NUCLEAR SECURITY AND EMERGENCIES IN CASE OF MALEVOLENT ACTS AGAINST NUCLEAR POWER PLANTS

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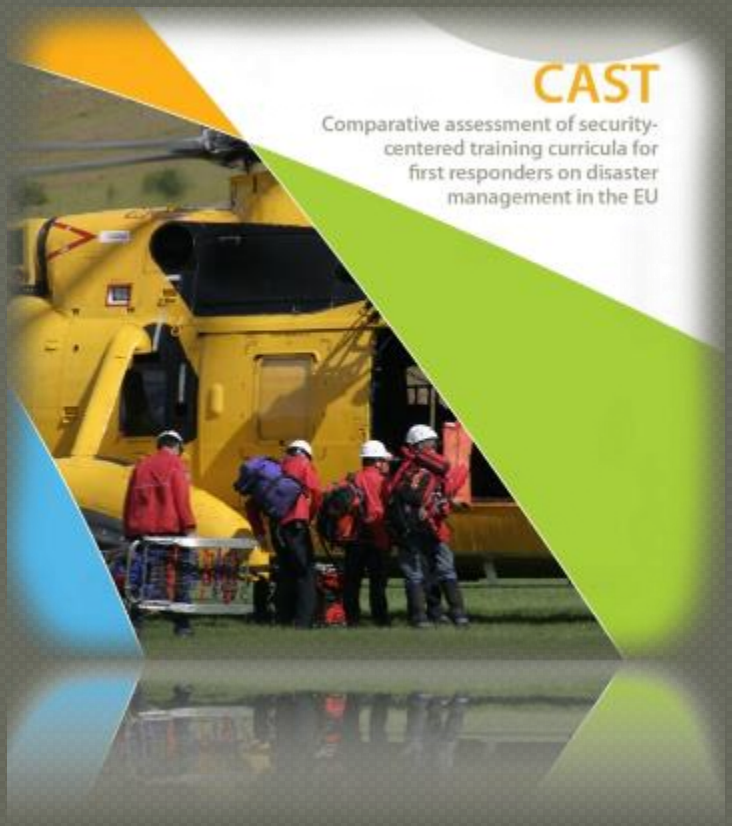
Background

- **CAST project**, Comparative Assessment of curricula for training First Responders on disaster management in the EU
- **Work Areas**: Managing Catastrophic Emergency, Terrorist Threats, Catastrophic Releases, Best Practices, Training Human Factors and Virtual Reality, Technology Implementation and Training Plans.
- **Main results**:
  - a Standardized Curriculum for First Responders in catastrophic emergencies, and
  - Proposals to overcome GAPs between EU states and the best worldwide practices identified.



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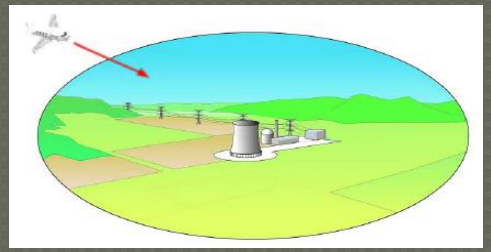
Vulnerabilities, Threats and Risks

The origin of risk is the accumulation of radioactive materials. Nuclear safety principles guarantee a series of protection stages against failure and its detection

The main significant differences amongst facilities in the nuclear security frame:

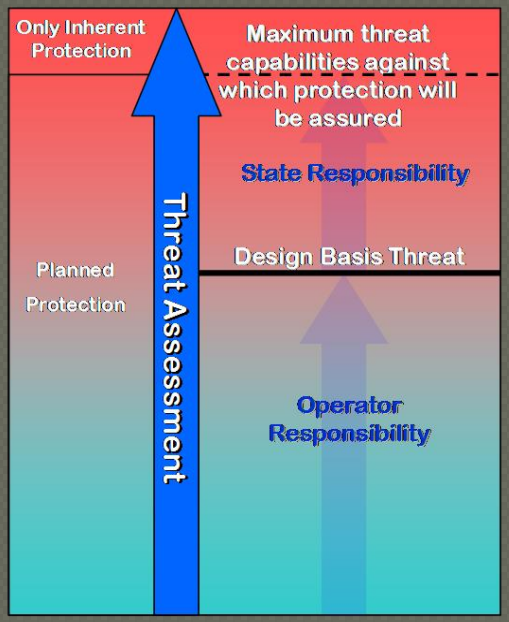
1) Technologies like Containment structures, Emergency Core Coolant Systems (ECCS), or fire systems.
2) Locations. Seismic, geological, meteorological, demographic and other.
3) Geopolitical aspects.
4) Training in case of emergency.



Thus, in addition to nuclear safety principles it is necessary to consider specifically and independently the physical protection of the facilities.

