that stated in the 5<sup>th</sup> bullet) regarding neutralization of a responder in a scenario where he/she does not survive when engaged by two or more adversaries with overlapping fields for fire, and in events that adversaries uses the full compliment of DBT equipment. Verify that such assumptions are applied consistently for all postulated scenarios.

***(U) Regulatory Basis:*** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Human performances are affected by environmental and physical conditions. Assumptions and uncertainties and for neutralization needs to be clearly stated for both adversaries/responders to provide a defensible technical basis for reliability of protection against the DBT.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-86

105. ***(U) Section 6.2.2, General Assumptions for the Evaluation (Page 16, 6<sup>th</sup> bullet, of HAE Report):*** Revised the assumptions to include the full compliment of the DBT equipment for the adversaries. Provide technical basis and assumptions that allows for MHI to conclude that neither one has advantage and would allow for a conclusion that “neither side survives.” Review and verify that such assumptions are defensible and can be applied for postulated scenarios

***(U) Regulatory Basis:*** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-

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APWR design incorporates proposed design features to protect target sets from the DBT. Human performances are affected by environmental and physical conditions. Uncertainties are addressed by incorporating margin of time or assuming unavailability as defense-in-depth for evaluating response actions to provide a defensible technical basis for reliability and availability of protection against the DBT. Assumptions stated did not address the technical basis for “advantage” or address equivalent tactical capabilities.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-87

106. ***(U) Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy, (Page 17, 1<sup>st</sup> bullet, of HAE Report):*** State clearly the number of responders in each of the units and include the specific armed responders designation number as described in Page 36 and as postulated in scenarios. The responder designation numbers should not be repeated, to allow clear indications of the assumption for total numbers and responder actions.

***(U) Regulatory Basis:*** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The statements in the text did not clearly indicate the number of armed responders in non-radiological portion of the VA for each unit for a dual-unit.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-88

107. ***(U) Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy, (Page 17, 1<sup>st</sup> bullet, of HAE Report):*** Provide clarification that the MHI evaluation of interior response used the worst case assumptions of locations in determining response time for each armed responder. Revise, as required, the time line assumptions for armed responders performing surveillance or patrol functions within the VA. Describe the assumptions for protection of responders on patrol to survive an adversary's attack from locations interior or exterior patrols to designated initial response positions. Clarify

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if responders on patrol or other duties are limited to a single unit or if he/she may be performing duties in either unit, and discuss how this was considered in time lines for initial response.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Overlapping fields of fire from DFPs provides for reliability of interdicting adversaries' tasks and denial access to a vital area. Additional information and MHI depictions of fields of fire relied on for determining adequacy of the proposed response within the powerblock, placement of internal DFPs, and to evaluate the reliability of the response to deny access to VA equipment.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-89

108. **(U) Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy, (Page 17, 2<sup>nd</sup> bullet, of HAE Report):** Clarify the specific number of armed responders in each of the units analyzed. Clearly identify the specific responder designation numbers as described on Page 36 and postulated scenarios. The responder designation numbers should not be repeated in the two units, to allow clear indications of the assumption for total numbers and responder actions.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The statements in the text did not clearly indicate the number of armed responders in non-radiological portion of the VA for each unit for a dual-unit. The statements did not clearly indicate the numbers of armed responders in non-radiological portion of the VA for each unit for a dual-unit.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-90

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109. **(U)** Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy, (Page 17, 2<sup>nd</sup> bullet, of HAE Report): Provide evaluation that includes and demonstrates that the worst case response time (e.g., most remote location or greatest travel time) for each of the responders would be less than the anticipated adversarial task times, demonstrating that the responders would be available to interdict adversaries in postulated scenarios. Clarify whether a responder on patrol is limited or assigned to a single unit or assigned to performing duties in both units. If a responder must travel from a duty location in one unit to a response position in another unit, describe and provide the response times.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates design features to protect target sets from the DBT. Response times used for postulated scenarios should be worst case and not the best case to ensure reliability and availability of responders to interdict adversaries.

**(U)** Note Applicable to All RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.*

13.06-91

110. **(U)** Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy, (Page 17, 1<sup>st</sup> and 2<sup>nd</sup> bullet, of HAE Report): Provide a clarifying statement on whether the same “ready room” is used by both the responders assigned to radiological and non-radiological area of responsibilities in the VA. Provide assumptions whether designation of radiological areas has an impact of delaying response time-lines or access to route of travel. Discuss whether radiological conditions (posting) would change during modes of operations and how the response assumptions have addressed such changes.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates design features to protect target sets from the DBT. The response time used for postulated scenarios should be worst case and not the best case to ensure reliability and availability of responders to interdict adversaries. Clarification is needed to understand how MHI considered radiological conditions in its response assumptions and postulated time lines.

