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## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

### APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.: 197-8176

SRP Section: 14.3.12 – Physical Security Hardware – Inspections, Test, Analyses, and Acceptance Criteria

Application Section: 14.3.12

Date of RAI Issue: 09/02/2015

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### **Question No. 14.03.12-1**

(U) Tier 1, Section 2.12.1, Design Description (Pages 2.12-1 through 2.12-2):

(U) Revise this section for completeness and accuracy of APR-1400 standard design descriptions for physical security systems that meet the prescriptive requirements of 10 CFR 73.55, and describe those systems or portions of the APR-1400's physical security system that are site-specific (i.e., not within the scope of the DC or are information to be provided by a COL applicant). Verify that the combinations of design descriptions in Tier 1 conform complete and accurately with Appendix A to NUREG 0800 SRP 14.3.12, Revision 1, May 2010, that addressed design commitments, ITA, and acceptance criteria for a minimum set of physical security ITAAC based on the prescriptive requirements of 10 CFR 73.55 requirements for the design of physical security systems. Include the following in the revision to Section 2.12.1:

- a. (U) Identify the subjects (or titles) for design description Item Nos. 2.a, 2.b, 2.c, 3.a, 3.b, 3.c, 4.a, 4.c, 8.a, 8.b, and 9. Specify in Section 2.12.1 that KHNP considers these items outside the scope of the APR-1400 standard design, and clearly indicate that they are site-specific design descriptions that a COL applicant would provide. Also, indicate whether these items correspond to design descriptions in Appendix A to NUREG 0800 SRP 14.3.12, which identified a minimum set of generic physical security ITAAC (i.e., PS-ITAAC Nos. 2(a), 2(b), and 2(c) for protected area barrier requirements; PS-ITAA Nos. 3(a), 3(b), and 3(c) for isolation zone requirements; PSITAAC Nos. 4(a) and 4(c) for protected area perimeter intrusion detection and assessment systems requirements; PS-ITAAC Nos. 8(a), and 8(b) for access control portals and search equipment requirements; PS-ITAAC No. 9 for picture badge identification system requirements; and PS-ITAAC No. 11.c for security alarm system interlock).
- b. (U) Indicate, where the design descriptions is provided in Section 2.12.1, that the design descriptions only address the portions of the design of physical security systems that KHNP has included within the scope of the APR-1400 DC, and they do

provide the design descriptions necessary to meet all requirements specified in the corresponding prescriptive requirement of 10 CFR 73.55. Clarify that additional design descriptions will be provided by the COL applicant for items where the APR-1400's design descriptions provided only address a portion of the prescriptive requirement for design in 10 CFR 73.55 and limitation of design descriptions, which must be further developed by a COL applicant for site-specific design of physical security system and complete the physical security ITAAC. The following are examples of where design descriptions did not address or omitted specifics of requirements stated in 10 CFR 73.55 and where they are not identified as "COL information:"

- (U) Item No. 1.b does not meet the design requirement that access to vial equipment requires passage through at least a second physical barrier, and only partially satisfy the requirement of 10 CFR 73.55(e)(9)(1);
  - (U) Item No. 5, does not include design of (or identify plant system that will be relied on) for illumination that enable assessment and observation for implementing security response meeting 10 CFR 73.55(i)(6)(ii);
  - (U) Item No. 6 does not address the design requirement for the bullet resistant of the enclosure or structures providing the last access control function for access, and only partially satisfy the requirement of 10 CFR 73.55(e)(5);
  - (U) Item No.15 does not address design of emergency exits in the protected area that meets the requirement of 10 CFR 73.55(e)(8)(iii).
- c. (U) Provide the design descriptions to include that the design of alarm system will not allow the status of a detection point, locking mechanism or access control device to be changed without the knowledge and concurrence of the alarm station for meeting requirement of 10 CFR 73.55(i)(4)(ii)(F), SRP 14.3.12, Appendix A, Item No. 11(b).
- d. (U) Indicate in Item No. 14, "Intrusion detection system," in lieu of "equipment exists," to specify that design of a specific physical security system will meet the requirement for 10 CFR 73.70(f). The recording capability is integral to intrusion detection system to record system status and conditions, such as alarm, trouble, and supervision.
- e. (U) Clarify whether design descriptions for Item No. 4.b and Item No. 11.a include the design of intrusion detection and assessment system that is capable of assessing and video image recording of intrusion alarmed access points of vital areas.

(U) Regulatory Basis: Subpart B of 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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be operated in conformity with the design certification, the provisions of the Act, and the Commission's rules and regulations.

(U) Tier1, Section 2.12.1, "Design Description," identified a number of items as COL information without specifics subject or titles of what KHNP considered site-specific physical security systems that are not included within the scope of the ARP-1400 DC. The indications of "COL information," provide no information for the Commission's finding or for the staff to confirm that design of physical security systems identified are either within or outside the scope of the DC for certification of the APR-1400.

(U) Also, several the design descriptions provided in Section 2.12.1 omitted design descriptions for meeting requirements of 10 CFR 73.55 for physical security system and hardware and did not identified the omitted design descriptions as site-specific. They are currently not identified as "COL information." The revisions to Section 2.12.1 (and corresponding information in Table 2.12-1, "Inspections, Tests, Analyses, and Acceptance Criteria,") must address design descriptions supporting design (and verification) of physical security systems meeting the requirements of 10 CFR 73.55.

## **Response**

### **14.03.12-1a.**

The subjects for design description Item Nos. 2.a, 2.b, and 2.c (protected area barrier requirements); 3.a, 3.b, and 3.c (isolation zone requirements); 4.a and 4.c (protected area perimeter intrusion detection and assessment systems requirements); 8.a and 8.b (access control portals and search equipment requirements); 9 (picture badge identification system requirements); and 11.d (revised from 11.c) (security alarm system interlock requirements) will be added to section 2.12.1. Also, statements will be added that indicate these items are site specific design descriptions that the COL applicant will be providing and they will be similar to those in Appendix A to NUREG 0800 SRP 14.3.12, but the actual description will be written by the COL applicant.

### **14.03.12-1b.**

Statements have been added to section 2.12.1 to clarify the scope of the design descriptions being provided and those that must be addressed by the COL applicant to completely address the regulatory requirements in 10 CFR 73.55.

- Item No. 1.b has been revised to address the two barrier requirement.
- DCD section 9.5.3.2 describes security lighting. As stated in 9.5.3.2, as well as in the acceptance criteria in Table 2.12-1 (1 of 4), the illumination will be a minimum of 0.2 foot candles in the isolation zones and the exterior areas of the protected area. This meets the regulatory requirement. Also, the alternative to the 0.2 foot candles in Table 2.12-1 (1 of 4) is provided to give the COL applicant the flexibility allowed by the regulation. Therefore, changes to Item No. 5 are not needed.
- Item No. 6 has been revised to include the last access control point. Additional details are discussed in APR1400-E-A-NR-14002-P technical report which is incorporated by reference. This report captures the design requirement for bullet resistance and the COL applicant must provide the design details.

- Item No. 15 has been revised to include emergency exits in the protected area boundaries. All emergency exits located in protected or vital area boundaries will be locked and alarmed.

#### **14.03.12-1c.**

A new Item No. 11.c has been added in accordance with NUREG 0800, section 14.3.12, to address the regulatory requirement that the design of alarm system not allow the status of a detection point, locking mechanism or access control device to be changed without the knowledge and concurrence of the alarm station. Also, APR1400-E-A-NR-14002-P technical report, which is incorporated by reference, discusses this requirement for the access control alarm system. Item No. 11.c has been changed to 11.d.

#### **14.03.12-1d.**

Item No. 14 has been modified to provide a positive statement of the recording equipment capability. Also, APR1400-E-A-NR-14002-P technical report, which is incorporated by reference, discusses the security logs to be maintained.

#### **14.03.12-1e.**

Item No. 4.b and No. 11.a currently discuss the capability of the recording equipment to record video images to be used for assessment of intrusion alarms occurring at the protected area perimeter. Also, APR1400-E-A-NR-14002-P technical report, which is incorporated by reference, discusses this capability. There is no regulatory requirement for video image recording for assessment of intrusion alarmed access points of vital areas. Therefore, no changes are being made to 4.b and 11.a.

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#### **Impact on DCD**

Tier 1 Section 2.12.1 of the DCD will be revised as indicated in the Attachment.

#### **Impact on PRA**

There is no impact on the PRA.

#### **Impact on Technical Specifications**

There is no impact on the Technical Specifications.

#### **Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical, or Environment Report.

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2.12 Physical Security Hardware

2.12.1 Design Description

and are further described in APR1400-E-A-NR-14002-P technical report which is incorporated by reference.

The physical security system provides physical features to detect, delay, assist response to, and defend against the design basis threat (DBT) for radiological sabotage. The physical security system consists of physical barriers, intrusion detection, surveillance, communications, alarm stations, and power supplies. The details of the design of physical security system are categorized as sensitive security information.

