

PHYSICAL SECURITY AUDIT PLAN

February 17 – 18, 2016

Korea Hydro & Nuclear Power Company, Ltd.

APR1400 DESIGN CERTIFICATION

Docket No. 52-046

Location: KHNP Washington, D.C. Center
8100 Boone Blvd., Suite 620,
Vienna, VA 22182

Purpose:

The purpose of this audit is to examine and review supporting technical information on select topics of the Korea Hydro & Nuclear Power Company, Ltd. (KHNP) APR1400 standard design for physical security systems for design certification under the U.S. Nuclear Regulatory Commission (NRC) Docket No. 52-046. The audit will review and evaluate supporting documentation for information provided in Tier 1 and Tier 2 of the APR1400 design control document, Technical Report APR1400-E-A-NR-14002-P, "Physical Security Design Features," Revision 0, submitted on September 30, 2015; and Technical Report APR1400-E-A-NR-14001-P-SGI, Revision 0, submitted on October 9, 2015. The outcome of the audit may result in identification of information or documentation that will require docketing to establish the design certification basis for the APR 14000 standard design.

Background:

The NRC staff's ongoing review of the applicant's information on the docket has identified information lacking complete and adequate descriptions related to the detailed design of physical security systems and associated technical design bases, including intended security functions, technical assumptions, design margin, and how the proposed design meets performance and/or prescriptive physical security requirements. Providing the completed information on how the applicant's design of dedicated physical security systems and/or plant structures, systems, and components (SSCs), which the NRC staff relies on, will allow the NRC staff to achieve the security functions and to arrive at the informed security findings for the design certification, as well as allows the NRC staff to determine the appropriate regulatory decisions.

Regulatory Audit Bases:

Subpart B of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52 and 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 the procurement, construction and installation specifications by the applicant. 10 CFR 52.48 requires that the application filed will be reviewed for compliance with the standards set out in 10 CFR Part 73. The audit is required to identify technical information needed to address the detail of the design and the design bases for the physical security systems within the scope of the APR1400 standard design. Supporting documents provide direct evidence and establish the standard for the design of physical security systems

for certification in accordance with 10 CFR Part 52. The documentation containing safeguards and/or security-related information are withheld from the public in accordance with 10 CFR 2.390.

Regulatory Audit Scope:

The audit will focus on the details and design bases for the design of the physical security systems within the scope of the APR1400, which are described in Tier 1, Table 2.12-1, "Physical Security Hardware ITTAC," Tier 2, Section 14.3.12, "Physical Security Hardware – Inspections, Tests, Analyses, and Acceptance Criteria," Tier 2, Chapter 13.6, "Physical Security," and Technical Report APR1400-E-A-NR-14002-P, that is incorporated by reference. The scope will include the review of supporting documentation, engineering evaluations or analyses that establish the design bases for meeting performance and/or prescriptive requirements of 10 CFR Part 73, and the adequacy of the design of physical security systems to provide sufficient details to permit the procurement, construction and installation specifications by an applicant. The audit will include the following:

- The first part of the audit will be to review information and methodology applied to establish the technical basis for determining a complete and accurate list of vital equipment. The review will focus on how KHNP identified all vital equipment, as defined in 10 CFR 73.2, for the identification of vital areas. The identification of a complete and accurate list of vital equipment provides the licensing basis and demonstrates that all vital equipment is protected as required, by 10 CFR 73.55(b)(9)(i). The review will focus not only on how KHNP identified vital equipment, but also on how KHNP eliminated structures, systems and components, as not vital.
- The second part of the audit will examine and review design drawings, design bases and specification documents, and referenced standards, which establish the standard design for physical security systems. The examinations of the supporting documents include engineering evaluations or analyses and documented conceptual design documents supporting the information provided in Technical Report APR1400-E-A-NR-14002-P, "Physical Security Design Features," and, as applicable, Technical Report APR1400-E-A-NR-14001-P-SGI, Revision 0, for the design of physical security systems within the scope of the APR1400 standard design.
- The final part of the audit will examine and review supporting analyses and engineered documentation that provide the design bases and the evaluations of minimum standoff distances required for vehicle barrier systems to protect against the design basis threat land and/or waterborne vehicle bomb assault. The review will include how a bounding safe standoff distance accounts for changes to nuclear island and structures physical configurations (e.g., hatches opened for refueling or maintenance activities), the design of blast resistant doors (if required), and the design for blast protection of openings for adequate safe-standoff distances for all modes of operations.

Information and Other Material Necessary for the Regulatory Audit:

The NRC staff requests KHNP to provide an overview of methodology applied to systematically identify a complete and accurate list of vital equipment from the descriptions of reactor safety systems and components described in Technical Report APR1400-E-A-NR-14002-P. An overview will be needed on the methodology applied to systematically identify vital equipment based on definition of vital equipment in 10 CFR 73.2. The overview should include the technical basis for how and why equipment was either selected or eliminated.

The NRC staff requests that KHNP provide a brief overview of design of a physical protection system (as described in Technical Report APR1400-E-A-NR-14002-P, Technical Report APR1400-E-A-NR-14002-P and Technical Report APR1400-E-A-NR-14001-P-SGI) for the APR1400 standard design. The overview should address the level of detail of the completed design to date, and where the details for the design of dedicated security systems and plant SSCs that are relied-on, to meet security functions, can be found. The overview should include any engineered calculations or other documents that address how the design of the physical security systems will meet applicable performance and prescriptive requirements of 10 CFR Part 73, for the design certification.

The following types of supporting documents are requested for review at the audit:

- Design drawings (D-size, if available) showing plan and elevation views for the design of the physical security systems and plant SSCs, which are relied on to meet the intended security design functions. Conceptual, design, and/or engineering documents showing systems configurations and systems interfaces (e.g., block diagram, line diagram, detail and section views, etc.).
- Design drawings showing: bounding minimum safe stand-off distance for the location of active and passive vehicle barrier systems; minimum safe stand-off distances associated for structures and buildings of the APR1400 standard plant; design and configurations of interior intrusion detection systems; interior assessment systems and components; configuration of alarm stations and last access control within the structures identified as CAS, SAS, and Main Access Control Building; configurations and locations of physical barriers credited for delay (interior or exterior); and exterior intrusion detection and assessment systems and integrated configurations of systems within the PA and isolation zone (if considered within the scope of the DC).
- Design and/or engineering calculations or analyses showing details and locations of engineered fighting positions relied-on to perform neutralization functions and analysis for interior and exterior overlapping fields of fire for designed placement of fighting positions within and integral to the structure of the APR1400 standard plant.
- All referenced documents that are specifically identified in the KHNP technical reports (Technical Report APR1400-E-A-NR-14002-P,

Technical Report APR1400-E-A-NR-14002-P and Technical Report APR1400-E-A-NR-14001-P-SGI) as method or standard applied in the design of physical security systems to meet prescriptive design requirements in 10 CFR 73.55.

Audit Team:

- John Vera, NRC, Project Manager
- Pete Lee, NRC, Senior Security Program Manager
- David Diec, NRC, Senior Security Program Manager
- Hanh Phan, NRC, Senior Reliability and Risk Analyst
- Matt Tomanek, Structural Engineer, NRC Contractor (U.S. Army Corps of Engineers)

No quality assurance (DCIP) support is required for this audit. Any materials deemed to be suitable for submittal or citation will be identified for future quality assurance program audit activities.

Logistics:

The audit will be conducted at the KHNP Washington DC Center, located in Vienna, Virginia. The audit is scheduled to begin at 9:00 a.m. on February 17, 2016, and end at 3:00 p.m. on February 18, 2016.