

Proliferation Resistance and International Safeguards

Eckhard Haas

**JAEA-IAEA- Workshop,- Tokai, Japan
November 13-15, 2007**



IAEA

International Atomic Energy Agency

Proliferation Resistance and International Safeguards

- **Definitions**
- **Proliferation resistance and State-level safeguards**
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Safeguards Objective

The objective of safeguards is the timely detection of diversion of significant quantities of *nuclear material* from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosive devices or for purposes unknown, and deterrence of such diversion by the risk of early detection.

INFCIRC/153 (corrected)

Proliferation Resistance – Definitions

Proliferation resistance is that characteristic of a nuclear system that impedes the diversion or undeclared production of nuclear material, or misuse of technology, by States in order to acquire nuclear weapons or other nuclear explosive devices.

Como II, IAEA STR-332, December 2002



Proliferation Resistance – Definitions

The degree of proliferation resistance results from a combination of, *inter alia*, technical design features, operational modalities, institutional arrangements and safeguards measures.

Como II, IAEA STR-332, December 2002

Proliferation Resistance – Definitions

Intrinsic proliferation resistance features are those features that result from the technical design of nuclear energy systems, including those that facilitate the implementation of extrinsic measures.

Proliferation Resistance – Definitions

Intrinsic features are technical features

- that reduce the attractiveness for nuclear weapons programmes of nuclear material in the fuel cycle,
- that prevent or inhibit the diversion of nuclear material,
- that prevent or inhibit the undeclared production of direct use material, and
- that facilitate verification, including of continuity of knowledge

Proliferation Resistance – Definitions

Extrinsic proliferation resistance measures are those that result from States' undertakings related to nuclear energy systems.

Proliferation Resistance – Definitions

Extrinsic measures could be:

- States' commitments, obligations and policies with regard to non-proliferation,
- bilateral agreements between exporting and importing States that nuclear systems will be used only for agreed purposes and subject to agreed limitations, and that guarantees supplies of nuclear fuel services,

Proliferation Resistance – Definitions

Extrinsic measures could be (cont'd):

