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Strengthening Testing and Evaluation Capabilities for the Long-Term Sustainability of Nuclear Detection Architectures

Strengthening Testing and Evaluation Capabilities
for the Long-Term Sustainability of Nuclear Detection Architectures
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The US Department of Energy (DOE) National Nuclear Security Administration's Office of Nuclear Smuggling Detection and Deterrence (NSDD formerly referred to as Second Line of Defense and Megaports) has worked with more than sixty countries to build, strengthen, and sustain capabilities that enable deterrence, detection, and investigation of the illicit trafficking of nuclear and radioactive materials. A central element of these capabilities is effective radiation detection equipment, including radiation portal monitors and handheld radiation detection devices. For this equipment to successfully serve the nuclear security regime, it is critical the equipment is selected based upon mission-driven radiation detection/identification, environmental robustness, and operational requirements, and rigorously tested to ensure its compliance with each. While requirements development and subsequent testing and evaluation is a central focus when acquiring new or replacement equipment, the capability is also part of a sustainable equipment life-cycle program that empowers the nuclear security regime to evaluate the impacts from changes to technology, operational protocol, or the operational environment.

Beginning in 2015, the US DOE's NSDD and General Administration of China Customs (GACC) initiated a series of technical exchange engagements focused on the building of a testing and evaluation capability to strengthen the detection architecture within China's nuclear security regime. In the context of evaluating a spectroscopic radiation portal monitor that GACC planned to deploy, these exchanges explored best practices in the various components of an effective radiation detection equipment testing and evaluation program. This included all elements required to successfully plan and conduct tests from requirements development through test reporting, as well test infrastructure and test program management topics. Through this initiative, GACC developed new facets to partnerships with the China State Nuclear Security Technology Center and the China National Institute for Metrology with these organizations offering GACC technical expertise, and testing facilities and resources. Together, this cooperation resulted in comprehensive and effective testing and evaluation capability that has successfully planned and conducted radiation detection and environmental performance tests on a spectroscopic radiation portal monitor for vehicle scanning and a walk-through radiation portal monitor for pedestrian scanning.

Beyond strengthening China's nuclear detection architecture, this technical exchange approach represents a method to increase the effectiveness of radiation detection equipment, and equipment life-cycle sustainability of other member states. Where resources constrain a state's ability to maintain a testing and evaluation capability, IAEA Nuclear Security Support Centers and Centers of Excellence with demonstrated capability in this area could serve as a valuable resource to achieve the same ends: effective detection architectures for all member state nuclear security regimes.

State

United States

Gender

Not Specified

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