

**IRSN**

INSTITUT  
DE RADIOPROTECTION  
ET DE SÛRETÉ NUCLÉAIRE

*Faire avancer la sûreté nucléaire*

# SAFETY AND SECURITY INTERFACES IN EMERGENCY SITUATIONS

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J.JALOUNEIX



# IRSN'ACTIVITIES IN NUCLEAR SECURITY

- Technical support of the French Competent Authority
  - Assessment of files and documentation produced by nuclear operators (facilities and transport areas)
  - Performance of inspections on behalf of the French CA
  - Performance of exercises and training
  - Drafting of regulation
- Involvement in international activities
  - Bilateral cooperation (European and international levels)
  - Multilateral relations (IAEA, ENSRA...)

# CONTEXT (1/2)

## Exercise in the field of safety => Large experience

- Initiator (natural event, equipment failure, human error)
- Limited number of entities involved

## Exercise in the field of security => More limited exp.

- Initiator (malevolent action)
- Large number of entities involved
- **Simulation of safety responses**
- Allocation of responsibilities (operator, authorities)

## Exercise merging safety/security

- Safety exercise with a malevolent initiator
- **Simulation of response strategy**

## Table top exercise

- Merge safety and security issues
- Allow training and open discussion about key points



## CONTEXT (2/2)

- Emergency response demands a perfect cooperation of a large number of local, regional and national entities (security and safety authorities, operator teams, dedicated response forces, judicial authorities...) to handle the safety and security aspects of the situation
- Exercises merging the two aspects in realistic conditions are complex, expensive and difficult to carry out
- Need to perform different types of exercises which complete each other
  - Security exercises
  - Safety exercises with a malevolent initiator
  - Table top exercises



**=> IRSN involved as TSO in safety and security areas is a focal point with all these entities**

# SECURITY EXERCISES



## Objective

- To test the overall organization in response to a malevolent action
- To assess the emergency plans available in the field of security
- To test the co-ordination of intervention teams

## Main results

- Assess scenarios of theft of NM and scenarios of sabotage
- Allow gradual interfaces between safety and security issues

# SAFETY EXERCISES WITH MALEVOLENT INITIATOR

## Objective

- train the local authority (implement emergency and contingency plans)
- Assess the decision making processes
- Precise the allocation of responsibilities between authorities and operator

## Specificities

- The sequences of failure of equipment could vary from those taken into account in the safety case due to a malevolent initiator
- Limitation of movements and actions on equipment on the site
- The time to counter the threat has to be taken into account to assess the deadline for recovery of a safe situation
- No exchange of sensitive information

## Main results

- Mutual acculturation
- Awareness by all actors of respective requirements in the fields of safety and security
- Awareness of safety specialists of potential vulnerabilities of the facility

