Authority for Nuclear Safety and Radiation Protection

Evaluation of threats in the nuclear domain of the Netherlands

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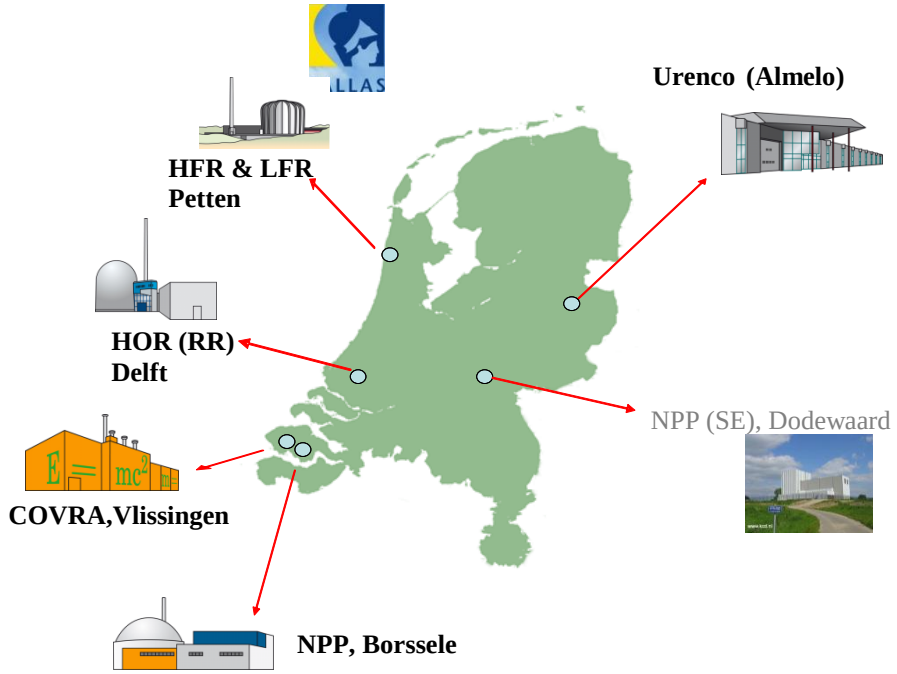
Unclassified Information

Content of the presentation

- Introduction of the nuclear domain in the Netherlands
- Public and Private Partners
- Legal framework
- The Crown Jewels
- DBT development of content
- Increase of the attack surface
- Points of attention

Intro: Nuclear Installations in the Netherlands

- NPP Borssele (2 loop PWR, 510 MW_e)
- NPP Dodewaard shutdown (BWR, safe enclosure)
- Research Reactor HFR Petten (50 MW_{th})
- Research Reactor LFR Petten (30 kW_{th}), shutdown
- University Reactor HOR Delft (3 MW_{th})
- Ultra Centrifuge Enrichment Plant URENCO (UNL)
- Interim Waste Storage Facility (COVRA)
- PALLAS Research Reactor (design phase)



Partners in the Netherlands nuclear domain

Public partners

- National Coordinator for Security and Counterterrorism (NCTV)
- National Cyber Security Centre (NCSC)
- General Intelligence and Security Service (AIVD)
- National Police (High Tech Crime Unit)

- Ministery of Foreign Affairs

Private partners

- License holders

Regulator

- Authority for Nuclear Safety and Radiation Protection (ANVS)

Legal framework

- CPPNM/a
    - Ratified in 2011
    - Final implementation in legislation in 2015

- Ministerial Regulation Security of Nuclear Installations and Fissile Material (legal)

  => Compliant with CPPNM/a

- Design Basis Threats (legal)
    - Physical Protection (2010, 2015, *2020*)
    - Cyber Security (2016, 2018, *2020*)

- Implementation Guide DBT Cyber Security (non-legal)

DBT process

What's a Design Basis Threat in the Dutch context?

A description of:

- the most serious, yet conceivable, threats;
- adverseries, their motives, goals, financial, technological and network capabilities;
- the vulnerable components of the nuclear installation;
- the most valuable elements of the nuclear installation (IT, OT);
- Etc.

- Primary adversaries in the DBT-approach: non-friendly states!

- Periodic evaluation and review of DBTs (Physical 5 years, Cyber 2 years)
- Interim adjustment DBT always possible

The Crown Jewels

Types of valuable/sensitive elements:

- primary processes / vital infrastructure (e.g. OT)

  => disruption of continuity/radiological emission

- sensitive/confidental information (e.g. IT)

  => prelude to attack / theft

- information on lay-out of the installation

  => national and on site security

- financial and economic information of the license holder

  => economic espionage

DBT development of content

- Design Basis Threats (legal)

  - Physical Protection (2010, 2015, *2020*)
    => Focus on primary adversaries groups
    => Goals, motives, capabilities etc.
    => Relatively few changes, with the exception of drones

  - Cyber Security (2016, 2018, *2020*)
    => Rapid developments in terms of the extent and depth of the cyber threat
    => Increasingly stronger interdependence between physical and cyber threat (stepping stone, blended attacks)
    => Increase of the attack surface

Increase of the attack surface

- The **attack surface** of a software environment is the sum of the different points (the "attack vectors") where an unauthorized user (the "attacker") can try to enter data to or extract data from an environment.
- *Keeping the attack surface as small as possible is a basic security measure.*
- Increase of the attack surface means:

  => Increase in points of entry in IT-, OT, Cloud services etc.

  => Transition from analogue systems to digital + outsourcing of services

  => Increase in number of attackers, level of professionalization, strength, knowledge, availability on Internet / Darknet Reduction of costs for carrying out an attack

  => limited increase in knowledge and awareness among government and licensee to keep up with the increase in threat/attack possibilities

  => Almost impossible to keep up with developments and innovations

  => Licensee staff -> limited knowledge -> hiring external

Points of attention

- Shift of focus from physical security to cyber is necessary.
- More attention is needed in the development of security with regard to Cloud, Stepping Stone, Blended Attacks, Suppliers etc.
- Exchange of information between public and private parties (threat analyzes, incident reports, etc.) is key for the further development of cyber security.
- More cyber awareness on a permanent basis is necessary within companies al all levels.
- Strengthening the integration of physical and cyber security within companies.

- I thank you for your attention!