1.a Vital equipment is located only within a vital area.

1.b Access to vital equipment requires passage through the vital area barrier.

at least two physical barriers.

- 2.a COL information
- 2.b COL information
- 2.c COL information
- 3.a COL information
- 3.b COL information
- 3.c COL information
- 4.a COL information

These design descriptions only address the portions of the design of physical security systems that are included within the scope of the APR1400 DC document, and they provide the design descriptions necessary to meet all requirements specified in the corresponding requirement of 10 CFR 73.55. Additional design descriptions will be provided by the COL applicant for items where the APR1400 design descriptions provided only address a portion of the requirement for design in 10 CFR 73.55 and other design descriptions must be further developed by a COL applicant for site-specific design of the physical security system in order to complete the physical security ITAAC.

4.b Included in 11.a below.

See page 2 for revised content.

4.c COL information

5. Isolation zones and exterior areas within the protected area are provided with illumination to permit observation of abnormal presence or activity of persons or vehicles.

- 2.a Physical barriers for the protected area perimeter. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 2(a) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 2.b Penetrations through the protected area barrier. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 2(b) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 2.c Unattended openings that intersect a security boundary. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 2(c) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 3.a Isolation zones for outdoor areas adjacent to the protected area. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 3(a) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 3.b Isolation zones will be monitored with intrusion detection and assessment equipment. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 3(b) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 3.c Areas where permanent buildings do not allow for an isolation zone will be monitored with intrusion detection equipment. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 3(c) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 4.a The perimeter intrusion detection system detects penetration or attempted penetration of the protected area perimeter barrier. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 4(a) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 4.c The intrusion detection equipment at the protected area remains operable from a UPS during a loss of normal power. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 4(c) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 8.a Access control points will be established at the protected area to control personnel and vehicle access. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 8(a) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 8.b Access control points will have search equipment for detecting firearms, explosives, incendiary devices or other items. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 8(b) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 9. The access control system will use a numbered photo identification badge. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 9 in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)

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6. The external walls, doors, ceilings, and floors in the main control room, the central alarm station ~~and~~ the secondary alarm station are bullet-resistant to at least Underwrites Laboratory Ballistic Standard 752, level 4.

7. The vehicle barrier system is installed and located at the necessary standoff distance to protect against the design basis threat (DBT) vehicle bombs.

8.a COL information

8.b COL information

9. COL information

See page 2  
for revised  
content.

, and the location within which the last  
access control function for access to the  
protected area is performed

10. Vital areas are locked and alarmed with active intrusion detection systems that annunciate in the central and secondary alarm stations upon intrusion into a vital area.

11.a Security alarm annunciation and video assessment information is displayed concurrently in the central alarm station and the secondary alarm station, and the video image recording with real time playback capability can provide assessment of activities before and after each alarm annunciation within the perimeter barrier.

11.b The central and secondary alarm stations are located inside the protected area and the interior of each alarm station is not visible from the perimeter of the protected area.

11.c The central and secondary alarm stations are designed and equipped such that, in the event of a single act, in accordance with the design basis threat of radiological sabotage, the design enables the survivability of equipment needed to maintain the functional capability of either alarm station to detect and assess alarms and communicate with onsite and offsite response personnel.

12. Secondary security power supply system for alarm annunciator equipment and non-portable communications equipment is located within a vital area.

11.c The alarm system will not allow the status of a detection point, locking mechanism or access control device to be changed without the knowledge and concurrence of the alarm station operator in the other alarm station.



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13.a Security alarm devices including transmission lines to annunciators are tamper indicating and self-checking (e.g., an automatic indication is provided when failure of the alarm system or a component occurs, or when on standby power). Alarm annunciation shall indicate the type of alarm (e.g., intrusion alarms and emergency exit alarm) and location.

13.b Intrusion detection and assessment systems concurrently provide visual displays and audible annunciation of alarms in the central and secondary alarm stations.

Recording

14. ~~Equipment exists to~~ <sup>will</sup> record onsite security alarm annunciation, including the location of the alarm, false alarm, alarm check, and tamper indication; and the type of alarm, location, alarm circuit, date, and time.

15. Emergency exits through the <sup>protected area and</sup> vital area boundaries are locked, alarmed, and equipped with a ~~crash bar~~ <sup>mechanism</sup> to allow for emergency egress.

16.a The central and secondary alarm stations have conventional (landline) telephone service with the main control room and local law enforcement authorities.

16.b The central and secondary alarm stations are capable of continuous communications with security personnel.

16.c Non-portable communication equipment in the central and secondary alarm stations remains operable from an independent power source in the event of loss of normal power.

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

Table 2.12-1 provides the ITAAC for the physical security hardware.



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Table 2.12-1 (1 of 4)

Physical Security Hardware ITAAC

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1.a Vital equipment is located only within a vital area.	1.a Inspection will be performed to confirm that vital equipment is located within a vital area.	1.a All vital equipment is located only within a vital area.
1.b Access to vital equipment requires passage through the vital area barrier.	1.b Inspection will be performed to confirm that access to vital equipment requires passage through the vital area barrier.	1.b Vital equipment is located within a protected area such that access to vital equipment requires passage through the vital area barrier.
2.a COL information	See page 9 for revised content.	
2.b COL information		
2.c COL information		
3.a COL information		
3.b COL information		
3.c COL information		
4.a COL information		
4.b Included in 11.a below		
4.c COL information		
5. Isolation zones and exterior areas within the protected area are provided with illumination to permit observation of abnormal presence or activity of persons or vehicles.	5. Inspection of the illumination in the isolation zones and external areas of the protected area will be performed.	5. The illumination in isolation zones and exterior areas within the protected area is 0.2 foot candles measured horizontally at ground level or, alternatively, sufficient to permit observation.
6. The external walls, doors, ceilings, and floors in the main control room, the central alarm station <del>and the secondary alarm station</del> are bullet-resistant to at least Underwrites Laboratory Ballistic Standard 752, level 4.	6. Inspections and/or analysis of the central and secondary alarm station will be performed.	6. The external walls, doors, ceilings, and floors in the main control room, the central alarm station <del>and the secondary alarm station</del> are bullet-resistant to at least Underwrites Laboratory Ballistic Standard 752, level 4.
7. The vehicle barrier system is installed and located at the necessary stand-off distance to protect against the design basis threat (DBT) vehicle bombs.	7. Inspections and analysis will be performed for the vehicle barrier system.	7. The vehicle barrier system will protect against the DBT vehicle bombs based upon the stand-off distance of the system.

and the location within which the last access control function for access to the protected area is performed

, the secondary alarm station, and the location within which the last access control function for access to the protected area is performed

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Table 2.12-1 (2 of 4)

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
8.a COL information	See page 9 for revised content.	
8.b COL information		
9. COL information		
10. Vital areas are locked and alarmed with active intrusion detection systems that annunciate in the central and secondary alarm stations upon intrusion into a vital area.	10. An inspection of the as-built vital areas and central and secondary alarm stations are performed.	10. Vital areas are locked and alarmed with active intrusion detection systems and intrusion is detected and annunciated in both the central and secondary alarm stations.
11.a Security alarm annunciation and video assessment information is displayed concurrently in the central alarm station and the secondary alarm station, and the video image recording with real time playback capability can provide assessment of activities before and after each alarm annunciation within the perimeter barrier.	11.a Test, inspection, or a combination of test and inspections of the installed systems will be performed	11.a Security alarm annunciation and video assessment information is displayed concurrently in the central alarm station and the secondary alarm station, and the video image recording with real time playback capability provides assessment of activities before and after alarm annunciation within the perimeter barrier.
11.b The central and secondary alarm stations are located inside the protected area and the interior of each alarm station is not visible from the perimeter of the protected area.	11.b Inspections of the central and secondary alarm stations will be performed.	11.b The central and secondary alarm stations are located inside the protected area and the interior of each alarm station is not visible from the perimeter of the protected area.
11.c The central and secondary alarm stations are designed and equipped such that, in the event of a single act, in accordance with the design basis threat of radiological sabotage, the design enables the survivability of equipment needed to maintain the functional capability of either alarm station to detect and assess alarms and communicate with onsite and offsite response personnel.	11.c Inspections and/or analysis of the central and secondary alarm station will be performed.	11.c The central and secondary alarm stations are designed and equipped such that, in the event of a single act, in accordance with the design basis threat of radiological sabotage, equipment needed to maintain the functional capability of either alarm station to detect and assess alarms and communicate with onsite and offsite response personnel exists.

