

REQUEST FOR ADDITIONAL INFORMATION 369-2723 REVISION 1

6/18/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 14.03.12 - Physical Security Hardware - Inspections, Tests, Analyses, and Acceptance Criteria

Application Section: Chapter 2 (Tier 1) and Chapter 14 (Tier 2)

QUESTIONS for Reactor Security Rulemaking and Licensing Branch (NSIR/DSP/RSRLB)

14.03.12-19

1. **(U)** Tier 1, Chapter 2, Section 2.12.2 (Pages 2.12-2 to 2.12-7): Describe requirements for inspections, tests, analyses, and acceptance criteria (ITAAC) for new prescriptive requirements on physical protection systems or hardware in revised security rule. Specifically identify in Table 2.12-1, Physical Security Hardware Inspections, Tests, and Analyses, and Acceptance Criteria (Sheets 1-5), the appropriate requirements to address the following physical protection systems: (a) applying low light technology in accordance with 10 CFR 73.55(h)(6)(ii); (b) applying real-time and play-back/recorded video images assessment in accordance with (10 CFR 73.55(e)(7)(i)(C)); and equal and redundant central alarm station and secondary alarm station in accordance with 10 CFR 73.55(i)(4)(ii)(H)(iii) incorporated into revised security rule issued in March 2009.

(U) Regulatory Basis: Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, requires that information submitted for a design certification (DC) 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. Tier I and Tier II descriptions of ITAAC for physical security systems must address new regulatory requirements identified in 73.55(h)(6)(ii), 10 CFR 73.55(e)(7)(i)(C), and 10 CFR 73.55(i)(4)(ii)(H)(iii).

14.03.12-20

2. **(U)** Tier 2, Chapter 14, Section 14.2.12: This RAI restates the request for information previously issued in RAI No. 52-755, Question No. 14.03.12-5. Describe objectives, prerequisites, test methods, data required and acceptance criteria (i.e., test abstracts) associated with the physical protection systems and design features incorporated in the standard US-APWR design. The test abstracts should be consistent with test abstracts described in FSAR Section 14.2.12 and provide sufficient detail for complete and adequate development of inspection and test procedures as described in FSAR Section 14.2.3.5, "Test Procedure Format." Example, the descriptions of test abstract should be similar, in content and format, to Section 14.2.12.1.42, "Emergency Lighting System Preoperational Test," and Sections 14.2.12.1.94 and 14.2.12.1.95 for offsite and in-plant communications systems preoperational test and security lighting, respectively. Security systems and hardware described in MHI Technical Report UAP-

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SGI-080002 R0, "US-APWR High Assurance Evaluation Assessment," submittal by letter dated September 25, 2008, must be included in FSAR Chapter 14, Verification Program. The description of the test abstracts (i.e., "objectives, test methods, and acceptance criteria included in test procedures") for physical protection systems and features may reveal security-related or safeguards information and appropriate protection of information must be provided.

(U) Regulatory Basis: Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, requires that information submitted for a design certification (DC) 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. Tier 2 documentation currently does not provide information on required inspection, test, or analysis (ITA) of physical security systems and components. The regulatory requirement does not exclude physical security systems.

(U) NRC Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants," Section C.I.14, "Verification Programs," states that "In Chapter 14 of the FSAR, the COL Applicant should provide information concerning its initial test program for SSCs [structures, systems and components] and design features for both the nuclear portion of the facility and the balance of the plant." RG 1.206 does not exclude the physical security systems that are relied on to protect and assure safety of plant operations against the design basis threat (DBT) in accordance with 10 CFR 73.1. The required ITA of physical security systems within the scope of the DC should be addressed by the MHI.

(U) Consistent with RG-1.206, the FSAR Section 14.2.1.1, Test Program for Nuclear and Balance of Plant Systems, MHI states that "the ITP [Inspection Test Program] includes tests on systems in both the nuclear portion of the plant, the balance of plant, or non-nuclear areas. The tests conducted on safety-related systems demonstrate the capability of the SSCs to meet performance requirements and design criteria." MHI states that "the tests on non safety-related systems verify the operability of the systems and/or components and their capability to support safety-related systems, where applicable. The testing continues through the initial fuel loading, startup, and power ascension. Tests are performed to demonstrate the operation of each system independently and the operation of the systems in an integrated plant environment." In addition, FSAR Section 14.2.3, Test Procedures, states that "test procedures are developed from test abstracts contained in FSAR Section 14.2.12."

