

International Perspectives on Nuclear Security

**“What keeps me awake at night?”**

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**Overview**

- Design
- Ageing
- Operations
- Security



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**Design**

- All operating plants in Western Europe were designed, built and put into operation in the previous century ! (Civaux 2: 24/12/1999, Temelin 2002)
- Design and construction knowledge are disappearing
- Design and construction records are incomplete
- Companies have disappeared

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## LTO and Ageing

"The Boiling Frog story is often used as a metaphor for the inability of people to react to significant changes that occur gradually or to events which have become commonplace."



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## Enough is enough...

- Back to basic principles
- Free from political and economic influences
- Far enough ahead in time
  - Application of the increased safety and security requirements to existing reactors
  - Clear deadlines needed

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## Operations... business as usual ?

- Many ongoing projects
- Uncertain future
- Ageing equipment
- Ageing staff – or new staff
- Where is the focus of management ?
- Safety and security culture
  - In operations, maintenance, engineering, projects,...
  - With the regulator, TSO

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### Time line for nuclear safety

10 October 1957

28 March 1979

26 April 1986

11 March 2011

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### Overview

- Design
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### The timeline for security

Munich : 5 September 1972

USA : 11 September 2001

IS : 2014-2017

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## Security

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## Threats

- Insider
- Physical aggression
- Cyber
- Drones
- Transparency vs confidentiality

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## Security Culture

- Think about possible threats (DBT)
- Protect the plant from outside malicious actions
  - Sabotage, theft
  - Gates, guards, guns
- Deter, detect, delay, respond
- Interaction between safety and security
- Deliberate acts by operators

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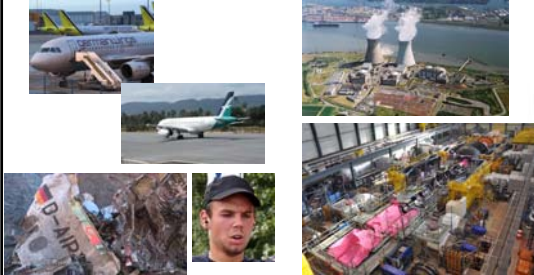
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## Deliberate actions



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## Insider threat incident at Doel 4 Measure taken

- Physical security measures
  - Limit access
  - Additional cameras
  - 4-eyes principle
- Verification of all safety equipment
- Workshop about insider threat
- Raised awareness

**Security culture**

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## On the longer term

- Backfitting of security systems
  - €€€, physical layout, interference with normal operations
- Intensify screening of staff, outside workers, visitors, emergency services,...
  - €€€, privacy,...
  - aftercare
- "instant radicalisation"
  - One week !!!
  - Social control



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## What are the components of the threat?

$$\begin{array}{c} \text{THREAT} \\ = \\ \text{Intent} \quad \times \quad \text{Capability} \\ \text{(Desire + Expectation)} \quad \times \quad \text{(Knowledge + Resources)} \end{array}$$

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## Physical measures

- DDDR
  - Deter
  - Detect
  - Delay
  - Response

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## Cyber

- Fast moving
- Highly specialized
- Many targets
  - Plant systems
  - Testing systems
  - Security systems (physical & administrative)
  - Administrative systems



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## Drones

- Fast developments
  - Increased payload
  - Increased range
  - Decreasing cost
- Can be used positively
  - Rapid surveillance
- Difficult to stop
- Swarms of drones



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## Transparency and confidentiality



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## Thank you



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