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Physical Protection Modeling and Simulation Tools to Optimize Security for New Reactors

In 2008, the U.S. Nuclear Regulatory Commission (NRC) issued a policy statement that stressed the importance of considering safety and security requirements together in the new reactor design process, so that security issues (e.g., newly identified threats of terrorist attacks) can be effectively resolved through facility design and engineered security features (Federal Register, Vol. 73, No. 199, page 60612, dated October 14, 2008). Incorporating physical security into the designs of new nuclear facilities can avoid future, costly retrofits. Numerous commercial- and government-developed physical protection modeling and simulation (M&S) tools exist to help new reactor designers and vendors design physical security elements into their new reactor facilities. Those physical protection M&S tools can perform one or more of several functions related to the design or evaluation of a physical protection program or protective strategy, including facility characterization, adversary pathway analyses, combat simulation, and physical security system effectiveness. The NRC is assessing the appropriate uses of physical protection M&S tools for designing, validating, and modifying physical protection programs and protective strategies associated with new reactors for two primary purposes. First, the NRC wants its security staff to be prepared to accurately review new reactor license applications, and conduct inspections at new reactor sites, that may rely on physical protection programs or elements that have been designed or modified using physical protection M&S tools. Second, the NRC intends to incorporate lessons that it learns from the assessment into the guidance for industry that it plans to issue within the next 2 years. A paper based on this abstract will describe the details of the approach that the NRC staff is utilizing to form policy for the regulatory oversight of physical protection M&S tools.

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