(U) Sufficient details for US-APWR DC ITAAC are needed to determine what are reasonable, complete, and acceptable ITA. The descriptions of test abstracts ensure that key ITA procedures required and subsequently develop will adequately verify that the construction and installation of security systems and components meet design and specifications and perform intended security functions. MHI response dated September 18, 2008 to RAI No. 52, Question No. 14.03.12-5 is contrary to statement that "the ITP includes tests on systems in both the nuclear portion of the plan, the balance of plant, or non-nuclear areas."

(U) MHI September 18, 2008 response to RAI No. 52, Question No. 14.03.12-5: For information, MHI response stated the following: "Security-related systems and design features are not considered important to safety and are not within the scope of

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preoperational testing as prescribed by RG 1.68 and NUREG 0800, SRP Section 14.2, "Initial Plant Test Program - Design Certification and New License Applicants." NUREG 0800, The scope of preoperational testing included in Tier 2, Subsection 14.2 is consistent with the criteria established by RG 1.68, rev. 3, section C.1. As stated in section A, Reg. Guide 1.68 "describes the general scope and depth that the NRC staff considers acceptable for ITPs for light-water-cooled nuclear power plants. Appendix A to this guide provides a representative listing of the plant SSCs and the design features and performance capabilities that should be demonstrated during the ITP." RG 1.68 does not include requirements for the testing of security-related systems. Similarly, SRP Section 14.2 specifies at pages 14.2-9 and 14.2-10 the SCCs and design features that are subject to the Initial Test Program (ITP), which do not encompass physical security related functions. Likewise, RG 1.206 does not expand the scope of preoperational testing (Tier 2) to include testing of security-related systems, but provides guidance specific in section C.11.1 to Tier 2 emergency planning ITAAC and physical security ITAAC. MHI also notes that other Design Certification Applications have not generally included security-related systems within the scope of the ITP for their designs. Accordingly, security-related systems are not within the scope of the preoperational testing program and would typically be tested as acceptance tests rather than preoperational tests. Acceptance tests are not described in the DCD as they are outside of the scope of the ITP. Acceptance tests are typically similar to preoperational tests in content and format, with different levels of review and approval. Test criteria for these systems, specified in Tier 1 ITAAC, would be verified by the COL holder using acceptance tests."

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21 or sensitive information in accordance with 10 CFR 2.390. The applicant should portion mark text in the response to request for 14.03.12-14 information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the US-APWR design. The RAI responses supplementing the DC Tier I document must be publicly available.

14.03.12-21

3. (U) Tier 2, Chapter 14, Section 14.2.12: This RAI restates the request for information previously issued in RAI No. 52-755, Question No. 14.03.12-4. Provide descriptions and discussions on construction activities, preoperational testing, and test procedures for security-related systems within the scope of the standard US-APWR design. Specifically, include descriptions on construction quality inspections activities associated with installation of security-related systems and components (e.g., conduit and cable installation, circuit integrity, separations, buried sensors, delay barriers or building walls, floors, and ceilings, protection of openings and penetrations, etc.) that may not be easily confirmed as adequate after construction without nondestructive methods.

(U) Regulatory Basis: Same as previously stated, Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, requires that information submitted for a design certification (DC) 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

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applicant. Tier 2 documentation currently does not provide information on required ITA of physical security systems and components.

(U) NRC Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants," Section C.I.14, "Verification Programs," states that "In Chapter 14 of the FSAR, the COL Applicant should provide information concerning its initial test program for SSCs [structures, systems and components] and design features for both the nuclear portion of the facility and the balance of the plant." RG 1.206 does not exclude the physical security systems that protect plant operations against the designed basis threat that is unanalyzed by the FSAR accident analyses and that is relied on to provide assurance for the safe plant operations. The required ITA of physical security systems within the scope of the DC should be addressed by the MHI.

(U) Sufficient details for US-APWR design ITAAC are needed to determine what are reasonable, complete, and acceptable ITA. The descriptions of test abstracts ensure that key ITA procedures required and subsequently develop adequately verify that the construction and installation of security systems and components meet design and specifications and meet intended security functions. MHI response dated September 18, 2008 to RAI No. 52, Question No. 14.03.12-5 is contrary to statement that "the ITP includes tests on systems in both the nuclear portion of the plan, the balance of plant, or non-nuclear areas."

