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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-5

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

Tier 1, Section 2.12, Physical Security Hardware (Page 2-12-1), Tier 2 Section 13.6, Physical Security (Pages 13.6-1 to 13.6-3), and TR APR1400-E-A-NR-14002-P, "Physical Security Design Features": The following general comments apply to information currently in the application and technical report incorporated by reference:

(a) Provide, in Tier 2, FSAR Section 13.6, design descriptions of physical security systems, features, and hardware (referred to hereon as security structures, systems, and components (SSCs)) for the APR1400 standard design certification. Include, the general descriptions (non-SGI) of physical security systems and hardware that correspond with those identified as physical security ITAAC, Table 2.12-1 in Tier 1 of the DCD.

(b) Provide design descriptions of how security SSCs will be designed and configured in the nuclear island structures, buildings and plant area of the APR1400 standard design. Specifically, the combination of information presented in Tier 2 FSAR and TR APR1400- E-A-NR-14002-P, supporting Tier 1 descriptions of designs must provide sufficient information on what and how engineered security SSCs will be configured and constructed/installed (e.g., shown using plan views, section views, block diagrams, design detail, material standards, etc.) in the layout of the APR1400 buildings and plant

area, along with design criteria or requirements that are described. Include sufficient detail to show the redundancies, separations, and diversity of systems for achieving intended security functions and the final detailed design, construction, and installation will meet requirements of 10 CFR 73.55.

(c) Revise Tier 2 FSAR Section 13.6 of the application and referenced safeguards technical report (FSAR Section 13.6.8, Reference No.3) to identify the descriptions of security SSCs within the scope of the APR-1400 standard plant and the descriptions of SSCs that are site-specific (i.e., not within the scope of the DC) information to be provided by a COL applicant that references the APR1400 design.

Tier 2, Section 13.6, did not discuss or describe specifics of security SSCs for the APR1400 standard design certification or provide general (non-SGI) design descriptions that support the systems and hardware identified in Tier 1, Table 2.12-1, physical security ITAAC. The detailed descriptions of design performance, specifications, and configurations must support the design features and physical security ITAAC identified in Tier 1. The level of detail supporting design descriptions for how physical security systems will be designed should conform to RG 1.206, Figure 1, Combined License Application Referencing a Certified Design," showing acceptable level of detail based on design completions for design certification finality.

Also, the stating of design criteria (prescriptive or performance requirements) in the application does not provide sufficient details for how the design of a security system, feature, or hardware will achieve a stated design criteria or requirement. Additional information that provides sufficient detail of how security SSCs will be designed, constructed, or installed are needed for the Commission's finding that certified standard design is such that a facility will be constructed and operated in conformity with the design certification, the provisions of the Act, and the Commission's rules and regulations.

The specific information on design of security SSCs are captured under the APR1400 standard design certification and those that are site-specific (reserved for a COL applicant) must be completely and accurately described in the basis for the Commission's finding in 10 CFR 52.47(b)(1).

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required.

Response

a) The security structures, systems, and components are described in Technical Report APR1400-E-A-NR-14002-P-SGI. That Technical Report is incorporated by reference into Tier 2 of the DCD. Portions of the information providezd in that Technical Report are Safeguards Information (SGI) and 10 CFR 73.21 requires that the entire document be overall marked as SGI and handled as SGI. While portions of the Technical Report could be extracted as non-SGI (although still SRI) information, doing so and placing this information in Section 13.6 of the DCD is very laborious and somewhat

counterproductive as it would require redaction in a public version. Keeping all the security information, both SRI and SGI, in one Technical Report and out of Section 13.6 (where the Technical Report is referenced) allows all the security details to be in the same document and makes releasing a public version of the DCD simpler (less likely for an error to be made during the redaction process). To aid the reviewer, the Technical Report will be portion marked so that the non-SGI information is identified within the report. Also, in response to question 13.06-10, DCD Section 13.6 is being revised to add descriptions of security design features corresponding to Tier 1 ITAAC that are neither SGI nor SRI.

b) Design descriptions are contained in the Technical Report and also more design details are being provided as responses to the questions contained in this RAI. Below is a cross reference showing examples of where the additional information is being provided in response to various questions within this RAI.

   a. Security communications - Question 13.06-6

   b. Security lighting power - Question 13.06-7

   c. Alarm stations - Question 13.06-13 and 31

   d. Spent Fuel Pool VA boundaries - Question 13.06-14

   e. Secondary power for alarm annunciation - Question 13.06-15 and -22

   f. VA barriers for windows, HVAC, utilities, etc. - Question 13.06-17

   g. VA door configuration and construction - Question 13.06-23

   h. PA barriers - Question 13.06-34

   i. Fighting positions - Question 13.06-39 and 41

   j. VA barrier delay times - Question 13.06-18

c) The SSC's that are within the scope of the APR1400 standard design are indicated in the Technical Report. Each element addressed is indicated as being in the scope or it is specifically identified as being a COL element and will be designed and supplied by the COL applicant. The next revision to the Technical Report will ensure that these identified COL elements are clearly marked.

