

## APR 1400 DCD Chapter 13, "Conduct of Operations" Audit

### NRC Audit Team:

Pete Lee (NSIR, Technical Lead)  
Hanh Phan (NSIR, Technical Reviewer)  
David Diec (NSIR, Technical Reviewer)  
Matt Tomanek (USACE, NRC Contractor)  
John Vera (NRO, Project Manager)

### 1.0 SUMMARY

The Nuclear Regulatory Commission (NRC) staff conducted an audit of the physical security elements of the Korea Hydro & Nuclear Power Co., Ltd., (KHNP) Advanced Power Reactor (APR) 1400 Design Certification Application, which included safeguards and security-related information supporting the Tier 1 and Tier 2 of the design control document (DCD). The audit was conducted at the KHNP Washington, D.C. Center, located in Vienna, Virginia on February 17, 2016. The staff conducted the audit in accordance with the NRC's Office of New Reactors (NRO) Office Instruction NRO-REG-108. The audit plan, dated February 11, 2016, is in the NRC Agencywide Document Access and Management System (ADAMS), under Accession No. ML16032A150.

### 2.0 BASIS

This audit was conducted in order for the staff to: (1) gain an understanding of APR1400 physical security design features to reach a reasonable assurance finding and (2) review related documentation and non-docketed information to evaluate conformance with the Standard Review Plan (SRP) and technical guidance.

The subjects of the audit included review of the following: (1) KHNP's methodology applied to establish the technical basis for determining a complete and accurate list of vital equipment; (2) the method and assumptions for determining a bounding minimum safe standoff distance for vehicle barrier systems to protect against the design basis threat vehicle bombs; and (3) design drawings, design basis and specification documents, and referenced standards for the design of physical security systems in the scope of the KHNP APR1400 design certification.

### 3.0 OBSERVATIONS AND RESULTS

1. The audit provided an understanding of the process applied by KHNP to determine vital equipment, associated technical assumptions, and the documentation of results for the APR1400 standard design. The staff noted that the information presented, addressed the subjects of the NRC request for additional information (RAI). The information described the methodology applied to determine vital equipment and the update to vital equipment list in Technical Report APR1400-E-A-NR-14002-P, "Physical Security Design Features," which is incorporated by reference into the APR1400 DCD.
2. The audit provided an understanding of the technical basis and assumptions for how KHNP determined the bounding minimum safe standoff distance (MSSD) that will protect the APR1400 nuclear island and structures against the design basis threat vehicle

bombs. KHNP applied the guidance in Section 2 of the update to NUREG/CR 6190, dated March 2004, as the basis for bounding MSSD distance. KHNP described how the bounding MSSD accounts for structures below ground and protection of equipment and personnel. The staff noted that the information presented and discussed during the audit, addressed the subjects included in RAI 8412. The staff noted that the information on how KHNP applied guidance in the update to guidance, including assumptions and results, should be included in Technical Report APR1400-E-A-NR-14002-P.

3. During the audit, the applicant informed and provided insights to the NRC staff regarding the design of physical security structures and systems within the scope of the APR1400 standard design certification. The staff noted that the information on the docket, including the Technical Report APR1400-E-A-NR-14002-P, "Physical Security Design Features," significantly underrepresented the design details available and captured in documents examined during the audit. The information regarding the design of physical security systems should be provided on the docket to establish the sufficient details and necessary bases for certifying the APR1400 standard design.
4. The staff did not identify any additional subject areas or issues that are not already included in NRC RAIs.

#### 4.0 CONCLUSION

The summary of observations, as indicated above, was communicated to KHNP during the audit and reiterated at the exit briefing. The audit did not identify a need for additional questions to supplement NRC RAIs. The staff emphasized that the DCD and the technical report, incorporated by reference, must document sufficient and necessary details on design of physical security systems to provide the basis for the design certification.