



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Coordination and Interface between Safety and Security

Task Force on Safety and Security Interface

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nuclearsafety.gc.ca

Guiding Principals



Nuclear Safety and Nuclear Security

Same overall objectives:

- Protection of People
- Protection of the environment from the effects of harmful nuclear radiation



Common Aspects of Nuclear Safety and Nuclear Security



Design of nuclear facilities

- Compliance with Nuclear Safety Regulations, Codes and Standards
- Use of In-depth defence concept:
 - Redundancy
 - Diversity
 - Single Failure Criterion
 - Physical Separation
- Safety measures = barriers against acts of sabotage
- ↑ Safety systems = ↑ barriers to overcome to commit sabotage and ↑ capabilities is required

Common Aspects of Nuclear Safety and Nuclear Security



Design of nuclear facilities

- Design Basis Accident (DBA)
 - Used by designers, operators and regulators for the events that may exceed the design basis considered for **nuclear safety**
- Design Basis Threat (DBT)
 - Used in **nuclear security** to deal with threat capabilities against which protection will be reasonably ensured

Common Aspects of Nuclear Safety and Nuclear Security



Design of nuclear facilities

- Engineered safety features of the facility
 - 1st mitigation action such as confinement of radioactive material
 - Process is completely synergetic for security concerns



Synergies Between Nuclear Safety and Security



Synergy

- Very strong even when it is not deliberately pursued
- When considered in the design of a nuclear facility, it can be very effective



Synergies Between Nuclear Safety and Security



- Further synergetic mitigation measures can be conducted on-site and/or off-site
- In case of a security incident additional measures can be required to prevent further malicious acts
- Protection against sabotage also provides protection against theft of the associated material
- Theft of nuclear materials may result in unacceptable consequences outside the nuclear facility

Safety-Security Interface Challenges



Different Paradigm

Nuclear Safety-Assesses Hazard

- Technical issue requiring professional expertise
- Use of probabilistic approach

Nuclear Security-Assesses Threat

- Requires specialized knowledge such as intelligence investigation skills and expertise
- Deterministic approach in developing DBT and threat scenarios
- Use of probabilistic approach is possible, but uncommon



Safety-Security Interface Challenges



Transparency Vs. Confidentiality

- Transparency
 - Sharing some experiences, information and engineering solutions
 - Public needs to know the nuclear facilities are safe
- Confidentiality
 - Security information is ***need to know basis***
 - Increasing the difficulty for adversaries to commit an act of sabotage



Safety-Security Interface Challenges



The silos mentality

First factor

- Nuclear Safety: Operators have full responsibility of nuclear safety
- Nuclear Security: Shared responsibility where threat assessment and protection against sabotage involves state organizations and in some cases it is largely under state responsibility

Second factor

- Traditionally, Nuclear Safety and Security specialist have worked in isolation

Resolution?

- Use of same regulatory authority for safety and security. Consistent with the 3S concept (*Safety, Security and Safeguards*) successfully used by some countries



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