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 impact to Technical Report APR1400-E-A-NR-14002-P/NP, Revision 0. The Technical Report will be revised to include portion markings, answers to other RAI 428-8412 questions and to clearly show COL elements. See attachments to other RAI questions as applicable. There is no impact on any other 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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-8

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

Tier 2, Section 9.5.3.2.c, Security Lighting (Page 9.5-40) and Chapter 13, Section 13.6.2.4 (Page 13-6.4): Describe the design and performance requirements for the secondary power supply for the reliability and availability of plant security lighting for illumination required for performing security. Provide additional information addressing the following:

(a) Describe the design of systems for minimum illumination required within the APR1400 buildings and structures to perform security functions (i.e., relied on to provide assessment and target discrimination for security response). Specify, whether the minimum illumination of 0.2 foot-candles for the exterior plant area or the minimum of 0.1 foot-candles for illumination for emergency lighting is the design criteria that is applied for interior security lighting;

(b) Describe the technical basis regarding the adequacy of minimum hour durations for the capacity of secondary power supply for security systems in TR APR1400-E-A-NR-14002-P (Sections 3.7 and 5). Indicate whether supply capacity for secondary power is designed to accommodate electrical power demand to maintain all or only certain engineered security systems to continue their intended functions,(e.g., security lighting, intrusion detection, assessment, communications, access controls, physical barrier

systems, alarm station functions, search train, lighting, etc.) and for how long a duration; and

(c) Clarify whether this minimum power supply described in TR APR1400-E-A-NR-14002-P (Sections 3.7 and 5) are is in addition to security lighting system supplied from offsite and backed up by AAC source upon loss of offsite power stated in Tier 2, Section 9.5.3.2.c.

The security systems and features incorporated in the APR1400 standard plant provides the technical basis for determining adequacy of a physical protection system that will meet regulatory requirements. A reliable secondary power supply and uninterrupted transfer from primary to secondary is required for assuring reliability and availability of physical security systems to perform their intended functions. Specifically, the combination of information presented in Tier 2 FSAR and TR APR1400-E-A-NR-14002-P (containing Safeguards Information) descriptions of designs must provide sufficient information to show how systems and components and interfaces will be configured (e.g., plan views, section views, block diagrams, design detail, material standards, etc.), along with design criteria or requirements described in the application, to describe how the designs of security SSCs will provide redundancies, separations, and diversity to achieve intended security functions.

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required

Response

(a) Emergency lighting is discussed in Subsection 9.5.3.2 for the interior areas of the plant. This lighting is credited as security lighting for the purpose of security response. From 9.5.3.2: ‘Emergency ac lighting provides more than 10 foot-candles of illumination at the above designated areas’; ‘emergency dc lighting powered from the station batteries provides more than 10 foot-candles of illumination’ and ‘self-contained battery lighting provides more than 0.1 foot-candle of illumination at the areas where emergency ac lighting is provided’. Also described in Subsection 9.5.3.2, the security lighting for exterior areas of the protected area (PA) will provide 0.2 foot-candle measured horizontally at ground level. The lighting at the PA barrier and the isolation zones will be provided by the COL applicant.

(b) The secondary power for alarm annunciation system and the security communications system will be a UPS with a generator picking up loads once it has started. The UPS system and the generator are described in response to questions 13.06-6 and 13.06-15. These secondary power supplies will assure that alarm station functions, intrusion detection, assessment, communications, and access controls will remain functional upon loss of normal power. Security lighting is not required by regulation to have a secondary power supply. Security lighting in the exterior areas of the PA will be backed up by the AAC source upon loss of offsite power.

(c) The offsite power for emergency illumination and for security lighting will be provided by the COL applicant. Backup power for the emergency AC lighting as described in Subsection 9.5.3.2 will be a Class 1E EDG and if there is a SBO it will be the AAC GTG. Security lighting in the exterior areas of the PA will be backed up by the AAC source upon loss of offsite power. The text in the DCD will be corrected in 9.5.3.2 c. to clearly distinguish between emergency lighting and security lighting. (See attachment to this Response).

Impact on DCD

DCD Tier 2, Subsection 9.5.3.2 will be revised as shown 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 to any Technical/Topical/Environmental Report.

The self-contained battery lighting fixtures are equipped with sealed-beam, an 8-hour battery, and a battery charger. The power is automatically provided from the self-contained battery upon loss of normal or emergency ac lighting power.

The self-contained battery lighting provides more than 0.1 foot-candles of illumination at the areas where emergency ac lightings are provided.

c. Security lighting system

The plant general lighting system is being utilized for the security lighting in all indoor areas which require security lighting.

A minimum illumination level of 0.2 foot-candles is provided and measured horizontally at ground level in ~~the isolation zones and~~ appropriate exterior areas within the protected area. The security lighting is powered from offsite and backed up by the AAC source upon loss of offsite power.

