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## Plutonium Diversion Detection Training (PDDT) for IAEA inspectors at the Idaho National Laboratory

*Monday, 5 November 2018 17:25 (5 minutes)*

Detecting diversion of nuclear material from nuclear fuel cycle facilities is one of the main objectives of safeguards under a comprehensive safeguards agreement. Effective detection approaches rest on three essential components. First, a well-reasoned verification plan which is based on a perceptive analysis of the facility's operating and accounting documents and includes both an efficient sampling plan as well as a judicious distribution of resources that takes into consideration the available time and working constraints (e.g. security, safety and plant schedules). Second, a sound knowledge of the physical properties of the nuclear material to be verified combined with an in-depth technical understanding of the measurement systems (e.g. neutron and gamma detectors) used for the verification activities including hands-on experience with the factors that affect the measurement results in terms of biases and uncertainties. Third, a practical experience of the statistical tools that can be used for the consolidation and evaluation of the verification data. Due to time constraints and other limitations, the stratification and sampling approach implemented at a facility is usually designed beforehand by senior inspectors and the detailed evaluation of inspection data, including potentially challenging measurement data, is performed at headquarters by senior inspectors and/or specialized analysts. Safeguards inspectors therefore have few occasions to deploy the full range of competences that they are expected to acquire, maintain, and upgrade throughout their professional life. While a wide variety of theoretical and practical training courses allow them to strengthen and refresh their knowledge of specific topics, the Plutonium Diversion Detection Training course (PDDT) offers the participants a unique occasion to put their multidisciplinary training into practice through the simulation of all aspects of a practical inspection at a plutonium plant. The extensive and versatile inventory of the Idaho National Laboratory facilities makes it possible to create a number of inventive diversion and falsification scenarios which the IAEA trainees are challenged to detect and foil, while complying with the strict safety, security and access constraints that are enforced at facilities holding sensitive nuclear material.

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

SGI3.7

### Which alternative "Key Question" does your Abstract address? (if any)

SGI3.5

### Topics

SGI3

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