See page 9 for added item no. 11.c

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Table 2.12-1 (3 of 4)

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
<p>12. Secondary security power supply system for alarm annunciator equipment and non-portable communications equipment is located within the vital area.</p>	<p>12. An inspection will be performed to ensure that the location of the secondary security power supply equipment for alarm annunciator equipment and non-portable communications equipment is within a vital area.</p>	<p>12. Secondary security power supply equipment for alarm annunciator equipment and non-portable communication equipment is located within a vital area.</p>
<p>13.a Security alarm devices, including transmission lines to annunciators, are tamper indicating and self-checking (e.g., an automatic indication is provided when failure of the alarm system or a component occurs, or when on standby power). Alarm annunciation shall indicate the type of alarm (e.g., intrusion alarms and emergency exit alarm) and location.</p>	<p>13.a A test will be performed to verify that security alarms, including transmission lines to annunciators, are tamper indicating and self-checking (e.g., an automatic indication is provided when failure of the alarm system or a component occurs, or when on standby power) and that alarm annunciation indicates the type of alarm (e.g., intrusion alarms and emergency exit alarms) and location.</p>	<p>13.a A report exists and concludes that security alarm devices, including transmission lines to annunciators, are tamper indicating and self-checking (e.g., an automatic indication is provided when failure of the alarm system or a component occurs, or when the system is on standby power) and that alarm annunciation indicates the type of alarm (e.g., intrusion alarms and emergency exit alarms) and location.</p>
<p>13.b Intrusion detection and assessment systems concurrently provide visual displays and audible annunciation of alarms in the central and secondary alarm stations. <span style="border: 1px solid black; padding: 2px;">will</span></p>	<p>13.b Tests will be performed on intrusion detection and assessment equipment.</p>	<p>13.b The intrusion detection system concurrently provides visual displays and audible annunciations of alarms in both the central and secondary alarm stations.</p>
<p>14. <span style="border: 1px solid black; padding: 2px;">Recording</span> Equipment exists to record onsite security alarm annunciation, including the location of the alarm, false alarm, alarm check, and tamper indication; and the type of alarm, location, alarm circuit, date, and time.</p>	<p>14. Test, analysis, or a combination of test and analysis will be performed to ensure that equipment is capable of recording each onsite security alarm annunciation, including the location of the alarm, false alarm, alarm check, and tamper indication; and the type of alarm, location, alarm circuit, date, and time.</p>	<p>14. A report exists and concludes that equipment is capable of recording each onsite security alarm annunciation, including the location of the alarm, false alarm, alarm check, and tamper indication; and the type of alarm, location, alarm circuit, date, and time.</p>

APR1400 DCD TIER 1

protected area and

Table 2.12-1 (4 of 4)

mechanism

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
15. Emergency exits through the vital area boundaries are locked, alarmed, and equipped with a <del>crash bar</del> to allow for emergency egress. mechanism	15. Test, inspection, or a combination of tests and inspections of the emergency exits through the vital area boundaries will be performed.	15. The emergency exits through the vital area boundaries are locked, alarmed, and equipped with a <del>crash bar</del> to allow for emergency egress.
16.a The central and secondary alarm stations have conventional (landline) telephone service with the main control room and local law enforcement authorities.	16.a Tests, inspections, or a combination of tests and inspections of the central and secondary alarm stations' conventional telephone services will be performed.	16.a The central and secondary alarm stations are equipped with conventional (landline) telephone service with the main control room and local law enforcement authorities.
16.b The central and secondary alarm stations are capable of continuous communication with security personnel.	16.b Tests, inspections, or a combination of tests and inspections of the central and secondary alarm stations' continuous communication capabilities will be performed.	16.b The central and secondary alarm stations are equipped with the capability to continuously communicate with security officers, watchmen, armed response individuals, or any security personnel that have responsibilities during a contingency event.
16.c Non-portable communication equipment in the central and secondary alarm stations remains operable from an independent power source in the event of loss of normal power.	16.c Tests, inspections, or a combination of tests and inspections of non-portable communication equipment will be performed.	16.c Non-portable communication devices (including conventional telephones systems) in the central and secondary alarm stations are wired to an independent power supply that enables the system to remain operable in the event of loss of normal power.

- 2.a Physical barriers for the protected area perimeter. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 2(a) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 2.b Penetrations through the protected area barrier. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 2(b) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 2.c Unattended openings that intersect a security boundary. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 2(c) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 3.a Isolation zones for outdoor areas adjacent to the protected area. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 3(a) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 3.b Isolation zones will be monitored with intrusion detection and assessment equipment. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 3(b) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 3.c Areas where permanent buildings do not allow for an isolation zone will be monitored with intrusion detection equipment. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 3(c) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 4.a The perimeter intrusion detection system detects penetration or attempted penetration of the protected area perimeter barrier. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 4(a) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 4.c The intrusion detection equipment at the protected area remains operable from a UPS during a loss of normal power. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 4(c) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 8.a Access control points will be established at the protected area to control personnel and vehicle access. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 8(a) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 8.b Access control points will have search equipment for detecting firearms, explosives, incendiary devices or other items. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 8(b) in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)
- 9. The access control system will use a numbered photo identification badge. (This item is a site specific design description that the COL applicant will be providing and it will be similar to 9. in Appendix A to NUREG 0800 SRP 14.3.12 but the actual description will be written by the COL applicant.)

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
11.c The alarm system will not allow the status of a detection point, locking mechanism or access control device to be changed without the knowledge and concurrence of the alarm station operator in the other alarm station.	11.c Tests, inspections, or a combination of tests and inspections of intrusion detection equipment and access control equipment will be performed.	11.c The alarm system will not allow the status of a detection point, locking mechanism or access control device to be changed without the knowledge and concurrence of the alarm station operator in the other alarm station.

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## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

### APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

**RAI No.:** 197-8176  
**SRP Section:** 14.3.12 – Physical Security Hardware – Inspections, Test, Analyses, and Acceptance Criteria  
**Application Section:** 14.3.12  
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### **Question No. 14.03.12-2**

(U) Tier 1, Section 2.12.1, Design Description, Item No.10 and Section 2.12.2, Inspections, Tests, Analyses, and Acceptance Criteria, Table 2.12-1, ITAAC (Pages 2.12-1 and 2.12-5):

(U) Indicate whether for design descriptions, “designed with locking devices and intrusion detection devices that annunciate in the central and secondary alarm stations,” in Section 2.12.1, Item No. 10, and Table 2.12-1, Design Commitment No. 10, as stated is intended to apply to all vital areas and not limited only to “unoccupied vital areas.”

(U) Regulatory Basis: Subpart B of 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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be operated in conformity with the design certification, the provisions of the Act, and the Commission's rules and regulations.

(U) Clarification is needed to confirm that the standard design supporting the Physical Security Hardware ITAAC Item No. 10 requires the verification that all (not limited to unoccupied) vital areas are designed to lock with intrusion detection system that alarm at the CAS and SAS, and is not limited to unoccupied vital areas. The design descriptions and ITAAC design commitment and acceptance criteria as stated meets the requirements of 10 CFR 73.55(e)(9)(ii) and 10 CFR 73.55(i)(2).

**Response**

Section 2.12.1, Item No. 10, and Table 2.12-1, Design Commitment No. 10 are written to apply to all vital areas and are not limited only to “unoccupied vital areas.” The design descriptions do not follow the wording in NUREG 0800, section 14.3.12 for Item No. 10 which addresses only unoccupied vital areas. Therefore, there are no changes needed to Section 2.12.1 or Table 2.12-1.

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**Impact on DCD**

There is no impact on the DCD.

**Impact on PRA**

There is no impact on the PRA.

**Impact on Technical Specifications**

There is no impact on the Technical Specifications.

**Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical, or Environment Report.



## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

### APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

**RAI No.:** 197-8176

**SRP Section:** 14.3.12 – Physical Security Hardware – Inspections, Test, Analyses, and Acceptance Criteria

**Application Section:** 14.2.13

**Date of RAI Issue:** 09/02/2015

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### **Question No. 14.03.12-5**

Tier 2, Section 14.2.13, “Combined License Information,” (Page 14.2-304):

Remove the COL Information Item No. COL 14.2(5), which defers to the COL applicant the development of detail descriptions addressing general system testing requirements for APR1400’s physical security ITAAC.

Regulatory Basis: Subpart B of 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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be operated in conformity with the design certification, the provisions of the Act, and the Commission’s rules and regulations.

Tier 2, Section 14.2.13, “Combined License Information,” Item COL 14.2(5) states that “[t]he COL applicant is to develop the detailed description of test and acceptance criteria for the Security System.” This COL information item defers to a COL applicant to develop appropriate testing procedures for verifying the APR1400 Physical Security ITAAC described in Tier 1, Section 2.12 and ITAAC Table 12.12-1, which are included in the APR-1400 standard design certification and are not site-specific information. The Commission’s regulatory finding of a reasonable assurance that ITA of ITTAC will permit acceptance and inspections for construction and installations as described in standard design for finality of a

design certification cannot rely on information that will be provided in the future or be based on a COL information item that defers the action to an operating license applicant.

### **Response**

DCD Tier 2, Subsection 14.2.13, "Combined License Information," will be revised to remove COL item 14.2(5).