~~The COL applicant is to provide offsite power for the security lighting system.~~

9.5.3.3 Safety Evaluation

The COL applicant is to provide security lighting for the protected area barrier and isolation zones and normal offsite power for all the exterior security lighting systems.(COL 9.5(14))

The normal lighting is not available during LOOP, SSE, and SBO conditions.

a. The emergency ac lighting is normally turned on and supplements the normal lighting. The emergency dc lighting is normally turned off.

b. During LOOP, SSE, and SBO, the emergency ac lighting fed from the Class 1E 480 Vac bus is interrupted until the power supply to the Class 1E ac buses is restored. During this period, emergency dc lighting powered from the station battery or the individual self-contained battery provides adequate illumination for safe shutdown operations and for movement of personnel to the access and egress routes.

c. Emergency ac or dc lighting provides a minimum illumination level of 10 foot-candles in the MCR and RSR. Emergency dc lighting provides illumination when emergency ac lighting is lost.

Table 1.8-2 (16 of 29)

Item No.	Description
COL 9.5(7)	The COL applicant is to provide the fire brigade radio systems.
COL 9.5(8)	The COL applicant is to provide the LAN and VPN system.
COL 9.5(9)	The COL applicant is to provide the emergency offsite communication system including dedication hotline, local law enforcement radio equipment, and wireless communication system.
COL 9.5(10)	The COL applicant is to specify that adequate and acceptable sources of fuel oil are available, including the means of transporting and recharging the fuel storage tank, following a design basis accident.
COL 9.5(11)	The COL applicant is to provide a description of the offsite communication system that interfaces with the onsite communication system, including type of connectivity, radio frequency, normal and backup power supplies, and plant security system interface.
COL 9.5(12)	The COL applicant is to provide the security radio system that consists of a base unit, mobile units, and portable units.
COL 9.5(13)	The COL applicant is to provide the local law enforcement communications including dedicated conventional telephone and radio-transmitted two-way communication system.
COL 9.5(14)	The COL applicant is to provide electric power for the security lighting ~~system~~.
COL 9.5(15)	The COL applicant is to provide the system design information of AAC GTG building HVAC system including flow diagram, if the AAC GTG building requires the HVAC system.
COL 10.2(1)	The COL applicant is to identify the turbine vendor and model.
COL 10.2(2)	The COL applicant is to identify how the functional requirements for the overspeed protection system are met and provide a schematic of the TGCS and protection systems from sensors through valve actuators.
COL 10.2(3)	The COL applicant is to provide a description of how the turbine missile probability analysis conforms with Subsection 10.2.3.6 to ensure that requirements for protection against turbine missiles (e.g., applicable material properties, method of calculating the fracture toughness properties per SRP Section 10.2.3 Acceptance Criteria, preservice inspections) will be met.
COL 10.3(1)	The COL applicant is to provide operating and maintenance procedures including adequate precautions to prevent water (steam) hammer and relief valve discharge loads and water entrainment effects in accordance with NUREG–0927 and a milestone schedule for implementation of the procedure.
COL 10.3(2)	The COL applicant is to establish operational procedures and maintenance programs as related to leak detection and contamination control.
COL 10.3(3)	The COL applicant is to provide a description of the FAC monitoring program for carbon steel portions of the steam and power conversion systems that contain water or wet steam and are susceptible to erosion-corrosion damage. The description is to address consistency with GL 89-08 and NSAC-202L-R3 and provide a milestone schedule for implementation of the program.

all

exterior

systems

security lighting for the protected area barrier and isolation zones and normal

COL 9.5(10) The COL applicant is to specify that adequate and acceptable sources of fuel oil are available, including the means of transporting and recharging the fuel storage tank, following a design basis accident.

COL 9.5(11) A COL applicant is to provide a description of the offsite communication system that interfaces with the onsite communication system, including type of connectivity, radio frequency, normal and backup power supplies, and plant security system interface.

COL 9.5(12) The COL applicant is to provide the security radio system that consists of a base unit, mobile units, and portable units.

COL 9.5(13) The COL applicant is to provide the local law enforcement communications including dedicated conventional telephone and radio transmitted two-way communication system.

all

COL 9.5(14) The COL applicant is to provide electric power for the security lighting ~~system~~.

systems

exterior

COL 9.5(15) The COL applicant is to provide the system design information of AAC GTG building HVAC system including flow diagram, if the AAC GTG building requires the HVAC system.

security lighting for the protected area barrier and isolation zones and normal

9.5.11 References

1. SECY-90-016, "Evolutionary Light Water Reactor (LWR) Certification Issues and Their Relationship to Current Regulatory Requirements," U.S. Nuclear Regulatory Commission, January 12, 1990.

2. SECY-93-087, "Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Light-Water Reactor (ALWR) Designs." U.S. Nuclear Regulatory Commission, April 2, 1993.

3. NUREG-0800, Standard Review Plan, Section 9.5.1.1, "Fire Protection Program," U.S. Nuclear Regulatory Commission, February 2009.