# TABLE TOP EXERCISES

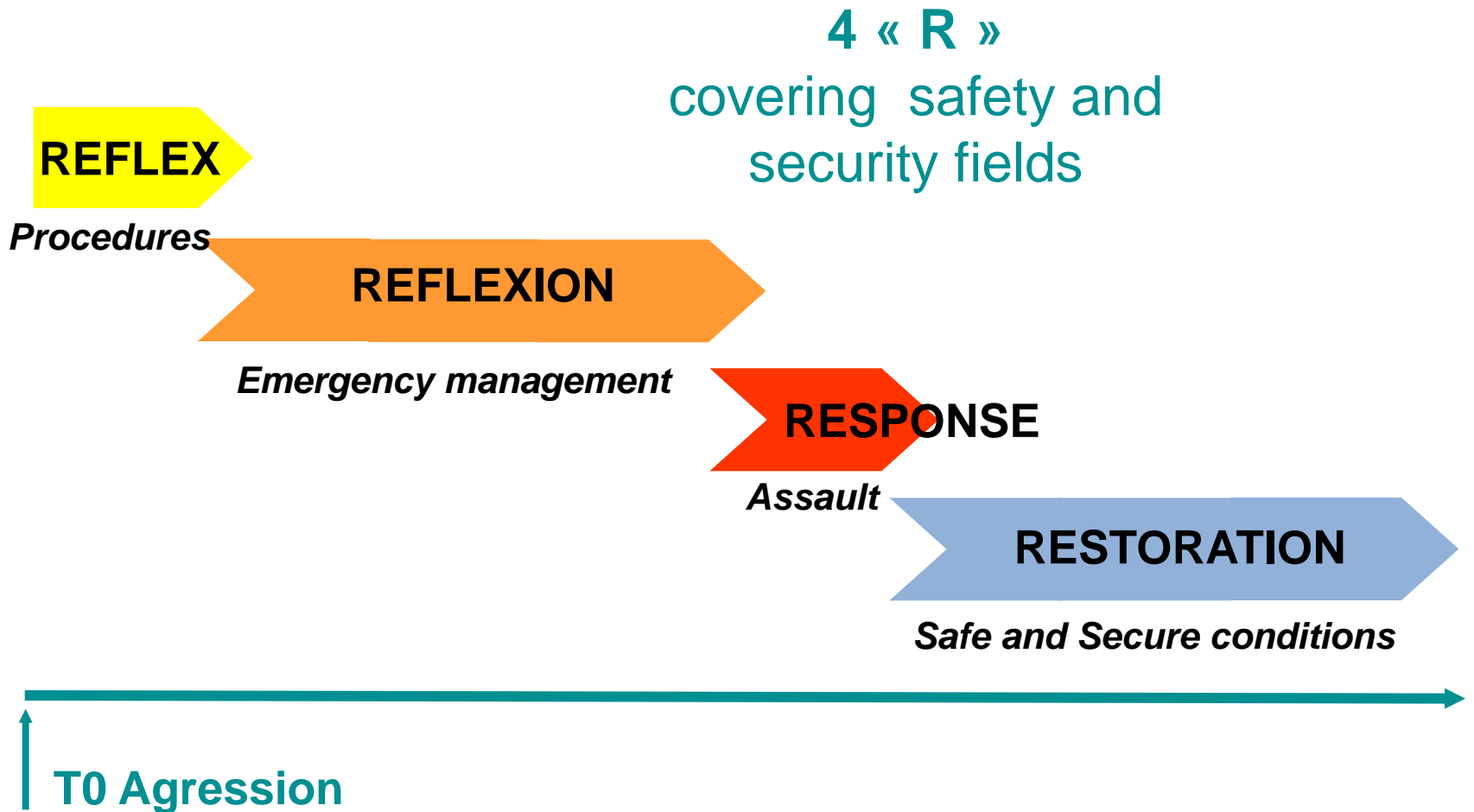
## Objective

- To involve and put in real-life situation all stakeholders
- To underscore the complementarity and the need for coordination between safety and security in the management of this type of crisis
- To identify and manage interfaces
- To prepare the decision making process and to understand the ground for these decisions
- To heighten awareness and/or to train people or entities involved

## Specificities

- A combination of two different problematic issues
  - **Safety** of the nuclear facility (damage of safety functions, accidental situation)
  - **Security** (terrorist group on site, impossibility to manage the situation by local actions)
- A threat level with the need **to overpower adversaries before the occurrence of an unacceptable situation** in a NPP (severe core damage)
- **A progressive involvement of all State agencies** as the situation on site is worsening

# SYNOPSIS OF TABLE TOP EXERCISES





- ❑ Detection and assessment of security events
- ❑ Contingency plan activated (local/national levels)
- ❑ National response forces required