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#### **Impact on DCD**

DCD Tier 2, page 14.2-304 and Table 1.8-2 will be revised as indicated in the attached markup.

#### **Impact on PRA**

There is no impact on the PRA.


#### **Impact on Technical Specifications**

There is no impact on the Technical Specifications.

#### **Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical, or Environment Report.

**APR1400 DCD TIER 2**14.2.13 Combined License Information

- COL 14.2(1) The COL applicant is to develop the site-specific organization and staffing level appropriate for its facility.
- COL 14.2(2) The COL applicant is to prepare the site-specific test procedures and/or guidelines that is to be used for the conduct of the plant startup program.
- COL 14.2(3) The COL applicant is to prepare a startup administrative manual and also provide preoperational and startup test summaries that contain testing objectives and acceptance criteria applicable for its scope of the plant design. Testing performed at other than design operating conditions for systems is to be reconciled either through the test acceptance criteria or post-test data analysis.
- COL 14.2(4) The COL applicant is to perform review and evaluation of individual test results.
- Delete
- ~~COL 14.2(5) The COL applicant is to develop the detailed description of test and acceptance criteria for the Security System.~~
- COL 14.2(6) The COL applicant is to develop a schedule for the development of the plant operating and emergency procedures should allow sufficient time for trial use of these procedures during the Initial Test Program. The schedule for plant startup is to be developed by the COL applicant to allow sufficient time to systematically perform the required testing in each phase.
- COL 14.2(7) The COL applicant is to describe its program for reviewing available information on reactor operating and testing experiences and discusses how it used this information in developing the initial test program. The description is to include the sources and types of information reviewed, the conclusions or findings, and the effect of the review on the initial test program.

## APR1400 DCD TIER 2

Table 1.8-2 (24 of 29)

Item No.	Description
COL 13.5(6)	The COL applicant is to describe how other operating and maintenance procedures are classified, which group or groups within the operating organization have the responsibility for following each class of procedures, and the general objectives and character of each class and subclass.
COL 13.5(7)	The COL applicant is to provide a program for developing shutdown procedure.
COL 13.6(1)	The COL applicant is to develop a physical security plan, training and qualification plan, and safeguards contingency plan. The COL applicant is to address site-specific information related to the physical security, contingency, and guard training and qualification plans. These documents are categorized as SGI and are withheld from public disclosure pursuant to 10 CFR 73.21. The COL applicant is to address site-specific physical security ITAACs as applicable.
COL 13.6(2)	The COL applicant is to develop an access authorization program that meets the requirements of 10 CFR 73.56, and conformance with the requirement is to be specified in the physical security plan.
COL 13.6(3)	The COL applicant is to develop a cyber security plan and implementation program in accordance with 10 CFR 73.54. The plan document is categorized as SGI and is to be withheld from public disclosure pursuant to 10 CFR 2.390(d)(1).
COL 13.7(1)	The COL applicant is to develop the description of the fitness-for-duty programs during construction and for the operating plant.
COL 14.2(1)	The COL applicant is to develop the site-specific organization and staffing level appropriate for its facility.
COL 14.2(2)	The COL applicant is to prepare the site-specific test procedures and/or guidelines that are to be used for the conduct of the plant startup program.
COL 14.2(3)	The COL applicant is to prepare a startup administrative manual and also provide preoperational and startup test summaries that contain testing objectives and acceptance criteria for its scope of the plant design. Testing performed at other than design basis for systems is to be reconciled either through the test acceptance criteria or post-test data analysis.
COL 14.2(4)	The COL applicant is to perform review and evaluation of individual test results.
<del>COL 14.2(5)</del>	<del>The COL applicant is to develop the detailed description of test and acceptance criteria for the Security System.</del>
COL 14.2(6)	The COL applicant is to develop a schedule for the development of the plant operating and emergency procedures that should allow sufficient time for trial use of these procedures during the initial test program. The schedule for plant startup is to be developed by the COL applicant to allow sufficient time to systematically perform the required testing in each phase.
COL 14.2(7)	The COL applicant is to describe its program for reviewing available information on reactor operating and testing experiences and discusses how it used this information in developing the initial test program. The description is to include the sources and types of information reviewed, the conclusions or findings, and the effect of the review on the initial test program.

## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

### APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.: 197-8176  
SRP Section: 14.3.2.12 ITAAC for Physical Security Hardware  
Application Section: 14.3.12  
Date of RAI Issue: 09/02/2015

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### **Question No. 14.03.12-6**

Tier 2, Chapter 14.3.2.12, "ITAAC for Physical Security Hardware." (Pages 14.3-28 to 14.3-29):

Provide descriptions of construction activities, preoperational testing, and test procedures for physical security systems and hardware within the scope of the standard APR1400 standard design. Specifically, address the following:

- a. Construction quality activities associated with installation of physical security-related systems (e.g., conduit and cable installation, circuit integrity, separations, buried sensors, delay barriers or building walls, protection of penetrations, etc.) should include security-related systems as systems components that may not be easily confirmed as adequate after construction without non-destructive methods, and preoperational testing that provide assurance of readiness of physical security systems and hardware to perform their intended security functions.
- b. For each physical security ITAAC, describe objectives, prerequisites, test methods, data required, acceptance criteria, and any special precautions such as for protecting SGI, restoring systems, and documentation of result of ITA for identified physical security ITAAC. Descriptions should apply the format and content described in Section 14.2.3.1, "Test Procedure Preparation" and consistent with information found for plant system in Tier 2, Section 14.2.12, such as the test abstracts provided for normal and emergency lighting in Tier 2, Section 14.2.12.1 80 and 14.2.12.1.81.

Regulatory Basis: Subpart B of 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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be operated in conformity with the design certification, the provisions of the Act, and the Commission's rules and regulations.

The information in Section 14.3.2.12 (or Tier 1, Section 2.12) does not provide sufficient descriptions of how testing or test procedures will be performed or developed, respectively, for a reasonable assurance of ITA for physical security systems identified as physical security ITAAC (i.e., Tier 1, Table 2- 12.1). The descriptions of how construction activities, preoperational testing, and test procedures will be developed to contain the proposed inspections, tests, analyses, and acceptance criteria is needed for the Commission's finding of reasonable assurances that the conduct and performance of ITA will verify construction and installations of physical security systems performance and functions satisfying physical security ITAAC for the APR1400 standard design. Information must be sufficient detail to support basis for reasonable assurance of ITA that correspond to the each of the physical security ITAAC identified Tier 1, Table 2.12-1 will be constructed and will be operated in conformity with the design certification, the provisions of the Act, and the Commission's rules and regulations. The description how inspections, test, and/or analyses for physical security systems should be describe in Tier 2 Section 14.3.2.12 that specifically address physical security ITAAC.

## **Response**

14.03.12-6 a:

The quality control activities during construction will be based on the approved Quality Assurance Program of the constructor chosen by the COL licensee. The program will dictate the quality control activities that will be applied to assure all systems are installed properly and maintained from that point until the 103(g) letter is submitted and approved to assure readiness for full operation. Security related systems will be covered by the program and the quality control activities to assure they will perform their intended security functions. The various layers of quality control required by regulation for the construction of a nuclear reactor power plant will assure the safety and security functions of those components being installed are maintained.

14.03.12-6 b:

New test procedure abstracts will be added to Section 14.2.12.1 to address the broad physical security ITAACs listed in Section 14.3.2.12. These abstracts will be numbered 14.2.12.1.136 through 12.2.12.1.146 and will be added in a future revision to the DCD. A markup showing these new abstracts is attached.

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**Impact on DCD**

The DCD will be revised as indicated in the attached markup.

**Impact on PRA**

There is no impact on the PRA.

**Impact on Technical Specifications**

There is no impact on the Technical Specifications.

**Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical, or Environment Report.



**APR1400 DCD TIER 2**

## 4.0 DATA REQUIRED

- 4.1 Alarms, indications, and control logic for safety injection system, shutdown cooling system, containment spray system and primary sampling system instrumentation

## 5.0 ACCEPTANCE CRITERIA

- 5.1 The leakage control and detection of outside containment system operates as described in Section 9.3.3



New abstract items will be added to subsection 14.2.12.1. (Refer to next pages)

14.2.12.2 Post-Core Hot Functional Tests14.2.12.2.1 Post-Core Hot Functional Test Controlling Document

## 1.0 OBJECTIVE

- 1.1 To demonstrate the proper integrated operation of plant primary, secondary, and auxiliary systems with fuel loaded in the core

## 2.0 PREREQUISITES

- 2.1 All pre-core hot functional testing has been completed as required.
- 2.2 Fuel loading has been completed.
- 2.3 All permanently installed instrumentation on systems to be tested is available and calibrated in accordance with Technical Specifications and test procedures.
- 2.4 All necessary test instrumentation is available and calibrated in accordance with Technical Specifications and test procedures.
- 2.5 All cabling between the control element drive mechanisms (CEDMs) and the CEDM control system (CEDMCS) is connected.