**(U)** Note Applicable to All RAI Responses: *The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information*

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***should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-92

111. (U) Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy, (Pages 16, 17, and 18 of HAE Report): Clarify in the MHI discussion of command and control functions, who has the main responsibility for directing responders, and what level of command and control responsibilities for the individuals identified. Clarify assumptions of responsibility for coordinating with local law enforcement from designated location of command and control. Clearly state who is the “Response Leader” in the 1<sup>st</sup> bullet of Page 18.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates design features to protect a standard target sets from the DBT. Administrative controls (i.e., security responses) are integrated with US-APWR design features to provide the required protection. MHI discusses command and control functions for individuals. Clarification is needed to understand MHI assumptions for command and control and roles/deployment of security leadership in response.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-93

112. (U) Section 6.2.3, US-APWR Security Force Implementation of Protective Strategy, (Pages 17, 4<sup>th</sup> bullet, of HAE Report): Provide design and performance requirements for DFPs that are designated as “BBRE,” (e.g., blast and bullet resistance enclosure). Provide all assumptions (bullet resistance, blast resistances, field of fire) for postulated scenarios.

(U) Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect a standard target sets from the DBT. Adequate design of DFPs provides for reliability of interdicting adversaries.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in***

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***the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-94

113. **(U)** Attachment 2, Plant Security Response to DBT – Assumptions (Page 35 of HAE Report): Verify consistency in the application of assumptions for penetration times for vault type doors (interior and exterior) on Page 35 and the stated task time for breaching vault type doors in postulated scenarios. The time lines for postulated scenarios should be consistent with the assumptions for task time associated for the types of doors.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates design features to protect target sets from the DBT. Additional information is needed to understand MHI assumptions for adequacy of the proposed response, and to evaluate the reliability of security response to deny access to VA equipment. Assumptions indicated for vault doors (different types) are not consistently applied in postulated scenarios.

**(U)** Note Applicable to All RAI Responses: ***The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-95

114. **(U)** Attachment 2, Plant Security Response to DBT – Assumptions (Page 36, 2<sup>nd</sup> bullet, of HAE Report): Clarify and discuss whether the maximum time indicated in the 2<sup>nd</sup> bullet is the assumption for the limiting time (i.e., maximum) for responders to be deployed and the time required to deploy barriers considered in assumptions of response time lines. State clearly whether the assumptions in the 2<sup>nd</sup> bullet is the time that a responder at the most remote locations (i.e., worst case - longest travel time) must not exceed. Provide the technical basis and assumptions for the time indicated to close vault type doors and clarify whether they applied to both interior and exterior doors.

**(U)** Regulatory Basis: Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates design features to protect target sets from the DBT. Additional information is needed to understand MHI assumptions for adequacy of the proposed response, and to evaluate reliability of response to deny access to VA equipment. Assumptions indicated in the 2<sup>nd</sup> bullet appear to be a limiting condition or a

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maximum response time for responders to pass a certain point of travel in order to get to their initial response positions.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-96

115. **(U) Attachment 2, Plant Security Response to DBT – Scenario Description, Scenario 1 (Page 37-39 of HAE Report):** Provide additional details and clarification of the following:

- 6<sup>th</sup> sentence: Verify the location of defensive positions are correct and correct as required indicate “DP3” in lieu of “DP2.”
- Revise response time lines to address worst case deployment locations (i.e., greatest travel time).
- Clarify and verify that the required time to deploy barriers (1 and 2) to include time and assumptions indicated on Page 36. Specifically include the time required to confirm an attack has occurred, communications, and task time to activate barrier. Clearly state the total time indicated is the minimum time prior to deployment of barriers.
- Clarify assumptions for adversaries use of chemical agents (i.e., what is used) and provide assumptions regarding effects and knowledge of such use by responders. Provide assumptions for personal protective equipment (PPE) available and required task time of responders to don PPE.
- Provide assumptions for delay and describe design and performance requirements for access control barrier described on the 13<sup>th</sup> line of text on Page 37.
- Describe when and how armed responder(s) would be notified to relocate after the first explosion. Describe in the time lines all task times required, such as communications of information of initial explosion to the CAS operator, confirmation of locations, and subsequent command and control orders to redeploy responder(s) from initial response locations. Provide redeployment time line(s) with the additional required task times and whether the assumptions include knowledge of locations of all identified adversaries or no knowledge of proximity of adversaries that requires a more cautious re-deployment that may require using cover and concealment.
- Revise postulated scenarios to consider full options of the hand carried equipment and explosive available to adversaries to ensure the postulated scenarios is defensible and would be bounding.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Postulated scenarios establish and provide the technical basis for a protective strategy that demonstrates adequacy and reliability of security response to interdict