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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-9

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

Tier 2, Section 9.5.3.2, Lighting System, Section 9.5.3.2, Security Lighting System (Page 9.5-40) and Section 13.6.2 (Page 13.6-1): Indicate whether the design of security systems for the APR1400 standard plant will include the application of fixed engineered systems applying low-light technology (i.e., low-light, thermal, infrared, or other imaging camera for assessment and target discrimination) as an alternative or supplement to providing minimum illumination needed for security functions within the building and structures or exterior plant areas of the APR1400 standard plant. If engineered low-light technology will be applied, provide in TR APR1400-E-A-NR-14002-P, Rev 0, the design and performance requirements, along with the how the designs and configurations will achieve those requirements, and how the combination of plant security lighting system (normal and/or emergency lighting) and low-light technology system will provide reliability and availability of security lighting to perform intended security functions. Include specific design bases for how the plant lighting system and/or low light technology are credited for closed circuit television network system assessment, monitoring of locations, and assessment for security response.

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features

incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required.

Response

The applying of low-light technology (i.e., low-light, thermal, infrared, or other imaging cameras for assessment and target discrimination) is a COL design decision. As noted in the response to questions 13.06-7 and 13.06-8 the security lighting for the exterior areas of the protected area is part of the standard plant design and will be 0.2 foot candles and will have the AAC source upon loss of normal power.

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 to any Technical/Topical/Environmental 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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-10

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

FSAR Tier 2, Section 13.6, “Physical Security,” (Page 13.6-1): Provide design descriptions (non-SGI) of engineered security SSCs (e.g., physical barriers for vital areas, security power system, lighting system, alarm system, communications system, and access control system, systems and features relied-on facilitating interior security responses and protecting responders, respectively). The descriptions must be sufficient to describe the designs and bases to support the Tier 1 Section 2.12, “Physical Security Hardware,” physical security ITAAC and security systems and features that are within the buildings, structures, and plant areas. The descriptions in Tier 2 FSAR should include non-SGI design descriptions as publically available information, such as the prescriptive or performance requirements for designs of security SSCs to meet 10 CFR 73.55.

Tier 2, FSAR Section 13.6, “Physical Security,” does not contain any descriptions of security systems, features, or hardware, design descriptions or design bases supporting Tier 1 physical security ITAAC that are not SGI and should be publically available information on the docket for the certification. The reference to TR APR1400-E-A-NR-14002-P, with design descriptions that is SGI, is not a justification for omitting non-SGI information in Tier 2 FSAR Section 13.6 that support Tier 1 information for certification

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required.

Response

DCD Tier 2, Section 13.6, “Physical Security,” will be revised to add non-SGI publically available information on the docket for the certification. The attached mark-up indicates the changes to 13.6 to incorporate descriptions correlated to each Physical Security Hardware ITAAC (PS-ITAAC) listed in NUREG-0800, 14.3.12 and those contained in APR1400 DCD Tier 1, Section 2.12.

Impact on DCD

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 Environmental Report.

13.6 Physical Security

The security plans required by 10 CFR 52.79(a)(35) and 10 CFR 52.79(a)(36) (Reference 1) are to be submitted to the NRC by the combined license (COL) applicant ~~as stated in Subsection 13.6.1.~~ The plans include a physical security plan, safeguards contingency plan, training and qualification plan, and a cyber-security plan. The plans are to meet 10 CFR 50.54(p) (Reference 2) requirements.

~~The technical report "Physical Security Design Features" (Reference 3) provides details on the systems, structures, and components (SSCs) that require protection as vital equipment, as defined in 10 CFR 73.2 (Reference 4), and the installed security features for physical protection. This report is to be incorporated by reference. In addition, technical report "Physical Security Design Response" (Reference 5) provides preliminary target sets and anticipated responses of the security design to basic scenarios. The Physical Security Response Report is not incorporated by reference and will be superseded by the COLA's Physical Security Program documents. References 3 and 5 are categorized as security safeguards information (SGI) and are withheld from public disclosure pursuant to 10 CFR 73.21 (Reference 6).~~

Security communications are described in Subsection 9.5.2. Security lighting is described in Subsection 9.5.3.2.

~~13.6.1 Physical Security – Combined License~~

~~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 inspections, tests, analyses, and acceptance criteria (ITAACs) as applicable (COL 13.6(1)).~~

1

" (Reference 3) discussed in 13.6.2 below.

technical report "

13.6.~~2~~ Physical Security – Design Certification

This Design Control Document (DCD) contains physical security elements and information needed for review. These elements, because of their inherent nature, are included within the physical design of the power reactor and supporting systems. These physical security elements are designed, located, and constructed to support the protection of equipment essential to the safe operation and shutdown of the power reactor. A list of vital equipment and vital areas is to be contained in the Physical Security Design Features. The physical security hardware ITAACs are contained in Section 2.12 of Tier 1 of the DCD.

replace with A (page 5~8)

~~13.6.3 Physical Security – Early Site Permit~~

~~The applicant for early site permit planning is to find the physical security information needed for the application contained in the DCD. A typical site layout plan is included in Chapter 1 and a list of vital equipment and vital areas is to be contained in the Physical Security Design Features. The physical security hardware ITAACs are contained in Section 2.12 of Tier 1 of the DCD.~~

~~13.6.4 Access Authorization – Operational Program~~

~~The COL applicant is to develop an access authorization program that will meet the requirements of 10 CFR 73.56 (Reference 7), and conformance with this requirement is to be specified in the physical security plan (COL 13.6(2)).~~