**APR1400 DCD TIER 2**

(New abstract items to be added to Section 14.2.12.1)

**14.2.12.1.136 Location of vital equipment****1.0 OBJECTIVE**

1.1 To document the location of each vital area so that vital equipment can be validated to be located inside a vital area.

**2.0 PREREQUISITES**

2.1 Construction activities on the major plant structures have been completed.

2.2 Vital equipment has been determined and a listing is available.

**3.0 TEST METHOD**

3.1 Each component of vital equipment will be located and the area where it is located will be examined to determine it is within a vital area.

3.2 Results of the examination of the vital equipment location will be documented.

**4.0 DATA REQUIRED**

4.1 List of all vital equipment.

**5.0 ACCEPTANCE CRITERIA**

5.1 All vital equipment is determined to be located within a vital area.

**6.0 SPECIAL PRECAUTIONS**

6.1 The vital equipment list and the Inspection Test Acceptance (ITA) document will be SGI and will need to be protected in accordance with appropriate requirements.

#### 14.2.12.1.137 Access to vital equipment

##### 1.0 OBJECTIVE

1.1 Verify that access to vital equipment requires passage through at least two physical barriers.

##### 2.0 PREREQUISITES

2.1 Construction activities on the major plant structures and the protected area barrier have been completed.

2.2 Security barriers are in place.

##### 3.0 TEST METHOD

3.1 Locate each component of vital equipment.

3.2 Verify that access to each component requires passage through two physical barriers one of which can be the protected area barrier.

##### 4.0 DATA REQUIRED

4.1 List of vital equipment and set of as built general arrangement drawings.

##### 5.0 ACCEPTANCE CRITERIA

5.1 Access to each component of vital equipment requires passage through at least two physical barriers one of which can be the protected area barrier.

##### 6.0 SPECIAL PRECAUTIONS

6.1 The vital equipment list will be SGI and the GA drawings will be SRI so they will need to be protected in accordance with appropriate requirements.

#### 14.2.12.1.138 Equipment to permit observation of abnormal presence or activity of persons or vehicles

##### 1.0 OBJECTIVE

1.1 Verify that CCTV equipment is in place to observe the isolation zones and areas at the protected area barrier for abnormal presence or activity of persons and/or vehicles.

## 2.0 PREREQUISITES

2.1 Construction activities on the security CCTV system have been completed.

2.2 Display monitors in the CAS and SAS are operational and camera controls are functioning.

## 3.0 TEST METHOD

3.1 Observe subject individuals on the TV monitors as they position themselves in the isolation zones and areas at the protected area barrier.

3.2 Determine the clarity and visual range of the CCTV cameras.

3.3 Exercise the zoom and pan capability of those cameras equipped with that capability.

## 4.0 DATA REQUIRED

4.1 Specifications on the cameras and their capabilities.

## 5.0 ACCEPTANCE CRITERIA

5.1 Camera fields of observation are verified that will allow the observation of abnormal presence or activity of persons and/or vehicles within the isolation zones and other areas at the protected area barrier.

## 6.0 SPECIAL PRECAUTIONS

6.1 The location of cameras and their fields of view will be SRI and will need to be protected in accordance with appropriate requirements.

14.2.12.1.139 Vehicle barrier system to protect against the design basis threat vehicle bombs

## 1.0 OBJECTIVE

1.1 Determine that a vehicle barrier is installed and located at the MSSD to protect against the design basis vehicle bombs.

## 2.0 PREREQUISITES

2.1 Construction activities on the vehicle barrier system have been completed.

2.2 MSSD calculation has been completed to establish the required distance from plant structures.

2.3 Certified test report showing the stopping capability of the barrier components that are part of the vehicle barrier system.

## 3.0 TEST METHOD

3.1 Validate that the vehicle barrier components are install at the MSSD or a distance greater than the MSSD taking the stopping capability of each component into consideration.

3.2 Determine that the vehicle barrier components are installed in accordance with manufacturer's specifications.

## 4.0 DATA REQUIRED

4.1 Test data on the individual vehicle barrier components certifying their stopping capability.

## 5.0 ACCEPTANCE CRITERIA

5.1 A continuous vehicle barrier with the certified stopping capability has been properly installed at the MSSD or greater distance from key plant structures.

## 6.0 SPECIAL PRECAUTIONS

6.1 The MSSD calculation will be SGI and will need to be protected in accordance with appropriate requirements.

14.2.12.1.140 Vital areas with active intrusion detection systems

## 1.0 OBJECTIVE

- 1.1 Determine that vital areas have locked and alarmed personnel access barriers and that unauthorized access is detected and data sent to the CAS and SAS.

## 2.0 PREREQUISITES

- 2.1 Construction activities on the structures containing vital equipment have been completed.
- 2.2 The intrusion alarms and electronic locks have been installed on the vital area doors.
- 2.3 The alarm annunciator computer has been installed and is operational.

## 3.0 TEST METHOD

- 3.1 Test the unauthorized opening of each vital area access door to verify that an intrusion alarm is generated.
- 3.2 Verify that the alarm is detected by the alarm annunciator computer and displayed in the CAS and SAS.
- 3.3 Verify that the required alarm information is displayed to the CAS and SAS operators.
- 3.3 Verify that an authorized access is allowed by the computer system with no alarm and that the authorized access is logged by the computer with the appropriate information.

## 4.0 DATA REQUIRED

- 4.1 Location of all the vital area doors and the installed intrusion detection hardware and electronic locking device installed.

## 5.0 ACCEPTANCE CRITERIA

- 5.1 Verification that each vital area door generates an alarm upon unauthorized access and displays the required alarm information to the CAS and SAS

operators.

## 6.0 SPECIAL PRECAUTIONS

6.1 The location of the vital area doors will be SGI and will need to be protected in accordance with appropriate requirements

### 14.2.12.1.141 Security alarm annunciation and video assessment information

#### 1.0 OBJECTIVE

1.1 Verify that the intrusion alarm system at the protected area perimeter generates the appropriate alarms and that the video assessment equipment captures the necessary images to perform an assessment of the alarm.

#### 2.0 PREREQUISITES

2.1 Construction activities on the security intrusion alarm annunciation and video assessment systems have been completed.

2.2 Both CAS and SAS are completed and are operational.

#### 3.0 TEST METHOD

3.1 Create an alarm on each protected area zone by using the appropriate run, crawl or walk tests in each zone.

3.2 Observe the alarm being generated by the system and the data displayed in the CAS and SAS.

3.3 Observe the captured video from the alarm zone to verify that there is sufficient information to assess the cause of the alarm.

3.3 Test several of the video images being captured in varying lighting situations to determine that assessment capability is available in all expected lighting circumstances.

#### 4.0 DATA REQUIRED



4.1 Zone layout of the protected area and the video cameras that are synchronized to each zone.

4.2 Display images that are synchronized to each zone and the retrieval information for those images.

#### 5.0 ACCEPTANCE CRITERIA

5.1 Intrusion into each protected area zone is alarmed and video images are captured of the zone in alarm that are sufficient for the CAS and SAS operators to perform assessments of what caused the alarms.

#### 6.0 SPECIAL PRECAUTIONS

6.1 The zone layout and camera synchronized information will be SRI and will need to be protected in accordance with appropriate requirements

#### 14.2.12.1.142 Location and equipment of the central and secondary alarm stations

##### 1.0 OBJECTIVE

1.1 Verify the location of the CAS and SAS meet regulatory requirements and that the equipment located in each station is equivalent and redundant.

##### 2.0 PREREQUISITES

2.1 Construction activities on the CAS and SAS are complete and the systems and installation of equipment located in each alarm station have been completed.

##### 3.0 TEST METHOD

3.1 Determine the location of the CAS to be sure it is in a vital area, the inside is not visible from outside the protected area, has equipment for alarm annunciation and assessment, and has all the required communication equipment.

3.2 Determine the location of the SAS to be sure it is in a vital area, the inside is not visible from outside the protected area, has equipment for alarm annunciation and assessment, and has all the required

communication equipment.

#### 4.0 DATA REQUIRED

4.1 Final site GA drawings showing the location of the CAS and SAS.

4.2 List of all the equipment needed to be installed in the CAS and the SAS.

#### 5.0 ACCEPTANCE CRITERIA

5.1 The CAS and the SAS are located and equipped to meet all the regulatory requirements for the design of alarm stations.

#### 6.0 SPECIAL PRECAUTIONS

6.1 The site GAs and the CAS/SAS installed equipment listing will be SRI and will need to be protected in accordance with appropriate requirements

#### 14.2.12.1.143 Secondary security power supply system

##### 1.0 OBJECTIVE

1.1 Verify that the secondary security power supply system is located in a vital area and is switched on when the normal power is lost.

