NRC's Modeling and Simulation Guidance Development

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Protecting People and the Environment

Purpose

The purpose of this presentation is to provide an update on the NRC's development of a NUREG to clarify how modeling and simulation (MODSIM) software could be used to help a licensee validate the effectiveness of changes to its security plan.

Regulatory Guide for 10 CFR 50.90

The guidance document on the potential use of modeling and simulation (MODSIM) software to validate changes to a licensees' security plan states that licensees should develop a baseline scenario to establish a starting point in the protective strategy.

(1) Formation of change team and scenario development
(2) Review of scenario by subject matter experts
(3) Limited scope performance tests (LSPTs)
(4) MODSIM preparation and testing
(5) Verification of MODSIM testing through tabletop/FoF exercises
(6) Documentation compilation

Regulatory Guide for 10 CFR 50.90 - continued

Once the licensee has completed its baseline scenario and assessment, a revised scenario is assessed by the licensee against the same platform to validate the physical protection system effectiveness as adequate.

(1) Formation of change team and scenario development
(2) Review of scenario by subject matter experts
(3) Limited scope performance tests (LSPTs)
(4) MODSIM preparation and testing
(5) Verification of MODSIM testing through tabletop/FoF exercises
(6) Documentation compilation
(7) Implementation provisions
(8) Record changes
(9) Submit to NRC for approval

Licensees' Submission of Revised Security Plans

When submitting a proposed change to a security plan using MODSIM technology, a licensee should have the following available:

(1) A documented evaluation showing the baseline scenario, consistent with the RG. The description of the baseline scenario should include a calculation of the physical security probability of system effectiveness.

(2) A documented evaluation showing the revised scenario, consistent with the RG. The description of the revised scenario should include a calculation of the physical security probability of system effectiveness.

Licensee Submission of Revised Security Plans

The nuclear power plant licensees will have the recommended physical security probability of system effectiveness value in an appendix; this appendix will contain Safeguards Information (SGI)

Cat I licensees will have the recommended physical security probability of system effectiveness value in an appendix; this appendix will contain Secret National Security Information (SNSI)

NUREG on MODSIM Tools

The NRC is developing a NUREG to document how the MODSIM tools can be used to validate changes to a licensees' security plan. This NUREG will include:

- A description of the modeling tool (e.g., how to obtain; training; cost; accreditation and data to be entered into the tool)

- A discussion of MODSIM tools available to licensees, including: Simajin, Dante, Avert, Scribe 3-d, and PathTrace

Inspection Procedures

The NRC will develop an addendum for existing inspection procedures for nuclear power plants and Cat I licensees.

Regional inspectors can go on-site to review security plan changes submitted using MODSIM tools.

Timeline for NUREG Development

- Drafted RG and NUREG will be reviewed within the NRC starting in 2nd quarter of fiscal year 2023
- The draft RG will be published in the *Federal Register* for public comment approximately in the 1st quarter of fiscal year 2024
- Finalization of the guidance documents estimated during the 2nd or 3rd quarter of fiscal year 2024