~~13.6.5 Not Used~~

~~13.6.6 Cyber Security Plan~~

~~The COL applicant is to develop a cyber-security plan and implementation program in accordance with 10 CFR 73.54 (Reference 8). The plan document is to be categorized as security-related information (SRI) and is withheld from public disclosure pursuant to 10 CFR 2.390(d)(1) (Reference 9) (COL 13.6(3)).~~

~~13.6.7 Combined License Information~~

~~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).~~

13.6.~~8~~ 3 References

10 CFR 73.55, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage," U.S. Nuclear Regulatory Commission.

1. 10 CFR 52.79, "Contents of Applications; Technical Information in Final Safety Analysis Report," U.S. Nuclear Regulatory Commission.

2. 10 CFR 50.54, "Conditions of Licenses," U.S. Nuclear Regulatory Commission.

3. APR1400-E-A-NR-14002-P-SGI, "Physical Security Design Features," KHNP.

4. 10 CFR 73.2, "Definitions," U.S. Nuclear Regulatory Commission.

5. ~~APR1400-E-A-NR-14001-P-SGI, "Physical Security Design Response," KHNP.~~

6. 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements," U.S. Nuclear Regulatory Commission.

7. ~~10 CFR 73.56, "Personnel Access Authorization Requirements for Nuclear Power Plants," U.S. Nuclear Regulatory Commission.~~

~~8. 10 CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks," U.S. Nuclear Regulatory Commission.~~

7

~~9.~~ 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," U.S. Nuclear Regulatory Commission.

A

13.6.2 Physical Security - Design Features

This section provides noncategorized, high level, details on the systems, structures and components (SSCs) that make up the Physical Security system. Additional details are provided in the technical report "Physical Security Design Features" (Reference 3) which includes details on the systems, structures, and components (SSCs) that require protection as vital equipment, as defined in 10 CFR 73.2 (Reference 4), as well as details on the installed security features required for physical protection. This report is to be incorporated by reference. Reference 3 is categorized as security safeguards information (SGI) and is withheld from public disclosure pursuant to 10 CFR 73.21 (Reference 6).

13.6.2.1 Vital Areas and Vital Area Barriers

Vital equipment is identified as part of the design and located inside vital areas. Access to the vital equipment requires passage through two physical barriers. One of the barriers is the protected area barrier that is site specific and is provided by the COL applicant and the other barrier is the walls, floors, ceilings, and doors of the vital area. The vital area barriers are constructed of substantial materials to meet the performance requirements of 10 CFR 73.55(b) (Reference 5). There are several separate vital areas in the APR1400 design including the control room, the spent fuel pool area, the central alarm station, and the secondary alarm station.

13.6.2.2 Protected Area Barrier

The protected area barrier design is the responsibility of the COL applicant. Penetrations through the protected area barrier and unattended openings in the protected area barrier are addressed by the COL applicant.

13.6.2.3 Isolation Zones

Isolation zones are designed by the COL applicant to provide for monitoring of the protected area barrier to detect attempted or actual penetration of the barrier. Where permanent buildings do not allow sufficient observation distance between the intrusion detection system and the protected area barrier, the building and the area around the building is monitored by the COL applicant to detect attempted or actual penetration of the protected area barrier.

A

13.6.2.4 Protected Area Perimeter Intrusion Detection and Assessment Systems

The protected area perimeter intrusion detection system is designed and provided by the COL applicant. The system is designed to detect attempted or actual penetration of the protected area barrier and annunciate an alarm in both alarm stations. Video assessment equipment is provided by the COL applicant to feed video information to the APR1400 infrastructure to perform real time recording and to concurrently display the monitored zones where the alarm occurs to both the alarm stations. The intrusion detection equipment and video assessment equipment interfaces with the APR1400 alarm annunciation and video assessment system infrastructure to provide data to both alarm station operators. The design by the COL applicant also provides an uninterruptible power supply for the intrusion detection equipment and the assessment equipment located at the protected area perimeter in the event of the loss of normal power. The APR1400 design provides a secondary power supply for the annunciation and video assessment equipment located in the alarm stations in the event of the loss of normal power.

13.6.2.5 Illumination Systems

The illumination of the isolation zones is designed and provided by the COL applicant. The illumination of the exterior areas outside the isolation zones within the protected area is provided as part of the standard APR1400 design and is 0.2 foot candles measured horizontally or, alternatively, sufficient to permit observation of abnormal presence or activity of persons or vehicles. The lighting within structures that are part of the APR1400 standard plant is sufficient to allow security response actions and other emergency response activities within the structures.

13.6.2.6 Bullet Resisting Barriers

The external walls, doors, ceiling, and floors of the main control room, central alarm station, and secondary alarm station are constructed of materials to provide bullet resistance to at least Underwriters Laboratories Ballistic Standard 752, Level 4. The last access control function location will be the responsibility of the COL applicant and is designed to the same bullet resistance minimum. Fighting positions designed and installed by the COL applicant as part of the defensive strategy are bullet resistant to the same standard.