##### 2.0 PREREQUISITES

2.1 Construction activities on the security annunciation secondary power system have been completed.

2.2 Final GA drawing showing the location of the security secondary power supply system and a single line electrical drawing showing the normal power and secondary power configuration.

##### 3.0 TEST METHOD

3.1 Locate the security secondary power supply equipment and verify that it is within a vital area.

3.2 Switch off the normal power to the security alarm annunciation equipment and verify that the secondary power supply system switched on to repower the alarm annunciation equipment.

#### 4.0 DATA REQUIRED

4.1 None.

#### 5.0 ACCEPTANCE CRITERIA

5.1 Verify that the security secondary power supply equipment is located in a vital area and that when normal power is lost to the security alarm annunciation equipment the secondary power supply picks up the load such that there is no interruption in the alarm system function.

#### 6.0 SPECIAL PRECAUTIONS

6.1 The location of the security secondary power supply system will be SGI and will need to be protected in accordance with appropriate requirements. The electrical single line may be SRI and may need to be controlled appropriately.

#### 14.2.12.1.144 Intrusion detection and assessment systems

##### 1.0 OBJECTIVE

1.1 Verify the intrusion detection system at the protected area perimeter and the video assessment system are capable of detecting and assessing penetrations or attempted penetrations of the protected area barrier.

##### 2.0 PREREQUISITES

2.1 Construction activities on the protected area intrusion detection system and the video assessment system have been completed.

2.2 Intrusion detection alarm computer system and video recording systems are operational.

2.3 CAS and SAS alarm monitoring and video assessment monitoring equipment is installed and operational.

### 3.0 TEST METHOD

- 3.1 Have an individual use both tactical and stealth maneuvers to penetrate the protected area barrier and isolations zones.
- 3.2 Observe that the intrusion detection system generates the appropriate alarm and the alarm station operators are able to review the video of the area before, during, and after the penetration to assess the details of the penetration or attempted penetration.
- 3.3 Record the test results and the documented capability of the intrusion detection and assessment systems for each of the zones.

### 4.0 DATA REQUIRED

- 4.1 Zone maps and the cameras assigned to each zone so that the system synchronization can be verified during the testing of each zone.

### 5.0 ACCEPTANCE CRITERIA

- 5.1 The intrusion detection system for each zone is capable of detecting penetration or attempted penetration of the protected area barrier covered by that zone and the video assessment equipment assigned to that zone are capable of recording and playing back video images to allow assessment of the penetration or attempted penetration.

### 6.0 SPECIAL PRECAUTIONS

- 6.1 The zone maps and camera assignments will be SRI and will need to be protected in accordance with appropriate requirements. The test report will also be SRI and must be protected.

#### 14.2.12.1.145 Equipment and emergency exits

### 1.0 OBJECTIVE

- 1.1 Verify that each of the emergency exits from protected and vital areas have installed locking devices which will allow emergency egress and installed alarms that will notify the alarm station operators that the door has been opened.

## 2.0 PREREQUISITES

- 2.1 Construction activities on the locking systems and alarm monitoring systems on the protected and vital area emergency exit doors have been completed.
- 2.2 Intrusion alarm computer system is installed and operational.
- 2.3 CAS and SAS alarm monitoring systems are installed and operational.

## 3.0 TEST METHOD

- 3.1 Operate the emergency egress locking mechanism on the inside of each emergency exit door or mechanism in the protected area barrier or vital area buildings to insure the capability to exit the building to ground elevation or to exit the protected area.
- 3.2 Observe that an alarm is generated when the door is opened and the door alarm information is displayed in both the CAS and SAS.

## 4.0 DATA REQUIRED

- 4.1 Location of each emergency exit door or mechanism and the hardware and alarm monitoring installed.

## 5.0 ACCEPTANCE CRITERIA

- 5.1 Each vital area building emergency exit door allows emergency egress through the door to ground elevation or allows egress from the protected area and that an exit open alarm is generated and displayed to both alarm station operators.

## 6.0 SPECIAL PRECAUTIONS

- 6.1 The location of the vital area emergency exit doors and the exits to the protected area will be SGI and will need to be protected in accordance with appropriate requirements.

14.2.12.1.146 Security communication systems

## 1.0 OBJECTIVE

- 1.1 Verify the regulatory required capabilities of the installed communication systems to support security requirements.

## 2.0 PREREQUISITES

- 2.1 Construction activities on the public address system, plant telephone system, and wireless communication system have been completed.
- 2.2 Construction activities on the CAS and SAS and control room have been completed and the security communication equipment in these locations is operational.

## 3.0 TEST METHOD

- 3.1 Use the public address system to broadcast a security alert message to the plant and verify that the message is heard in several key locations where plant personnel are located.
- 3.2 Use the plant telephone system to establish phone calls to the control room from the CAS and SAS.
- 3.3 Use the plant telephone system to establish phone calls to local law enforcement agencies (police, sheriff, FBI, etc.).
- 3.3 Use the wireless communication system (radios) to establish communication with security personnel located inside the plant structures, within the site protected area, and outside the protected area in the areas that are under patrol by the security officers.
- 3.4 Use the non-portable portion of the wireless communication system to communicate with security officers after the normal power to the system has been lost and the system is being powered by the secondary power system.
- 3.5 Use the local law enforcement remote radio system provided to the CAS and/or SAS to communicate with the local law enforcement agency.
- 3.6 Determine the location of the non-portable communication equipment

secondary power supply and verify it is located in a vital area.

#### 4.0 DATA REQUIRED

4.1 None.

#### 5.0 ACCEPTANCE CRITERIA

- 5.1 Communication between the CAS, SAS, and the control room can be accomplished using the plant telephone system and remains operable in the event of loss of normal power.
- 5.2 The public address system can be used to broadcast security alert messages and instructions to plant areas.
- 5.3 The plant telephone system can communicate with local law enforcement agencies to call for assistance.
- 5.4 The wireless communication system provides continuous communication with the security force members and remains operable from the secondary power supply in the event of loss of normal power.
- 5.5 The secondary power supply to the non-portable wireless communication system components is located in a vital area.
- 5.6 The local law enforcement remote radio equipment provided to the CAS and/or SAS can be used to contact local law enforcement during an emergency.

#### 6.0 SPECIAL PRECAUTIONS

- 6.1 The location of the secondary power supply for the non-portable communication system components is SGI and must be protected accordingly.

## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

### APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

**RAI No.:** 197-8176  
**SRP Section:** 14.2.13 – Combined License Information  
**Application Section:** 14.3.12  
**Date of RAI Issue:** 09/02/2015

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### **Question No. 14.03.12-7**

Tier 2, Chapter 14.2.13, “Combined License Information,” Item No. 14.2(11), (Pages 14-2-305):

- a. Remove the COL Information Item No. COL 14.2(11) which defers the development of test procedure of the communication system described in the Tier 1 and Tier 2 of the APR1400 DC. Provide test descriptions, individual pre-operational test addressing general system testing requirements for the plant communication systems described in Tier 1, Section 2.6.9 and Communication System ITTAC identified in Table 2.6.9.1.
- b. Provided, in Section 14.2.12.1, test descriptions, individual pre-operational test addressing general system testing requirements for the security communication systems, including plant system credited for security communications.

Regulatory Basis: Subpart B of 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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be operated in conformity with the design certification, the provisions of the Act, and the Commission's rules and regulations.



Section 14.2.13, Combined License Information, identified a COL Information Item No. COL 14.2(11) states that “[t]he COL applicant is to develop the test procedure of the communication system.” This defers to the a COL applicant to address the Communications System ITAAC that are described in Tier 1, Section 2.6.9, ITAAC Table 2.6.9.1. The plant communications system included in the APR1400 standard design DC is not site-specific, and therefore regulatory finding for the reasonable assurance that ITA.

### **Response**

14.03.12-7 a:

COL information item No. COL 14.2(11) will be deleted.

14.03.12-7 b:

A new test abstract will be added to section 14.2.12.1 to address the testing of security communication systems. It will be section 14.2.12.1.146. A markup showing these changes is attached.

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### **Impact on DCD**

The DCD will be revised as indicated in the attached markup.

### **Impact on PRA**

There is no impact on the PRA.

### **Impact on Technical Specifications**

There is no impact on the Technical Specifications.

### **Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical, or Environment Report.

**APR1400 DCD TIER 2**

COL 14.2(8) The COL applicant that references the APR1400 design certification is to identify the specific operator training to be conducted as part of the low-power testing program related to the resolution of TMI Action Plan Item I.G.1, as described in (1) NUREG-0660 – NRC Action Plans Developed as a Result of the TMI-2 Accident, Revision 1, August 1980 and (2) NUREG-0737 – Clarification of TMI Action Plan Requirements.

COL 14.2(9) The COL applicant is to prepare the preoperational test of cooling tower and associated auxiliaries, and raw water and service water cooling systems.

COL 14.2(10) The COL applicant is to develop the test program of personnel monitors and radiation survey instruments.

