



Contribution ID: 198

Type: oral

## **Proliferation Resistance and Safeguards by Design - The Safeguardability Assessment Tool Provided by the INPRO Collaborative Project "INPRO" (Proliferation Resistance and Safeguardability Assessment)**

*Friday, 24 October 2014 10:10 (20 minutes)*

Since the INPRO Collaborative Project on Proliferation Resistance and Safeguardability Assessment Tools (PROSA) was launched in 2011, Member State experts have worked with the INPRO Section and the IAEA Department of Safeguards to develop a revised methodology for self-assessment of sustainability in the area of proliferation resistance of a nuclear energy system (NES). With the common understanding that there is "no proliferation resistance without safeguards" the revised approach emphasizes the evaluation of a new "User Requirement" for "safeguardability", that combines metrics of effective and efficient implementation of IAEA Safeguards including "Safeguards-by-Design" principles. The assessment with safeguardability as the key issue has been devised as a linear process evaluating the NES against a "Basic Principle" in the area of proliferation resistance, answering fundamental questions related to safeguards: 1) Do a State's legal commitments, policies and practices provide credible assurance of the exclusively peaceful use of the NES, including a legal basis for verification activities by the IAEA? 2) Does design and operation of the NES facilitate the effective and efficient implementation of IAEA safeguards? To answer those questions, a questionnaire approach has been developed that clearly identifies gaps and weaknesses. Gaps include prospects for improvements and needs for research and development. In this context, the PROSA approach assesses the safeguardability of a NES using a layered "Evaluation Questionnaire" that defines Evaluation Parameters (EP), EP-related questions, Illustrative Tests and Screening Questions to present and structure the evidence of findings. An integral part of the assessment process is Safeguards-by-Design, the identification of potential diversion, misuse and concealment strategies (coarse diversion path analysis), and the identification of safeguards tools and measures to meet facility or activity specific safeguards objectives. The usefulness of this approach has been preliminary tested and demonstrated in a case study performed by KAERI.

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**Session Classification:** Promoting the Interface Between Nuclear Safety, Security and Safeguards