13.6.2.7 Vehicle Control Measures

A vehicle barrier system is designed and installed by the COL applicant at the minimum safe standoff distance to prevent the design-basis threat vehicle bombs from approaching the plant to within a distance which could cause damage to vital equipment. The design of the APR1400 buildings provides the structural characteristics to determine the minimum safe standoff distance where the vehicle barrier must be located and this distance is provided to the COL applicant. An active vehicle barrier is installed by the COL applicant to allow authorized vehicles to pass through the vehicle barrier to perform authorized activities.

A

13.6.2.8 Personnel, Vehicle, and Material Access Control Portals and Search Equipment

Access control portals are established and designed by the COL applicant for personnel and vehicle access into the protected area. These control points are equipped with access control equipment as well as equipment for detection of firearms, explosives, incendiary devices or other items which could be used to attack the plant with the intent to create a radiological release. The protected area access control equipment provided by the COL applicant will interface with the APR1400 access control system which will be used to grant authorized access to the protected area and other areas of the plant for performing authorized activities.

13.6.2.9 Picture Badge Identification System

The COL applicant uses an access authorization system with a numbered photo identification badge to control authorized access to both the protected area and internal plant areas. The picture badge system interfaces with the APR1400 access control systems to allow authorized access to the protected area and other areas of the plant to perform authorized activities.

13.6.2.10 Vital Area Access Controls

Vital areas have locked and alarmed doors that are monitored with active intrusion detection devices. The APR1400 access control system controls access through these doors and will annunciated any unauthorized passage through the doors to both alarm stations. The devices and circuits for this data transmission are self-checking and tamper indicating.

13.6.2.11 Alarm Stations

The APR1400 alarm annunciation system provides intrusion detection alarm annunciation and video assessment information concurrently to both the central alarm station and the secondary alarm station. Both alarm stations are located inside the protected area, are designed as vital areas, and the interiors are not visible from the perimeter of the protected area. Both alarm stations are designed, protected, equipped, and constructed to be equivalent and redundant with both having the same capability to provide the required functions. Both alarm stations are equipped with real time playback video capability to provide assessment of activities before and after each alarm annunciation within the protected area perimeter barrier. In the event of a single act in accordance with the design basis threat of radiological sabotage, at least one of the alarm stations retains the ability to provide the necessary functions to respond to an attack.

13.6.2.12 Secondary Power Supplies for Alarm Annunciation and Non-portable Communications Equipment

The APR1400 design provides a secondary power supply system for the alarm annunciation system and one for the non-portable communications equipment used by security personnel. Both of these secondary power supply systems are located within vital areas.

A

13.6.2.13 Intrusion Detection Systems Console Displays

The APR1400 intrusion detection system alarm devices including the transmission lines are tamper indicating and self checking. There is an automatic visual and audible indication provided to the alarm station operators when an alarm occurs, failure occurs within the system, or when the system is operating on standby power. The alarm annunciation system indicates the type of alarm and location to the station operators on displays mounted on the console. The console also has video displays that concurrently show the assessment videos of appropriate areas where the alarm occurred.

13.6.2.14 Intrusion Detection Recording Systems

The APR1400 intrusion detection and assessment recording system is capable of recording each security alarm location, assessment video, and displaying the information to both alarm stations. The alarm annunciation system records the date, circuit, and time for each alarm including the location of the alarm, if it is a false alarm, if it is an alarm check, or if it is a tamper alarm.

13.6.2.15 Vital Area Emergency Exits

Emergency exits through the vital area boundaries are locked and are alarmed with intrusion detection devices. The locking devices are designed to allow prompt egress (crash bar, etc.) from the area during an emergency.

13.6.2.16 Communications Systems

The central and secondary alarm stations are equipped with conventional (land line) telephone service with the main control room and local law enforcement authorities. Both alarm stations are capable of continuous communication with on-duty security force personnel who have responsibilities within the physical protection program and during contingency events. The non-portable communication devices (including the conventional telephone system) in both alarm stations are wired to an independent power supply that enables these systems to remain operable during a loss of normal power. The portable communication devices are site specific and will be provided by the COL applicant. The portable devices will use the APR1400 infrastructure for communications within the plant areas and the patrol areas and response locations.

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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-18

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

Technical Report - APR1400-E-A-NR-14002- P, Rev. 0, Section 3.4, Vital Area Barriers (Architectural Features) (Element 4) (Pages 5-6): For the physical barriers described and identified for the buildings in Section 3.4, provide the design basis assumptions (i.e., delay times) for the walls, floors, ceiling and doors to functions as security feature for delay. Specifically, where these physical barriers are credited to provide delay functions for security response, specify the minimum delay times based mechanical and explosive breaching and defeat of protected openings to identify the least delay time for feature on the structure assembly (e.g., doors, windows, vents).

The information provided must be sufficient detailed to describe the designs and design bases for security systems and features of the APR1400 standard design. Additional information is needed to establish sufficient design details of dedicated security SSCs and/or safety SSCs relied-on as vital areas barriers for the APR1400 standard design certification.

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required.