~~COL 14.2(11) The COL applicant is to develop the test procedure of the communication system.~~

#### 14.2.14 References

1. 10 CFR Part 50, Appendix B, “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants,” U.S. Nuclear Regulatory Commission.
2. Regulatory Guide 1.28, “Quality Assurance Program Requirements (Design and Construction),” Rev. 4, U.S. Nuclear Regulatory Commission, June 2010.
3. Regulatory Guide 1.68, “Initial Test Programs for Water-Cooled Nuclear Power Plants,” Rev. 4, U.S. Nuclear Regulatory Commission, June 2013.
4. Regulatory Guide 1.68.2, “Initial Startup Test Program to Demonstrate Remote Shutdown Capability for Water-Cooled Nuclear Power Plants, U.S. Nuclear Regulatory Commission, April 2010.
5. Regulatory Guide 1.68.3, “Preoperational Testing of Instrument and Control Air Systems,” U.S. Nuclear Regulatory Commission, September 2012.
6. Regulatory Guide 1.79, “Preoperational Testing of Emergency Core Cooling Systems for Pressurized Water Reactors, U.S. Nuclear Regulatory Commission, October 2013.

## APR1400 DCD TIER 2

Table 1.8-2 (25 of 29)

Item No.	Description
COL 14.2(8)	The COL applicant that references the APR1400 design certification is to identify the specific operator training to be conducted as part of the low-power testing program related to the resolution of TMI Action Plan Item I.G.1, as described in (1) NUREG-0660, "NRC Action Plans Developed as a Result of the TMI-2 Accident," Revision 1, August 1980 and (2) NUREG-0737, "Clarification of TMI Action Plan Requirements."
COL 14.2(9)	The COL applicant is to prepare the pre-operational test of cooling tower and associated auxiliaries, and raw water and service water cooling systems.
COL 14.2(10)	The COL applicant is to develop the test program of personnel monitors and radiation survey instruments.
<del>COL 14.2(11)</del>	<del>The COL applicant is to develop the test procedure of the communication system.</del>
COL 14.3(1)	The COL applicant is to provide the ITAAC for the site-specific portion of the plant systems specified in Subsection 14.3.3.
COL 14.3(2)	The COL applicant is to provide the proposed ITAAC for the facility's emergency planning addressed in Subsection 14.3.2.10.
COL 14.3(3)	The COL applicant is to provide the proposed ITAAC for the facility's physical security hardware addressed in Subsection 14.3.2.12.
COL 14.3(4)	The COL applicant is to provide a DAC closure schedule for implementing the piping DAC.
COL 15.0(1)	The COL applicant is to perform the radiological consequence analysis using site-specific $\chi/Q$ values, unless the $\chi/Q$ values used in the DCD envelop the site-specific short-term or long-term $\chi/Q$ values of the DCD, and to show that the resultant doses are within the guideline values of 10 CFR 50.34 for EAB and LPZ and that of 10 CFR Part 50, Appendix A, GDC 19 for the MCR and TSC.
COL 17.4(1)	The COL applicant is to develop and implement Phases 2 and 3 of the design RAP, including QA requirements. In Phase 2, the plant's site-specific information is to be subjected to the design RAP process, and the site-specific risk-significant SSCs are combined with the APR1400 design risk-significant SSCs into one list for the plant. Phase 2 is to be performed during the COL application phase and updated/maintained during the COL license holder phase. In Phase 3, procurement, fabrication, construction, and test specifications for the SSCs within the scope of the RAP provide reasonable assurance that key assumptions, such as equipment reliability, are realistic and achievable. The QA requirements are implemented during the procurement, fabrication, construction, and pre-operational testing of the SSCs within the scope of the RAP. Phase 3 is to be performed during the COL license holder phase and prior to initial fuel loading. The COL applicant is to propose a method for incorporating the objectives of the reliability assurance program into other programs for design or operational errors that degrade non-safety-related, risk-significant SSCs.

**APR1400 DCD TIER 2**

## 4.0 DATA REQUIRED

- 4.1 Alarms, indications, and control logic for safety injection system, shutdown cooling system, containment spray system and primary sampling system instrumentation

## 5.0 ACCEPTANCE CRITERIA

- 5.1 The leakage control and detection of outside containment system operates as described in Section 9.3.3



New abstract items will be added to subsection 14.2.12.1. (Refer to next pages)

14.2.12.2 Post-Core Hot Functional Tests14.2.12.2.1 Post-Core Hot Functional Test Controlling Document

## 1.0 OBJECTIVE

- 1.1 To demonstrate the proper integrated operation of plant primary, secondary, and auxiliary systems with fuel loaded in the core

## 2.0 PREREQUISITES

- 2.1 All pre-core hot functional testing has been completed as required.
- 2.2 Fuel loading has been completed.
- 2.3 All permanently installed instrumentation on systems to be tested is available and calibrated in accordance with Technical Specifications and test procedures.
- 2.4 All necessary test instrumentation is available and calibrated in accordance with Technical Specifications and test procedures.
- 2.5 All cabling between the control element drive mechanisms (CEDMs) and the CEDM control system (CEDMCS) is connected.

(New abstract items to be added to Section 14.2.12.1)

#### 14.2.12.1.146 Security communication systems

##### 1.0 OBJECTIVE

1.1 Verify the regulatory required capabilities of the installed communication systems to support security requirements.

##### 2.0 PREREQUISITES

2.1 Construction activities on the public address system, plant telephone system, and wireless communication system have been completed.

2.2 Construction activities on the CAS and SAS and control room have been completed and the security communication equipment in these locations is operational.

##### 3.0 TEST METHOD

3.1 Use the public address system to broadcast a security alert message to the plant and verify that the message is heard in several key locations where plant personnel are located.

3.2 Use the plant telephone system to establish phone calls to the control room from the CAS and SAS.

3.3 Use the plant telephone system to establish phone calls to local law enforcement agencies (police, sheriff, FBI, etc.).

3.3 Use the wireless communication system (radios) to establish communication with security personnel located inside the plant structures, within the site protected area, and outside the protected area in the areas that are under patrol by the security officers.

3.4 Use the non-portable portion of the wireless communication system to communicate with security officers after the normal power to the system has been lost and the system is being powered by the secondary power system.

3.5 Use the local law enforcement remote radio system provided to the CAS and/or SAS to communicate with the local law enforcement agency.

3.6 Determine the location of the non-portable communication equipment

secondary power supply and verify it is located in a vital area.

#### 4.0 DATA REQUIRED

4.1 None.

#### 5.0 ACCEPTANCE CRITERIA

- 5.1 Communication between the CAS, SAS, and the control room can be accomplished using the plant telephone system and remains operable in the event of loss of normal power.
- 5.2 The public address system can be used to broadcast security alert messages and instructions to plant areas.
- 5.3 The plant telephone system can communicate with local law enforcement agencies to call for assistance.
- 5.4 The wireless communication system provides continuous communication with the security force members and remains operable from the secondary power supply in the event of loss of normal power.
- 5.5 The secondary power supply to the non-portable wireless communication system components is located in a vital area.
- 5.6 The local law enforcement remote radio equipment provided to the CAS and/or SAS can be used to contact local law enforcement during an emergency.

#### 6.0 SPECIAL PRECAUTIONS

- 6.1 The location of the secondary power supply for the non-portable communication system components is SGI and must be protected accordingly.

## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

### APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

**RAI No.:** 197-8176

**SRP Section:** 14.3.12 – Physical Security Hardware – Inspections, Test, Analyses, and Acceptance Criteria

**Application Section:** 14.3.6

**Date of RAI Issue:** 09/02/2015

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### **Question No. 14.03.12-8**

Tier 2, Section 14.3.6, “Combined License Information,” (Page 14.3-34):

Revise COL Information Item No. 14.3(3) to indicate that “the COL applicant to provide proposed ITAAC for the facility’s physical security hardware not addressed in the DCD in accordance with RG 1.206 (Reference 1).”

Regulatory Basis: Subpart B of 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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be operated in conformity with the design certification, the provisions of the Act, and the Commission’s rules and regulations.

COL 14.3(3) states that the “COL applicant is to provide the proposed ITAAC for the facility’s physical security hardware address in Subsection 14.3.2.12.” The COL information item does not meet the requirement that DC applicant provide sufficient information for address the ITAAC and their verifications of physical security systems that are within the scope of the DC. The COL information item, if needed, must be limited to those systems or portions of physical security systems that are considered site-specific and therefore justified for the COL applicant to address. The descriptions in Section 14.3.2.12 do not correspond to items indicated as “COL information” in the design descriptions and ITAAC found in Tier 1 Sections 2.12.1 and

2.12.2. The items identified in Section 14.3.2.12 include physical security systems that are within the scope of the APR1400 DC, which are not reserved for a COL applicant to address. A revision to the COL information item COL 14.3(3) is needed to ensure that the COL applicant address the physical security systems that are site-specific and outside the scope of the APR1400 DC.