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adversaries and assure the denial of access to vital areas. Additional information is needed to understand how security respond and determine the adequacy of security response. MHI assumptions for security response provide the technical basis for the design of engineered physical security barriers and DFPs.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-97

116. **(U) Attachment 2, Plant Security Response to DBT – Scenario Description, Scenario 2 (Page 40-42 of HAE Report):** Provide additional details and clarification of the following:

- Revise response time lines to address worst case deployment locations (i.e., greatest travel time).
- Describe when and how armed responder(s) would be notified to relocate after the first explosion. Describe in the time line any task time required, such as communications of information of initial explosion to CAS operator, confirmation of locations, and subsequent command and control orders to redeploy responder(s) from initial response locations. Provide redeployment time line(s) with additional required task times and whether the assumptions include knowledge of locations of all identified adversaries or no knowledge of proximity of adversaries that requires a more cautious re-deployment that may require using cover and concealment.
- Provide assumptions of engagement between responders and adversaries after the first explosion at the described access point where MHI postulated that the adversaries outnumbered responders by a ratio of 2 to 1. Include details of technical basis and MHI assumptions for neutralization of adversaries (field of fire, distances, and rates of fire), assumptions of effectiveness for the responders under suppressive fire, assumptions of effectiveness of DFPs against full options of the hand carried equipment and explosives available to the adversaries.
- Revise the postulated scenarios to consider full options of the hand carried equipment and explosives available to adversaries to ensure the postulated scenarios are defensible and sufficient to bound all scenarios using the adversarial characteristics of the DBT.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Postulated scenarios establish and provide the technical basis for a protective strategy that demonstrates adequacy and reliability of security response to interdict adversaries and assure the denial of access to vital areas. Additional information is needed to understand how security respond and determine the adequacy of security

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response. MHI assumptions for security response provide the technical basis for the design of engineered physical security barriers and DFPs.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-98

117. **(U) Attachment 2, Plant Security Response to DBT – Scenario Description, Scenario 3 (Page 43-45 of HAE Report):** Provide additional details and clarification of the following:

- For the sequences of events considered in the postulated scenario, clarify whether MHI considered the lost of alternative BBRE (identified on line 10 in lieu of that identified on 5 of Page 43) as more challenging and may allow for advancement of the entire adversarial team. Verify whether the postulated scenario using an alternative BBRE would be a bounding scenario.
- Revise response time lines to address worst case deployment locations (i.e., greatest travel time).
- Describe when and how armed responder(s) would be notified to relocate after the first explosion. Describe in the time lines any task time required, such as communications of information of initial explosion to CAS operator, confirmation of locations, and subsequent command and control orders to redeploy responder(s) from initial response locations. Provide redeployment time line(s) with additional required task times and whether the assumptions include knowledge of locations of all identified adversaries or no knowledge of proximity of adversaries that requires a more cautious re-deployment that may requires using cover and concealment.
- Provide assumptions of engagement between responders and adversaries after the first explosion at described access point where MHI postulated that the adversaries out numbered responders by a ratio of 2 to 1. Include details of technical basis and MHI assumptions for neutralization of adversaries (field of fire, distances, and rates of fire), assumptions of effectiveness for responders under suppressive fire, assumptions of effectiveness of DFP against full options of the hand carried equipment and explosive available to adversaries,
- Revise the postulated scenarios to consider full options of the hand carried equipment and explosives available to adversaries to ensure the postulated scenarios are defensible and sufficient to bound all scenarios using the adversarial characteristics of the DBT.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Postulated scenarios establish and provide the technical basis for a protective strategy that demonstrates adequacy and reliability of security response to interdict

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adversaries and assure the denial of access to vital areas. Additional information is needed to understand how security respond and determine the adequacy of security response. MHI assumptions for security response provide the technical basis for the design of engineered physical security barriers and DFPs.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-99

118. **(U) Attachment 2, Plant Security Response to DBT – Scenario Description, Scenario 4 (Page 46-48 of HAE Report):** Provide additional details and clarification of the following:

- Revise response time lines to address worst case deployment locations (i.e., greatest travel time).
- Clarify and verify that required time to deploy barriers (1 and 2) to include time and assumptions indicated on Page 36. Specifically include the time required to confirm an attack has occurred, communications, or task time to activate barrier. Clearly state the total time indicated is the minimum time prior to deployment of barriers.
- Clarify assumptions for adversaries use of chemical agents (i.e., what is used) and provide assumptions regarding effects and knowledge of such use by responders. Provide assumptions for personal protective equipment (PPE) available and required task times of the responders to don PPE.
- Provide assumptions for delay and describe design and performance requirements for the access control barrier described on the 12<sup>th</sup> line of text on Page 46.
- Revise text to the indicated DP3 instead of DP2.
- Verify and correct the designation at T=100.
- Clarify the statement and descriptions regarding redeployment at T=113. MHI assumption of initial deployment would indicate that subsequent redeployment would not be required.
- Provide fields of fire for defensive positions to engage adversaries at access point (vault door) indicated at T=160.
- Describe MHI assumptions and consideration of friendly fire for defensive positions located within lines of sight and close proximity. Provide technical basis and rationale that friendly fire is not an issue.
- Revise the postulated scenarios to consider full options of the hand carried equipment and explosives available to adversaries to ensure the postulated scenarios are defensible and sufficient to bound all scenarios using the adversarial characteristics of the DBT.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the

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DBT. Postulated scenarios establish and provide the technical basis for a protective strategy that demonstrates adequacy and reliability of security response to interdict adversaries and assure the denial of access to vital areas. Additional information is needed to understand how security respond and determine the adequacy of security response. MHI assumptions for security response provide the technical basis for the design of engineered physical security barriers and DFPs.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-100

119. **(U) Attachment 2, Plant Security Response to DBT – Scenario Description, Scenario 5 (Page 49-51 of HAE Report):** Provide additional details and clarification of the following:

- Revise response time lines to address worst case deployment locations (i.e., greatest travel time).
- Describe when and how armed responder(s) at T=62 would be notified to relocate after the first explosion. Describe in the time lines any task time required, such as communications of information of initial explosion to CAS operator, confirmation of locations, and subsequent command and control orders to redeploy responder(s) from initial response locations. Provide redeploy time line(s) and whether the assumptions include knowledge of locations of all identified adversaries or no knowledge of proximity of adversaries that requires a more cautious deployment that requires using cover and concealment.
- Clarify assumptions for the adversaries use of chemical agents (i.e., what is used) and provide assumptions regarding the effects and knowledge of such use by responders. Provide assumptions for personal protective equipment (PPE) available and required task time of responders to don PPE.
- Revise the postulated scenarios to consider full options of the hand carried equipment and explosives available to adversaries to ensure the postulated scenarios are defensible and sufficient to bound all scenarios using the adversarial characteristics of the DBT.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Postulated scenarios establish and provide the technical basis for a protective strategy that demonstrates adequacy and reliability of security response to interdict adversaries and assure the denial of access to vital areas. Additional information is needed to understand how security respond and determine the adequacy of security response. MHI assumptions for security response provide the technical basis for the design of engineered physical security barriers and DFPs.

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**(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.**

13.06-101

120. **(U) Attachment 2, Plant Security Response to DBT – Scenario Description, Scenario 6 (Page 52-54 of HAE Report):** Provide additional details and clarification of the following:

- Revise response time lines to address worst case deployment locations (i.e., greatest travel time).
- Describe assumptions for the deployment of barrier at T=46. Specifically if the action is remotely actuated by design or require a human action. Describe assumptions associated with initiation event or requirement to deploy barrier.
- Describe assumptions for neutralization of adversaries in sequence of events beginning from T=62. Clarification is needed for apparent differences between outcomes for similar sequences of events between postulated Scenario 5 and this scenario.
- Describe when and how armed responder(s) at T=62 would be notified to relocate after the first explosion. Describe in the time lines any task time required, such as communications of information of initial explosion to CAS operator, confirmation of locations, and subsequent command and control orders to redeploy responder(s) from initial response locations. Provide redeployment time line(s) and whether the assumptions include knowledge of locations of all identified adversaries or no knowledge of proximity of adversaries that requires a more cautious re-deployment that requires using cover and concealment.
- Clarify that the access door described in T=59 is a blast resistant door. Verify statements on Page 12 regarding design characteristics of access doors and the assumptions for the access door indicated in this sequence of event.
- Review statements in text and table regarding neutralization of the adversary identified at T=65. Address inconsistencies and revise as required the development and sequences of the events.
- Provide the fields of fire assumed for DFP identified in sequences T=65. It is not clear that line of sight from the DFP is adequate support the assumptions of neutralization.
- Revise the postulated scenarios to consider full options of the hand carried equipment and explosives available to adversaries to ensure the postulated scenarios are defensible and sufficient to bound all scenarios using the adversarial characteristics of the DBT.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Postulated scenarios establish and provide the technical basis for a protective strategy that demonstrates adequacy and reliability of security response to interdict