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21 or sensitive information in accordance with 10 CFR 2.390. 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. The RAI responses supplementing the DC Tier I document must be publicly available.

14.03.12-22

4. (U) Tier 2, Chapter 14, Section 14.2.2, Organization and Staffing: Provide clarification regarding the applicability of descriptions in FSAR Section 14.2.2 for organization and staffing, startup organization, organizational authorities and responsibilities, plant operations and technical staff participation, and experience and qualification of supervisor personnel for satisfying the inspections and testing non-safety-related and non-nuclear systems and components such as the verification for physical security ITAAC. Indicate a specific commitment to address physical security systems and credited features.

(U) Regulatory Basis: Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, requires that information submitted for a design certification (DC) 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. Tier 2 documentation currently does not provide information on required inspection, test, or analysis (ITA) of security-related system that supports the Tier 1 descriptions of security ITAAC within the design scope for certification. The FSAR Chapter 14, Sections 14.2.2.2 through 14.2.2.5 establishes organization and processes requirements for inspection and testing. Based

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on MHI responses to RAI No. 52-755, No. 14.03.12-4 and No. 14.03.12-5, clarification, and specific indications of a commitment, is needed to understand whether MHI has fully integrated verification of security systems (i.e., non-nuclear and non-safety systems) within the umbrella of its initial test program that includes a commitment to verify the design features for the facility and the balance of the plant.

14.03.12-23

5. **(U)** Tier 2, Chapter 14, Sections 14.2.3, Test Procedures: Provide clarification regarding the applicability of descriptions for test procedures, organizational function during development, review, and approval of test procedures, test procedure content, system designer participation in development of test procedures, qualification of test procedure developers and reviewers, test procedure format for satisfying the inspections and testing non-safety-related and non-nuclear systems and components such as the verification for physical security ITAAC. Indicate a specific commitment to address physical security systems and credited features.

(U) Regulatory Basis: Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, requires that information submitted for a design certification (DC) 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. Tier 2 documentation currently does not provide information organization and processes for required inspection, test, or analysis (ITA) of security-related system that supports the Tier 1 descriptions of security ITAAC within the design scope for certification. The FSAR Chapter 14, Sections 14.2.3.1 through 14.2.3.5 establishes test procedures requirements for inspection and testing. Based on MHI responses to RAI No. 52-755, No. 14.03.12-4 and No. 14.03.12-5, the staff requests clarification, and specific indications of a commitment, to understand whether MHI has integrated verification of security systems (i.e., non-nuclear and non-safety systems) within the umbrella of its initial test program that includes a commitment to verify the design features for the facility and the balance of the plant. Indicate a specific commitment to address physical security systems and credited features.

14.03.12-24

6. **(U)** Tier 2, Chapter 14, Sections 14.2.4, Conduct of Test Program, Section 14.2.5, Review, Evaluation, and Approval of Test Results, and Section 14.2.6 Test Records: Provide clarification regarding the applicability of FSAR Section 14.2.4 through 14.2.6 for inspection and testing of non-nuclear and non-safety systems and components for satisfying physical security. If not applicable, describe what and how start up organization, infrastructure, and processes (i.e., program and administrative controls) will be established for assuring adequate conduct inspection, test, or analysis (ITA), records, and maintenance of physical security systems verified for satisfying ITAAC.

(U) Regulatory Basis: Subpart B of Title 10 CFR (10 CFR) 52, § 52.47, requires that information submitted for a design certification (DC) must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications

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and construction and installation specifications by an applicant. Tier 2 documentation currently does not provide information on organization and processes for required ITA of security-related system that supports the Tier 1 descriptions of security ITAAC within the design scope for certification. The FSAR Chapter 14, Sections 14.2.4 through 14.2.6 provides process for conducting, evaluation, and records requirements for inspections and tests. Based on MHI responses to RAI No. 52-755, No. 14.03.12-4 and No. 14.03.12-5, the staff requests clarification to understand whether MHI has integrated verification of security system (i.e., non-nuclear and non-safety systems) within the umbrella of its initial test program that includes a commitment to verify the design features for the facility and the balance of the plant.