## REFLEX PHASE

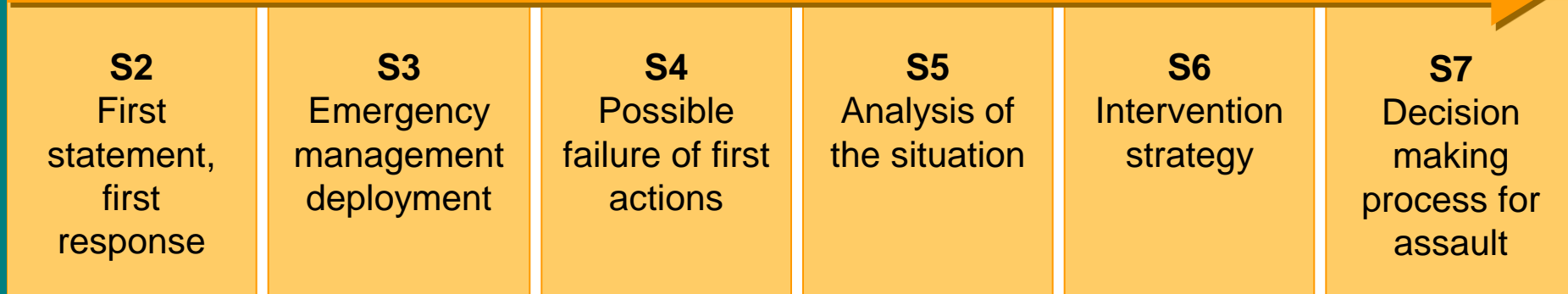
S1  
The attack

- ❑ Reactor automatic shutdown
- ❑ Detection and assessment of safety events
- ❑ Emergency plan activated
- ❑ National safety emergency organisation activated

# Security

- Possible local forces intervention failures
- Possible hostages and employees injured
- National forces take the response leadership
- All ministers informed
- Assessment of possible intervention strategies
- National forces lead negotiation with adversaries
- Order of assault

## REFLECTION PHASE



- How to recover safety functions by actions in inaccessible buildings
- Control of core cooling and other basic safety functions
- Preparation of population protection

# Safety

Security

- National forces lead negotiation with adversaries
- Last details of assault tactics are decided
- Adversaries overpowered
- Release of hostages

## RESPONSE PHASE

S8  
Assault

- Assessment of time to recover main safety functions

Safety

# Security

- Securing the buildings

- Search of evidences
- Contingency plan deactivated?

## RECOVERY PHASE

**S9**

Recovery strategy

Short term

Medium and long term

- Equipment check
- Strategy to restart stopped equipment
- Strategy in case of equipment failure

- Starting the repair works
- Emergency plan deactivated?

# Safety

# DECISION MAKING PROCESS

- Need to find a balance between safety and security requirements
- Need for allocation of responsibilities between several entities (a lot of State and non-State actors involved)
- The authority responsible for the crisis management has to be clearly identified and the ground for decision making must be clear
- A specificity of a nuclear crisis resulting from a severe attack on a nuclear facility is the ability to cope with simultaneously two different issues:
  - To protect the life of workers and possible hostages on the site
  - To avoid a severe accident with potential releases in the environment
- Need to prioritize the main risks to make a decision (hostage life vs. core melt)

# COORDINATION AND INTERFACES

- Need to carefully prepare the coordination, cooperation and the interfaces between all involved entities
- Need to precise in the regulations the missions, roles and responsibilities of ministerial departments, institutions, organizations and individuals involved in the process
- Need for coordination and acculturation between the safety and the security fields to identify synergies in the management of the crisis and potential conflicting areas
- Need for information and coordination between local and national involved entities, mainly as the intervention and response is concerned
- Need for a careful preparation and coordination between safety and security authorities to issue press releases

# PLANNING, PREPARATION AND TRAINING

- Need to develop strong safety and security cultures within the institutions, organizations and personnel
- Need to be prepared for such a crisis through development, implementation and testing of emergency plans and contingency plans
- Importance to the intervention teams to have a good knowledge of the nuclear site and to be aware of its specific risks
- A nuclear crisis of malicious origin on a nuclear site could lead to unexpected situations which have to be identified and assessed by the nuclear operator and appropriate procedures and provisions have to be prepared in advance (staff management, hostage-taking)

# TIME AND PEOPLE MANAGERMENTS



- The time scale is not the same for safety and security specialists
- There is a need to quickly identify equipment or system which will become vital for safety purposes as a result of damages performed by the adversaries
- The crisis is not over after the assault and the neutralization of the adversaries
- Need to have locally on the site or its close vicinity a sufficiently robust response force