Design Basis Threat (DBT)

- A **DBT** is a description of attributes and characteristics of potential adversaries that could try to execute a malicious act.
- DBT objective is to establish a tool that creates a precise and detailed technical basis, to allow the operator the creation of a physical protection plan and its approval by the competent authority in nuclear security



- **Threat Assessment** the State analyze the relevant information to produce the Threat Assessment Document (TAD) that generally describes the threats.
- **DBT development**, DBT Document containing the threat to protect and Beyond DBT Document with threats to be included in the DBT.
- **DBT use and maintenance**, to determine the responsibilities in design, implementation, assessment, use and revision of physical protection against DBT.

Training on Emergencies caused by NPP Attacks

Differences between Accidental and Attack Caused Emergencies

- The media impact.
- The potential medical consequences.
- The impact could be "directed" to maximize the consequences.
- There may be secondary threats.
- The potential sequence for the event is less predictable.
- Related with the response:
  - Many agencies, may be involved.
  - Intelligence, tactical response force and crime-of-scene procedures are critical.
  - Increased need for coordination.
  - The lead organization may be a security agency.
  - Protective measures.
  - Emergency timing.

The Emergency Plan acts as the last layer of the defence in depth.

This Plan has the purpose to mitigate the consequences of a potential event that is supposed to happen, without analyzing its likelihood.

Training on Emergencies caused by NPP Attacks

***Training focuses* (1/3)**

- **Detection and Threat Assessment**.
- **Classification** must be trained specifically.
- **Notification**, including short notice and prompt notification.
- **Protective actions**. (On-Site). The type of threat alters the usual response. Some measures should be trained are:
  - *Activation of the ERO* to Alternative Emergency Facilities and the initial response.
  - *Evacuation* of threatened buildings and escape routes available.
  - *Sheltering*, away from potential targets.
  - *Counting*, considering the planned dispersal of operations staff.

Training on Emergencies caused by NPP Attacks

Training focuses (2/3)

- **Initial Operation Actions**. The ERO must train :
  - The diagnosis of plant status and plan.
  - Mitigation actions implementation .
  - Response defined and directed from alternatives emergency facilities.
  - Repairing actions.
  - The objectives of the operating personnel will prevent and mitigate damage to the core and maintain the integrity of the containment.
  - It must be trained the support to Operation staff both from ERO, including Logistics, as from off-site organizations.
- **Off-Site Response**. The staff must be trained on Initial Response Actions, prioritizing and allocating resources and support to the site.
- **Mitigation** must be trained in case of great damage, training:
  - Using alternative resources to replace/support damaged equipments.
  - Using security Site team and Off-Site Security Forces in the Command Post to coordinate movement of response resources.

Training on Emergencies caused by NPP Attacks

Training focuses (3/3)

- **Communications**:
  - Communications equipment, including alternative equipment and responding to malicious efforts to produce malfunctioning on them.
  - Initial communications with Off-site Response Organizations.
  - Coordination of resources to address the response to damage, including the coordination of off-site support and the Access Control.
  - Specific training in the management coordination of victims in several ways:
    - For a large number of victims, (e. g. by air attack).
    - Injuries combined by radiation and characteristic of the event.
    - Evacuation of casualties to appropriate hospitals in each case.
    - Physical protection of healthcare workers.
    - Use of protective equipment and communications.

Training on Emergencies caused by NPP Attacks

Drills and exercises

The most important aspect is the practical training on the particular characteristics of an emergency caused by a hostile act. Three levels

Training and test general and high level targets:

- Coordination capabilities.
- Capabilities of specialized services to properly respond .
- The ability of all FR to work in this kind of stressful emergencies.

At the second level, more concrete aspects (type Table Top). The objectives:

- Assess the threat.
- Communicate the threat level to ERO and the public.
- Develop and Implement appropriate precautionary protective actions.
- Activate medical services and support facilities.

The third level, more related to in-field response:

- Establishing an effective **COMMAND AND CONTROL** system.
- Implementing appropriate defensive/**precautionary** actions.
- Rapidly field deployment of FR.
- Deploying triage areas properly provided, managed and protected.
- Protecting FR on the field of operations, and handling of evidences.

Training on Emergencies caused by NPP Attacks

Conclusions and recommendations

The main finding is that, even though the basis of nuclear emergencies remains valid, there are specific characteristics that recommend:

- To review the Emergency Plan in order to define the changes, improvements and adaptations needed to better face the specific aspects related to hostile acts. In this way, is recommended to develop:
  - Specific arrangements and procedures.
  - Specific emergency equipment and facilities (i.e. alternate facilities properly equipped) and specific support software to face these situations.
- To develop a systematic approach to train in order to define the specific training needed, taking account the different groups of responders and the different threats, to guarantee with a reasonable confidence that, even in the worst case, the staff have been trained properly.

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Thank you

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