### **Response**

COL 14.3(3) item of DCD Tier 2, Subsection 14.3.6, "Combined License Information," will be revised to indicate that "the COL applicant is to provide proposed ITAAC for the facility's physical security hardware not addressed in the DCD in accordance with RG 1.206 (Reference 1)."

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### **Impact on DCD**

DCD Tier 2, Subsection 14.3.6, "Combined License Information," and Table 1.8-2 will be revised as indicated in the attached markup.

### **Impact on PRA**

There is no impact on the PRA.

### **Impact on Technical Specifications**

There is no impact on the Technical Specifications.

### **Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical, or Environment Report.



**APR1400 DCD TIER 2**14.3.5.3 Human Factors Engineering Design ITAAC

Human factors engineering design ITAAC verifies final design at a level of detail adequate for procurement and construction. The final design can be validated by V&V since V&V covers all of the other elements. An integrated system validation test will be performed in accordance with the HF V&V implementation plan to validate final HSI design. The design ITAAC for V&V are listed in Tier1 Table 2.9-1.

14.3.6 Combined License Information

COL 14.3(1) The COL applicant is to provide the ITAAC for the site-specific portion of the plant systems specified in Subsection 14.3.3.

COL 14.3(2) The COL applicant is to provide the proposed ITAAC for the facility's emergency planning addressed in Subsection 14.3.2.10.

COL 14.3(3) The COL applicant is to provide the proposed ITAAC for the facility's physical security hardware ~~addressed in Subsection 14.3.2.12.~~

COL 14.3(4) The COL applicant is to provide a design ITAAC.

not addressed in the DCD in accordance with RG 1.206 (Reference 1).

14.3.7 References

1. Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," U.S. Nuclear Regulatory Commission, June 2007.
2. NUREG-0800, Standard Review Plan, Section 14.3, "Inspections, Tests, Analyses, and Acceptance Criteria," "Initial Test Program and ITAAC – Design Certification," U.S. Nuclear Regulatory Commission, March 2007.
3. NUREG-0800, Standard Review Plan, Section 2.0, "Site Characteristics and Site Parameters," Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," U.S. Nuclear Regulatory Commission, March 2007.

## APR1400 DCD TIER 2

Table 1.8-2 (25 of 29)

Item No.	Description
COL 14.2(8)	The COL applicant that references the APR1400 design certification is to identify the specific operator training to be conducted as part of the low-power testing program related to the resolution of TMI Action Plan Item I.G.1, as described in (1) NUREG-0660, "NRC Action Plans Developed as a Result of the TMI-2 Accident," Revision 1, August 1980 and (2) NUREG-0737, "Clarification of TMI Action Plan Requirements."
COL 14.2(9)	The COL applicant is to prepare the pre-operational test of cooling tower and associated auxiliaries, and raw water and service water cooling systems.
COL 14.2(10)	The COL applicant is to develop the test program of personnel monitors and radiation survey instruments.
COL 14.2(11)	The COL applicant is to develop the test procedure of the communication system.
COL 14.3(1)	The COL applicant is to provide the ITAAC for the site-specific portion of the plant systems specified in Subsection 14.3.3.
COL 14.3(2)	The COL applicant is to provide the proposed ITAAC for the facility's emergency planning addressed in Subsection 14.3.2.10.
COL 14.3(3)	The COL applicant is to provide the proposed ITAAC for the facility's physical security hardware <del>addressed in Subsection 14.3.2.12.</del>
COL 14.3(4)	The COL applicant is to provide a DAC closure schedule for implementing the piping DAC.
COL 15.0(1)	The COL applicant is to perform the radiological consequence analysis using site-specific $\gamma/O$ values, unless the $\gamma/O$ values used in the DCD envelop the site-specific short-term or long-term $\gamma/O$ values. <b>not addressed in the DCD in accordance with RG 1.206 (Reference 1).</b> <small>at doses are within the guidance values of 10 CFR 50.54 for L1B and L1Z and that of 10 CFR Part 50, Appendix A, GDC 19 for the MCR and TSC.</small>
COL 17.4(1)	The COL applicant is to develop and implement Phases 2 and 3 of the design RAP, including QA requirements. In Phase 2, the plant's site-specific information is to be subjected to the design RAP process, and the site-specific risk-significant SSCs are combined with the APR1400 design risk-significant SSCs into one list for the plant. Phase 2 is to be performed during the COL application phase and updated/maintained during the COL license holder phase. In Phase 3, procurement, fabrication, construction, and test specifications for the SSCs within the scope of the RAP provide reasonable assurance that key assumptions, such as equipment reliability, are realistic and achievable. The QA requirements are implemented during the procurement, fabrication, construction, and pre-operational testing of the SSCs within the scope of the RAP. Phase 3 is to be performed during the COL license holder phase and prior to initial fuel loading. The COL applicant is to propose a method for incorporating the objectives of the reliability assurance program into other programs for design or operational errors that degrade non-safety-related, risk-significant SSCs.

## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

### APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

**RAI No.:** 197-8176

**SRP Section:** 14.3.12 – Physical Security Hardware – Inspections, Test, Analyses, and Acceptance Criteria

**Application Section:** 14.3.7

**Date of RAI Issue:** 09/02/2015

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### **Question No. 14.03.12-9**

Tier 2, Section 14.3.7, References (Page 14.3-36):

In Section 14.3.7, Reference No. 14, indicate NUREG-0800, SRP 14.3.12, Revision 1, published May 2010, in lieu of Revision 0, published March 2007. The most recent SRP 14.3.12 should be use by an applicant to develop the DC application.

Regulatory Basis: Subpart B of 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 CFRF 52.47(a)(9) states that “[f]or applications for light-water cooled nuclear power plants, an evaluation of the standard plant design against the Standard Review Plan (SRP) revision in effect 6 months before the docket date of the application.

Reference No. 14, on Page 14.3-36, did not reference Revision 1 of NUREG SRP 14.3.12, dated of May 2010 which superseded the Revision 0 version of SRP 14.3.12, dated March 2007. Although the staff guidance in SRP 14.3.12 are not regulatory requirements or regulatory guides, conforming with descriptions of physical security ITAAC found in Appendix A to NUREG 0800 SRP 14.3.12 provides assurance that the applicant include information necessary, but not limited to, on the docket for the Commission to efficiently and effectively determine regulatory requirements have been met for the findings for certification of APR14000 standard design in accordance with requirements of Subpart B of 10 CFR 52. The SRP is not a substitute for the regulations, and compliance is not a requirement. However, the SRP provide guidance for staff review of applications and include acceptable method of complying with the Commission's regulations.

**Response**

In DCD Tier 2, Subsection 14.3.7, Reference No. 14 will be revised to indicate SRP 14.3.12 Revision 1 published on May 2010 that KEPCO/KHNP used to develop the APR1400 DC application.

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**Impact on DCD**

In DCD Tier 2, page 14.3-36 will be revised as indicated in the attached markup.

**Impact on PRA**

There is no impact on the PRA.

**Impact on Technical Specifications**

There is no impact on the Technical Specifications.

**Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical, or Environment Report.

**APR1400 DCD TIER 2**

13. NUREG-0800, Standard Review Plan, Section 14.3.11, “Containment Systems – Inspections, Tests, Analyses, and Acceptance Criteria, U.S. Nuclear Regulatory Commission, March 2007.
14. NUREG-0800, Standard Review Plan, May 2010. 4.3.12, “Physical Security Hardware – Inspections, Tests, Analyses, and Acceptance Criteria, U.S. Nuclear Regulatory Commission, ~~March 2007.~~
15. 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” U.S. Nuclear Regulatory Commission.
16. 10 CFR Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants,” U.S. Nuclear Regulatory Commission.
17. 10 CFR Part 73, “Physical Protection of Plants and Materials,” U.S. Nuclear Regulatory Commission.
18. 10 CFR Part 100, “Reactor Site Criteria,” U.S. Nuclear Regulatory Commission.
19. 10 CFR 52.103, “Operation under a combined license,” U.S. Nuclear Regulatory Commission.
20. 10 CFR Part 50, Appendix A, “General Design Criteria for Nuclear Power Plants,” U.S. Nuclear Regulatory Commission.
21. ASME Boiler and Pressure Vessel Code, Section III, “Rules for Construction of Nuclear Facility Components,” The American Society of Mechanical Engineers, the 2007 Edition with the 2008 Addenda.
22. 10 CFR 50.55a(h), “ Protection and safety systems, U.S. Nuclear Regulatory Commission.
23. IEEE Std. 603-1991, “IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations,” Institute of Electrical and Electronic Engineers, 1991.
24. NUREG-0800, Standard Review Plan, BTP 7-14, “Guidance on Software Reviews for digital Computer Based Instrumentation and Controls Systems,” Rev. 5, U.S. Nuclear Regulatory Commission, March 2007.