International Conference on Nuclear Security
AIEA-Vienna

Protecting sensitive EDF nuclear sites

LCL L. Texier
JL. Lautier
Protecting sensitive EDF nuclear sites

• A few historical points
• French regulations
• Main principles applied by EDF
• NPP protection: a cooperation between State & EDF
• Future perspectives
• Some points for consideration and conclusions
Protecting sensitive EDF nuclear sites
A few historical points

• There is a *historical* need to protect nuclear materials / nuclear fuel (*counter-proliferation measures*)

• A *multifaceted and continuously evolving* terrorist threat (World Trade Center, 2001, Madrid, London, Mumbai...)

• Strengthening of both international and French regulations ...

• The *current* context: a *significant terrorist threat*...
Protecting sensitive EDF nuclear sites

Recent French regulations

**Civil defence code**

- L and R 1332-1 and subsequent texts
  - Sectors of activity of vital importance
    (called ‘SAIV’ – decree dated July 3rd 2008)

- Order dated August 27th 2007
  - Standard operator security plan (called ‘PSO’)

- Order dated September 27th 2007
  - Standard plant protection response plan (‘PPP’)

- Order dated August 27th 2009 (Classified)
  - National Security Directives
    - Design basis threat (DBT)
    - Requirement to have a PSO and a PPP

- Order dated 26th February 2010
  - EDF is named as being an ‘operator of vital importance’

*Site protection measures are based on a DBT*

**L and R 1333-1 and subsequent texts**

Protection and control of nuclear materials on nuclear facilities and during transportation

(‘PCMNIT’ – decree dated September 17th 2009)

**8 Orders (2011)**

- Transportation of materials
- Authorisation to hold materials
- Security studies
- NM monitoring & accounting
- Physical protection of nuclear plants
- The declarant
- Approval of transport vehicles
- Composition of experts groups

**Required measures and obligation to demonstrate the suitability of physical protection measures & organization**
Protecting sensitive EDF nuclear sites
The main principles

• Establish a site protection policy

• *Define and organise* a model for site protection, including principles, practical methods for application and a continuous improvement loop (Deming wheel principle)

• Three main cornerstones:
  • Detection,
  • Delaying intruders, delaying the threat
  • Intervention capacity (mitigating the threat)
ACTIVE PROTECTION: THE EDF MODEL

- Detection at the perimeter of site areas
- Effective delaying measures
- Rapid deployment of dedicated & specialized armed forces
Protecting sensitive EDF nuclear sites
The main principles applied by EDF
(Defence in depth)

- To set up measures to:
  - detect any attempted intrusion
  - hinder or delay the intruders
  - alert law enforcement agencies & deploy immediately dedicated armed response
  - mitigate the impact of a malevolent act

- To gather intelligence & assess the threat
- To respond to terrorist attacks
Protecting sensitive EDF nuclear sites
The main principles applied by EDF

Material resources: Defence in depth

ZS : Fence + instrumentation

ZP : Fence + instrumentation

ZR : Fence + instrumentation

Control access measures & organization depending on localization

Reinforced boundary + detection
The monitored area: access control and first fence

The protected (ZP) and restricted (ZR) areas:
Enhanced boundaries and detection measures
Monitoring and raising the alert: monitoring stations along with people using *high-performance* technology
Protecting sensitive EDF nuclear sites
The main principles applied by EDF

Security culture

EDF’S model is based on:

- a strong culture
- regular training
- threat analysis & assessment

Graded approach

EDF’S model is based on:

- organisational and technical measures tailored to the various threats
- ability to reversibly and constantly adapt NPP physical protection to the assessed threat
The French nuclear counter-terrorism response strategy applied to EDF NPP

One key objective:
TO PRESERVE NUCLEAR SAFETY

One major constraint:
TIMEFRAME (nature & kinetics of attacks vs. safety issues)

EDF strategy:
A response force with CT response capabilities tailored to NPP safety issues

EDF solution:
A strong partnership between EDF and MoI
The French nuclear counter-terrorism response strategy applied to EDF NPP

Keys of success:

→ A dedicated & specialized response force (24/7)

→ Provided capabilities consistent with DBT

→ A response force composed of sworn police officers

→ An efficiency build on a double integration: within EDF & law enforcement agencies organizations

→ Response forces' coordination & interoperability (between in & off-site forces) based on common SOPs, training and equipment policies designed by the national CTU (GIGN)
NPP physical protection: a shared responsibility & a strong cooperation between State & EDF

PSPG = 1°- Specialized Gendarmerie unit
2°- Integral part of EDF's PP measures & dedicated response force
3°- First layer of the State's response (interface between on-site & off-site responders)
   → integrated twice : within EDF organization & the Gendarmerie Nationale
The NPPs physical protection & the dedicated CT response

- National CTU (GIGN)
- Helicopters dedicated to GIGN
- Regional CTU (GIGN branches)
- NPP dedicated CTU (PSPG)
Protecting sensitive EDF nuclear sites

Future perspectives

• Integrating the new arrangements associated with French regulations:
  • New technology to be adapted to set targets and around EDF’s own needs
  • Significant coaching by management needs to be allowed for
  • Investment choices need to be made advisedly
  • Efficiency of the chosen protection systems must to be demonstrated; performance tests need to be performed

• Preparing for new types of threat:
  • Threat from explosives, cyber attack, other future threats...

• Pursuing and strengthening the close cooperation between the Gendarmerie and EDF

Strong links are required between EDF and the competent bodies
EDF needs to have competent, flexible and trustworthy industrial partners
Protecting sensitive EDF nuclear sites
Some points for consideration

- Protecting sensitive sites relies more and more on *advanced technology implemented* by people,
- Protecting sensitive sites requires significant investment both in human and material resources,
- Protecting sensitive sites relies on a variety of *expert* appraisals or points of view,
- A global *strategic* approach might be required
- Cooperation between the different operators is a way of driving progress (an example being WANO), while complying with confidentiality rules,
- Exercises and various *audits* and inspections are also a way of driving progress

Complex in terms of management ...
... collective skills are *necessary*
If security is not going forwards then it is going backwards....

Than you for your attention