BEST PHYSICAL PROTECTION PRACTICES IN SPANISH NUCLEAR POWER PLANTS

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2 Content (19 slides)

1. Introduction:
   • Spanish Nuclear sites,
   • Competent Authorities
   • Nuclear Security Milestones
   • NS Requirements

2. Examples of Best Practices:
   • Physical Barriers
   • IDS
   • CCAA
   • Airborne Detection
   • Alarm Assessment
   • Patrolling
   • Training
   • Security Culture
3 Spanish Nuclear Sites

- Garoña, BWR, 466 MW
- Trillo, PWR, 1066 MW
- Vandellos II, PWR, 1087 MW
- Asco, PWR, 2 Units (1032 & 1027 MW)
- Cofrentes, BWR, 1092 MW
- Almaraz, PWR, 2 Units (1049 & 1044 MW)
- Juzbado, Nuclear Fuel F
- Central Spent Fuel Storage
- J Cabrera ISFSI
- Low & Medium Rad Waste Repository
4 Regulatory Authorities

Nuclear Safety -> Radiation Protection -> Ministry of Interior

Ministry of Energy, Tourism & Digital Agenda

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5. Important security events

Royal Decree 158 CPPNM

Bombing Madrid

Security Instruction 09 Order

Royal Decree 1308 NS Gral Requirements

Dead line IS-09

ROP in NS

GREENPEACE Cofrentes NPP 2011

Police Forces in the sites

1995

2002

2004

2006

2007

2011

2015

2016

Working Group Spanish NS Regime

GREENPEACE Jose Cabrera NPP 2002
6 Nuclear Security Requirements

1. Area Categorization: OCA, PA & Vital A

2. Physical barriers: Fences, walls, Security doors..

3. IDS: Double Fence, & VAs

4. CCTV: in every IDS

5. Access Control
   OCA → 1º
   PA → 2º
   VAs → 3º

6. CAP & SAS 24/7

7. Guards Patrolling

8. Responders: POLICE
One NPP has installed another double fence also with IDS and TV cameras, of course is larger because is in between the OCA and PA ("Supervised Area") → very good example of Defense in Depth philosophy.
NPPs have strengthened the barriers with many wires and concertina so the fences have strong iron beams to bear all these devices.
Operators have a set up a large variety of sensors with different technology along the security areas (more than it is required). There is no doubt that the vehicle entrance to the PA could be a weak point. How could be detected people hidden in big trucks where many times is very difficult to search?

There are two Operators who are using a Heartbeat Sensor, this is a sort of wires connected to several parts of the vehicle to read that movement of the heart. It is very easy and fast to use it, and very effective.
It is sometimes difficult, especially during refueling periods when there are a lot of vehicles getting into the PA, nuclear operators besides to search and use explosive detectors have **sniffing dogs to detect explosives** that could be hidden in any part of the truck.
NPPs are very worried about the insider threat. So there are operators who have strengthen VA entrances and there are facilities with a sort of iron cage before getting into a building with vital systems in spite inside the building there are alarmed and security doors with IDS and TV cameras. Even in these iron cages there is also a security guard.
Spanish regulation does not require airborne detection systems, however there is a NPP which has two radars in order to detect and produce an alarm if there is flight object approaching. That information is displayed in CAS and they have written down a procedure to notify to the security aviation competent authorities.
Every alarm coming from a sensor must be evaluated and the best means is to have a TV camera. But sometimes one is not enough, so it is very extended to assess the alarm with two or more cameras, even one of them is a tilt pan zoom camera, so it does allow the control alarm stations’ operator to have different perspectives of the zone and even to zoom it from different directions.
Distances in most of the sites are very long and in somewhere there are not easy paths to drive. To solve that problem some Operators have bought electric motorcycles, and by this way guards can patrol along the site and arrive to several places faster than using any car.
That is one of the key factors to minimize the human error and also to have a successful PPS. There is a close and very good relationship between Police Forces and Nuclear Security Guards, so Police often come to the facilities to perform joined exercises, and Guards also go to the Police facilities to be trained. There is a very good connection among them.
Self-assessment in security is crucial. There are several best practices about this issue.

One example is the self-evaluation performed by security managers through the Annual Security Problems and Resolutions Report, in which they are tracking all the failures in any of the components, equipment, processes and procedures of the PPS, and afterwards they can perform statistics and evaluation, so they can get very useful trends, conclusions and effective performance information.
That is one of those indicators which can tell how well a nuclear facility works. A NPP has provided a comic to remind through the drawings that the workers must obey the security rules: passing through the portal detectors, using their badges, swiping their cards, and the security guards are performing their responsibilities, searching the vehicles, patrolling the site…
As a part of security culture, Operators have periodic meeting among them in order to discuss common security problems and find out solutions, so they try different equipment and systems and inform each other about the pros and cons.

This has a very productive outcome, because that means that there are 6 security managers looking for a solution instead just one.
Conclusions

1. To have an EFFECTIVE NUCLEAR SECURITY REGIMEN is due to the proper oversight of the competent authority, the good motivation of the operators and a very close relationship between them.

2. NUCLEAR SECURITY PERFORMANCE at Spanish NPPs has been IMPROVED progressively in the last decade.
Thank you for your attention