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adversaries and assure the denial of access to vital areas. Additional information is needed to understand how security respond and determine the adequacy of security response. MHI assumptions for security response provide the technical basis for the design of engineered physical security barriers and DFPs.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-102

121. **(U) Attachment 2, Plant Security Response to DBT – Scenario Description, Scenario 7 (Page 55-54 of HAE Report):** Provide additional details and clarification of the following:

- Revise response time lines to address worst case deployment locations (i.e., greatest travel time).
- Clarify assumptions for the adversaries use of chemical agents (i.e., what is used) and provide assumptions regarding the effects and knowledge of such use by responders. Provide assumptions for personal protective equipment (PPE) available and required task time of responders to don PPE.
- Clarify and verify that required time to deploy barriers (1 and 2), T=30, to include time and assumptions indicated on Page 36. Specifically include the time required to confirm an attack has occurred, communications, or task time to activate barrier. Clearly state the total time indicated is the minimum time prior to deployment of barriers.
- Provide assumptions for delay and describe design and performance requirements for access control barrier described on the 13<sup>th</sup> line of text on Page 55 (i.e., T=33).
- Verify deployment of the responder to DP2 or DP3. Correct as required.
- Describe when and how the armed responder(s) at T=103 based on the event occurring at T=102 would be notified to relocate after the first explosion. Describe in the time line any task time required, such as communications of information of initial explosion to CAS operator, confirmation of locations, and subsequent command and control orders to redeploy responder(s) from initial response locations. Provide redeploy time line(s) and whether the assumptions include knowledge of locations of all identified adversaries or no knowledge of proximity of the adversaries that require a more cautious re-deployment that may requires using cover and concealment.
- Provide clarification on how a diversion was determined for event occurring at T=100 by security responders (i.e., CAS). Provide the assumptions and technical basis for the redeployment indicated at T=120 after a second event at T=118 (i.e., how does one know to abandon current position and redeploy). Describe in the time line any task time required, such as communications of information of initial explosion to CAS operator, confirmation of locations, and

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subsequent command and control orders to redeploy responder(s) from initial response locations. Provide redeploy time line(s) and whether the assumptions include knowledge of the locations of all identified adversaries or no knowledge of the proximity of adversaries that requires a more cautious re-deployment that requires using cover and concealment

- Revise the postulated scenarios to consider full options of the hand carried equipment and explosives available to adversaries to ensure the postulated scenarios are defensible and sufficient to bound all scenarios using the adversarial characteristics of the DBT.

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). The US-APWR design incorporates proposed design features to protect target sets from the DBT. Postulated scenarios establish and provide the technical basis for a protective strategy that demonstrates adequacy and reliability of security response to interdict adversaries and assure the denial of access to vital areas. Additional information is needed to understand how security respond and determine the adequacy of security response. MHI assumptions for security response provide the technical basis for the design of engineered physical security barriers and DFPs.

***(U) Note Applicable to All RAI Responses: The information addressing specific details related to security features will be safeguards information (SGI) and must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. Other security-related or not of sensitive information should be identified and protected as required. The RAI responses supplementing the DC Tier 1 document must be publicly available.***

13.06-103

71. **(U)** In the “US-APWR High Assurance Evaluation Assessment,” dated September 2008,” UAP-SGI-08002 R0, MHI does not describe the scope and conduct of the analyses for performing the security assessment.

**(U)** Provide additional description of the scope and conduct of the analyses used to perform the security assessment including:

- **(U)** Evaluation methods and models used, including limitations, including the limitation and applicability of NEI 03-11 for establishing a licensing basis
- **(U)** Descriptions of the peer reviews performed, and review team qualifications for assurance of assessment completeness and accuracy. Summary of qualifications requirements or criteria applied by MHI should be described, along with technical disciplines included for peer reviews.
- **(U)** Validation process of the input data for the security assessment

**(U) Regulatory Basis:** Same as previously stated (i.e., Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, 10 CFR 52.48, 10 CFR Part 73, and 10 CFR 73.55(a)). Title 10 CFR 73.2 defines vital equipment as “equipment, system, device, or material, the failure,

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destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. To adequately protect against the DBT of radiological sabotage, a design applicant must first identify a complete and accurate list of vital equipment and subsequently target sets for which the design of a physical protection systems and COL security programs are provided to meet general performance requirements of 10 CFR 73.20, 73.45, and 73.55.