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## **DNN Safeguards Research and Development: Providing Capabilities that Shape the Future**

The National Nuclear Security Administration's (NNSA) Defense Nuclear Nonproliferation (DNN) Office of Proliferation Detection funds research and development (R&D) that improves the efficiency and effectiveness of current safeguards and efforts to strengthen existing safeguards measures to detect material diversion in declared facilities. DNN R&D develops advanced tools and methods to provide for comprehensive monitoring, detection and analysis of civilian nuclear fuel cycle programs. Sponsored research provides confidence that special nuclear material (SNM) is not being diverted or misused for the proliferation of nuclear weapons. A safeguards-specific goal is to develop and demonstrate new technologies and capabilities to cooperatively quantify and track SNM throughout a nuclear fuel cycle and detect any illicit diversion of these materials. These goals align with those of the International Atomic Energy Agency's recently released Research and development Plan, "Enhancing the Capabilities of Nuclear Verification by making use of scientific and technological innovation, and to enhance the readiness of technology and support new verification missions." [1]

DNN supports research and development of technologies and methodologies that can significantly improve or enhance nondestructive assay methods, provide effective containment and surveillance, process and environmental monitoring, and destructive analyses. This paper will provide an overview of the DNN Safeguards R&D program; highlighting efforts that are currently underway and others that are in the initial stages of R&D.

[1] International Atomic Energy Agency, Department of Safeguards, Research and development Plan, "Enhancing Capabilities for Nuclear Verification", January 2018.

### **Which "Key Question" does your Abstract address?**

TEC1.1

### **Topics**

TEC1

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