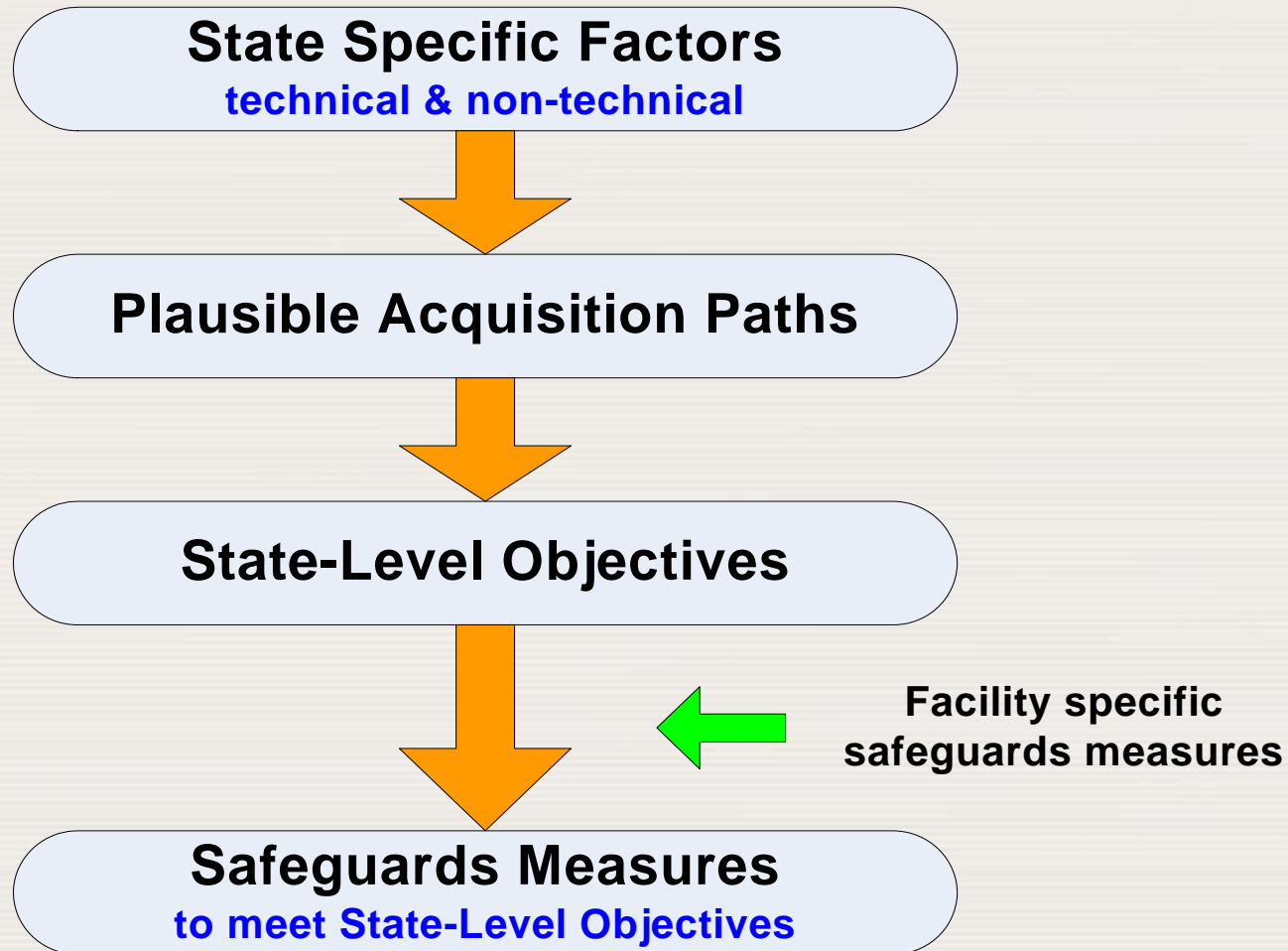
- the application of IAEA safeguards and, as appropriate, regional bilateral and national measures to ensure that operators comply with non-proliferation or peaceful-use undertakings, and
- legal and institutional arrangements to address violations of nuclear non-proliferation or peaceful-use undertakings.

Proliferation Resistance – Fundamentals

Extrinsic proliferation resistance measures, such as control and verification measures, will remain essential, whatever the level of effectiveness of intrinsic features.