Response

Security-Related Information – Withhold Under 10 CFR 2.390

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 Technical, Topical, or Environmental 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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-19

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

Technical Report - APR1400-E-A-NR-14002- P, Rev. 0, Section 3.5, “Vital Area Physical Barriers (Penetration Features) (Element 5),” (Page 6): Indicate the specific guidance from Regulatory Guide 5.65, “Vital Area Access Control, Protection of Physical Security Equipment, and Key and Lock Controls,” (Reference 7) that will be applied in the designs of security systems or hardware for the APR1400 standard design certification. Indicate specific sections of RG 5.65 and provide descriptions of the design requirements and specific methods or approaches that will be included as part of the design bases for the APR1400 standard design certification. RGs provide guidance for meeting regulations, but are not requirements.

The information provided must be sufficient in detailed to establish the designs and design bases for security systems and features that are in the scope of the APR1400 standard design. RGs provide guidance for meeting regulations, but are not requirements. The applicant did not state that RG 5.65 is incorporated by reference (in whole or in parts) as the design bases for security SSCs for the design certification.

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features

incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required.

Response

As stated in the Technical Report the design and construction of the vital area barriers will use guidance in RG 5.65. The governing sections are Section 1 and Section 2. The barriers will be constructed of materials that provide delay to forced entry. They will be constructed of materials that are resistant to cutting, drilling and puncture by small hand tools or tool substitutes. Details of the VA barriers can be found in the response to questions 13.06-17 and 13.06-18.

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 Technical, Topical, or Environmental 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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-26

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

Technical Report - APR1400-E-A-NR-14002- P, Rev. 0, Section 4.1, "Vital Areas and Equipment Not within the Scope of the Standard Design (Voluntary Element 1)," (Page 9): Provide descriptions of the safety-related systems (and risk-significant non-safety related systems if applicable) that are considered outside the scope for the APR1400 standard plant, which will be addressed by a COL applicant. Provide general descriptions of site specific safety SSCs not included in the APR1400 standard design that would be justified as site-specific information outside the scope for certification.

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required

Response

The scope of SSCs in Technical Report APR1400-E-A-NR-14002-P-SGI includes all the site specific safety related SSCs that are currently known for the APR1400. If a site has a different

form of ultimate heat sink than the one being certified as part of the standard plant design, then that would be a safety related system that would be site specific and would need to be addressed by the COL applicant.

Most sites will have risk significant non-safety related SSCs due to various systems that support power generation and/or reliability of plant support systems (i.e. switchyard components, fire water storage tank refill capability, fuel oil storage and transfer, etc.) If a future site identifies SSCs that meet this definition, then the COL applicant would need to address those SSCs and describe them in their COLA.

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 Technical, Topical, or Environmental 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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-33

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

Technical Report - APR1400-E-A-NR-14002-P-SGI, Section 4.6, “Vital Area Physical Barriers not Within the Standard Design Scope (Architectural Features) (Voluntary Element 6),” Section 4.9, “Protection of Penetrations of Openings (Voluntary Element 9),” Section 4.10, “Vital Area Portal Egress Not within the Standard Design Scope (Voluntary Element 10),” and Section 4.11, “Control of Unoccupied Vital Areas Not Within the Standard Design Scope (Voluntary Element 11),”: Based on the site-layout provided in Appendix C, specify what are the vital areas and barriers that will be addressed by a COL applicant. Illustrate clearly using plant layout (such as figure shown in Appendix C), the vital areas and barriers within the PA that are in the scope of the APR1400 standard design certification and identify the VA and barriers that are not within the scope, and specify what are the vital areas and barriers that will be addressed by a COL applicant. Provide a general description in each of the sections identified as to what are the site-specific vital areas and associated access portals, intrusion detection, locks, access controls, and emergency exits that are not included in the APR1400 standard design certification.

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features

incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required.

Response

The site-layout provided in Appendix C, indicates the vital areas and barriers that will be part of the APR1400 standard plant design. The vital areas within the PA that are in the scope of the APR1400 standard design certification are also identified in the figures in Appendix A with the barriers to those areas indicated. The associated access control portals, intrusion detection, locks, access controls, and emergency exits that are included in the APR1400 standard design certification are discussed in Technical Report APR1400-E-A-NR-14002-P-SGI and responses to several questions contained within this RAI.

The one vital area that is site specific and not addressed in Technical Report APR1400-E-A-NR-14002-P-SGI is the Last Access Control Location which is a COL applicant responsibility and is discussed in response to question 13.06-29.

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 Technical, Topical, or Environmental 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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-34

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

Technical Report - APR1400-E-A-NR-14002-P-SGI, Section 4.7, “Confirmation of Access to Vital Equipment Requiring Passage through Two Barriers (Voluntary Element 7),” and Section 4.8, “Separation of VA and PA Barrier (Voluntary Element 8),” (Page 11): Include figure shown in Appendix C, “Perimeter Security Fence General Layout,” to illustrate that the PA barrier, with the designated VA barriers in Appendix A, meets the requirement that access to vital equipment is through passage through two barriers. Identify on the figure the representation of the PA barriers, along with the isolation zone in the PA boundary, that establish the second physical barrier that is separate from the vital area barriers.

