

Additional safeguards measures are necessary to provide assurance that undeclared nuclear material and nuclear facilities do not exist in States which have entered into comprehensive safeguards agreements. Such measures must be introduced at an early date. Substantive progress has been made in considering various additional safeguards measures. This progress is the result of coordinated effort involving Member States, international consultants, the Standing Advisory Group on Safeguards Implementation (SAGSI), and the Secretariat.

Safeguards Elements of Cutoff Convention

From the identified diversion signatures a list of appropriate safeguards/verification techniques is provided. These are defined into three generic types of methods, varying from the least to the most intrusive:

- Technical Means³⁹,
- Routine Inspections, and
- Special Inspections⁴⁰.

The technical means are non-intrusive methods and comprise reconnaissance satellite systems using either photographic, infrared, radar or electronic sensors, and radar and acoustic systems. Chemical and radio-nuclide environmental detection and monitoring methods and non-technical intelligence collection and analysis means are also defined as technical means.

The routine inspection techniques include existing, or potential, IAEA safeguards (e.g., on-site surveillance, containment and accountancy) which require the presence of a resident or non-resident inspector, using either off-site or on-site equipment to facilitate inspections using non-destructive or destructive analysis. Sampling, which involves off-site analysis, is considered to be destructive analysis.

Special inspections are as defined in INFCIRC/153, and would in principle include both destructive and non-destructive analysis techniques. A descriptive qualitative assessment is provided of the effectiveness of verification methods, for a given facility diversion.

Technological developments and safeguards instrumentation for the fissile material Cutoff Convention, are changing the way inspectors are able to verify nuclear materials at many facilities around the world. Many new instruments ranging from advanced video monitoring systems to miniature detectors and analyzers already are in place. Behind the development of many of these new safeguards instruments are a number of factors. They include:⁴¹

- Technological advances in computer-related fields, such as micro-processing and electronics, and specific areas of instrumentation,

³⁹ These are also referred to in the literature as National or International Technical Means. For the purpose of this report, the ownership of the verification technique is not a concern.

⁴⁰ These are also sometimes referred to as unannounced inspections.

⁴¹ *IAEA Safeguards Implementation at Nuclear Fuel Cycle Facilities*, IAEA, Vienna, 1985. pp. 22-68.