Como II, IAEA STR-332, December 2002

Facility-Specific Safeguards Considerations

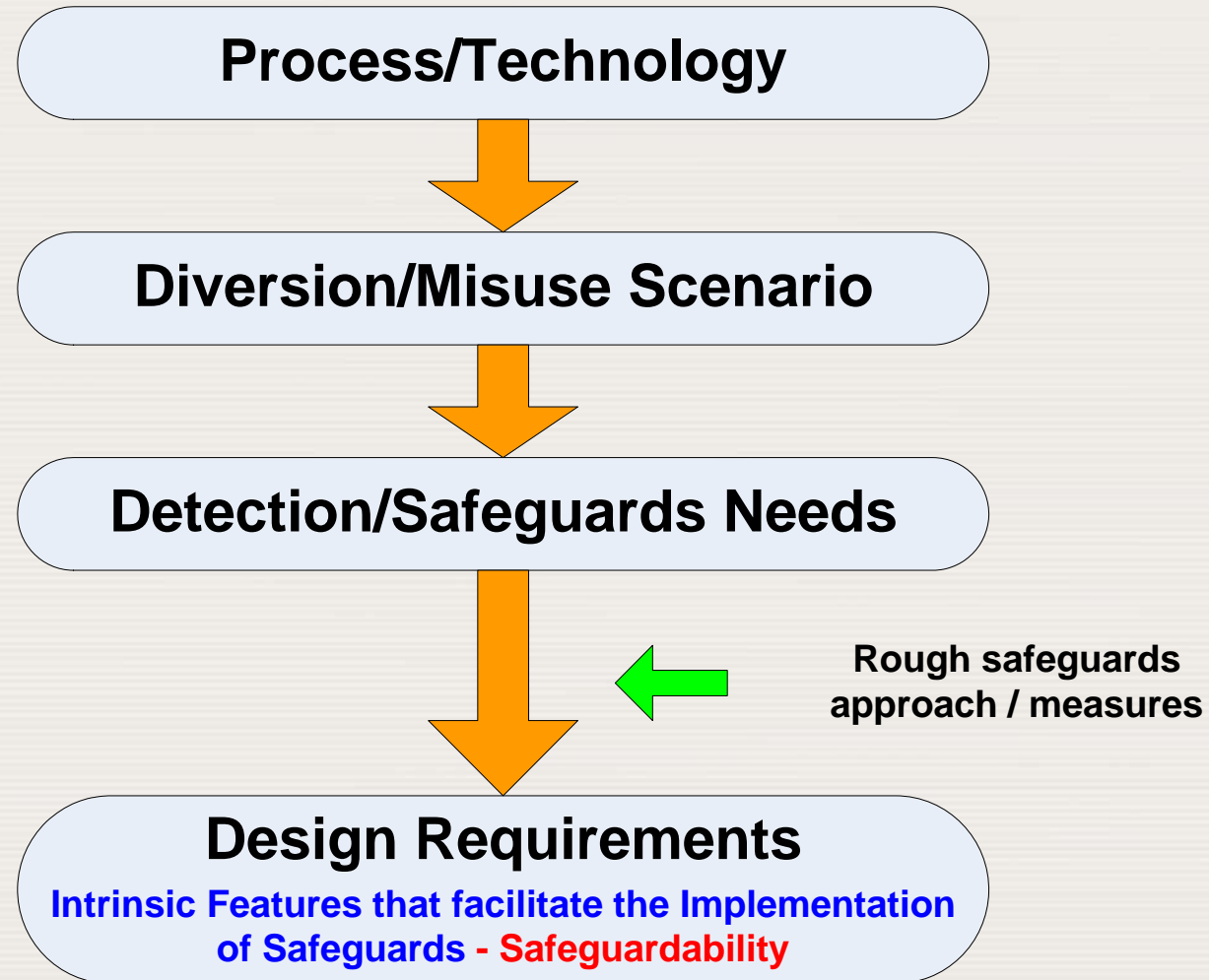


State-Level Proliferation Resistance Attributes

State-level proliferation resistance attributes that have or might have an impact on the safeguards effort at the State-level:

- **Comprehensive safeguards agreement and an additional protocol in force (integrated safeguards implemented)**
- **multilateral approaches to the nuclear fuel cycle (e.g. international centres for front-end and back-end fuel cycle facilities, Global Nuclear Energy Partnership (GNEP))**
- **multinational ownership, management or control of nuclear energy systems**

Facility-Specific Safeguards Considerations



Facility-Level Proliferation Resistance Attributes

Facility-level proliferation resistance attributes that have or might have an impact on the safeguards effort at a facility:

- **Material Category (unirradiated direct use material, irradiated direct use material and indirect use material)**
- **Material Quality (suitability for a nuclear explosive device)**

Facility-Level Proliferation Resistance Attributes cont'd

- **Attractiveness of nuclear technology (proliferation sensitivity)**
- **Complexity of nuclear technology (potential diversion and misuse scenarios)**
- **Accessibility of facilities and nuclear material for IAEA inspectors**
- **Accountability (uncertainty of the material balance, safeguards measurement capability)**

Facility-Level Proliferation Resistance Attributes cont'd

- **Availability of accounting and safeguards relevant operating data**
- **Amenability of containment and surveillance measures**
- **Amenability of monitors providing information on the flow of nuclear material or on the status of a facility or equipment**
- **Possibility of remote data acquisition**

Conclusion

- **International safeguards will remain essential for the proliferation resistance of a nuclear energy system.**
- **Taking into account design features that are aimed at facilitating the implementation of international safeguards at very early design stages will improve the proliferation resistance.**