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required.

Response

The figure shown in Appendix C, “Perimeter Security Fence General Layout,” illustrates a typical PA barrier which is site specific and the responsibility of the COL Applicant. The designated VA barriers in Appendix A are part of the standard plant design. With the typical PA barrier in place or located at a greater distance from the plant structures, the vital areas meet the requirement that access to vital equipment requires passage through two barriers. With each vital area having barriers that surround the area and the typical PA being designed and provided by the COL Applicant, then two barriers are in place and passage through these two barriers is required for access to each vital area.

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 Technical, Topical, or Environmental 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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-37

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

Technical Report - APR1400-E-A-NR-14002-P-SGI, Section 4.16, “Isolation Zone (Voluntary Element 16),” (Page 13): Provide the plan and section views showing minimum dimensions for the design configurations of the isolation zone (i.e., supplementing the Appendix C, Perimeter Security Fence General Layout), and the design configuration integrating the isolation zone with configuration of the PA boundary and security SSCs in the perimeter intrusion detection/assessment system to provide intended monitoring, surveillance, and assessment functions.

The information provided must be sufficient detailed to describe the design and design bases for security systems and features of the APR1400 standard design. Additional information is needed to establish details for the design and design bases of security systems, features, or hardware of the APR1400 standard design and how they are relied-on to perform security functions.

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features

incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required

Response

The design of the PA and the isolation zones is site specific and the responsibility of the COL Applicant. The design configuration integrating the isolation zones with the configuration of the PA boundary and security SSCs in the perimeter intrusion detection/assessment system will be designed by the COL Applicant. The standard plant design is providing the equipment and infrastructure to receive, process, and display the information from the intrusion detection system components and the monitoring, surveillance, and assessment components being provided by the COL Applicant. The alarm information and the surveillance and assessment data will be displayed in both the CAS and SAS for the alarm station operators to perform their regulatory functions and these systems meet the redundancy and diverse requirements.

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 Technical, Topical, or Environmental 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.: **428-8412**

SRP Section:

Application Section: **13.6**

Date of RAI Issue: **03/02/2016**

Question No. 13.06-38

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 52.47(b)(1) requires that the application must contain proposed inspections, tests, analyses, and acceptance criteria. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.

Technical Report - APR1400-E-A-NR-14002-P, Section 4.17, “Intrusion Detection and Assessment Systems (Voluntary Element 17),” and Section 4.18, “Backup Power for Intrusion Detection and Assessment Systems,” (Page 13): Described how security SSCs will be design to provide intrusion and detection assessment as stated in this section. Provide the following for the design of the security SSCs for performing intended security functions:

(a) Provide plan and section views showing the design of detection and assessment systems for the coverage of exterior plant areas and design and configuration for detection and assessment internal to the buildings and structures;

(b) Provide block-diagram showing the IDS and assessment systems design and configuration of subsystems, components and devices for providing intrusion detection and assessment functions, design interfaces with the alarm stations, primary and secondary power supplies, uninterruptable power supply, and lighting for continuous detection and assessment function;

(c) Address how power supplies and communication signals will be designed for reliability and availability of security functions;

(d) Provide coverage maps of IDS and assessment systems devices of plant areas (interior and exterior) for the design for redundancy and overlapping detection and assessment capabilities; and

(e) Provide design descriptions and figures for the typical designs of assessment systems and how they are configured with the design of security lighting to provide assurance for assessment.

The information provided must be sufficient detailed to describe the design and design bases for security systems and features of the APR1400 standard design. Additional information is needed to establish details for the design and design bases of security systems, features, or hardware for the APR1400 standard design and how they are relied-on to perform security functions.

Note: The information addressing specific details related to security features which is safeguards information (SGI) must be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark the text in the response to request for additional information (RAI) to appropriately identify SGI that reveals the specific details of security features incorporated in the APR1400 design. Other security-related or sensitive information should be identified and protected as required.

Response

(a) The external detection and assessment equipment and design are the responsibility of the COL applicant. The internal detection system is discussed in the responses to question 13.06-23.

(b) The intrusion detection (IDS) and assessment systems design and configuration, components, and devices are the responsibility of the COL applicant. The standard plant design will provide the infrastructure to receive, analyze, process, and display the data from those systems to the CAS and SAS operators. The systems being provided as part of the standard plant to interface with the remote components and devices are discussed in the response to questions 13.06-13, 13.06-22, and 13.06-32.

(c) The local power supplies and cabling and the communication cabling for the IDS and assessment components and devices will be the responsibility of the COL applicant. The cabling and interface components being designed as part of the standard plant are discussed in the response to question 13.06-22. Normal and secondary power supplies for the infrastructure to process and display the alarm and assessment data is discussed in responses to questions 13.06-8, 13.06-15, and 13.06-21.

(d) The external IDS and assessment system devices are the responsibility of the COL applicant. The internal door intrusion alarms are discussed in response to question 13.06-23.

(e) The external assessment systems and the PA barrier and isolation zone lighting are the responsibility of the COL applicant.

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 to any Technical/Topical/Environmental Report.