25 YEARS OF

global leadership in **nuclear safety**

WANO

WORLD ASSOCIATION OF NUCLEAR OPERATORS

WANO: nuclear safety & nuclear security

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International Conference on Challenges Faced by Technical and Scientific Support Organisations (TSOs) in Enhancing Nuclear Safety and Security

This is WANO

WANO Mission

To maximise the safety and reliability of nuclear power plants worldwide by working together to assess, benchmark and improve performance through mutual support, exchange of information, and emulation of best practices

Membership

WANO membership lets industry professionals focus on one goal: excellence in nuclear safety

Membership is voluntary and every nuclear power plant across the globe is a member

- Operating companies
- Owners
- Others with significant impact on nuclear safety

More than 130 members representing more than 435 nuclear plants work together to achieve the best possible safety standards.

Interactive WANO Member World Map available at www.wano.info

WANO Programmes Relationship

The WANO programmes work together to drive **continuous performance improvement**

Peer Review (PR)

Peer Reviews help members compare their operational performance against standards of excellence

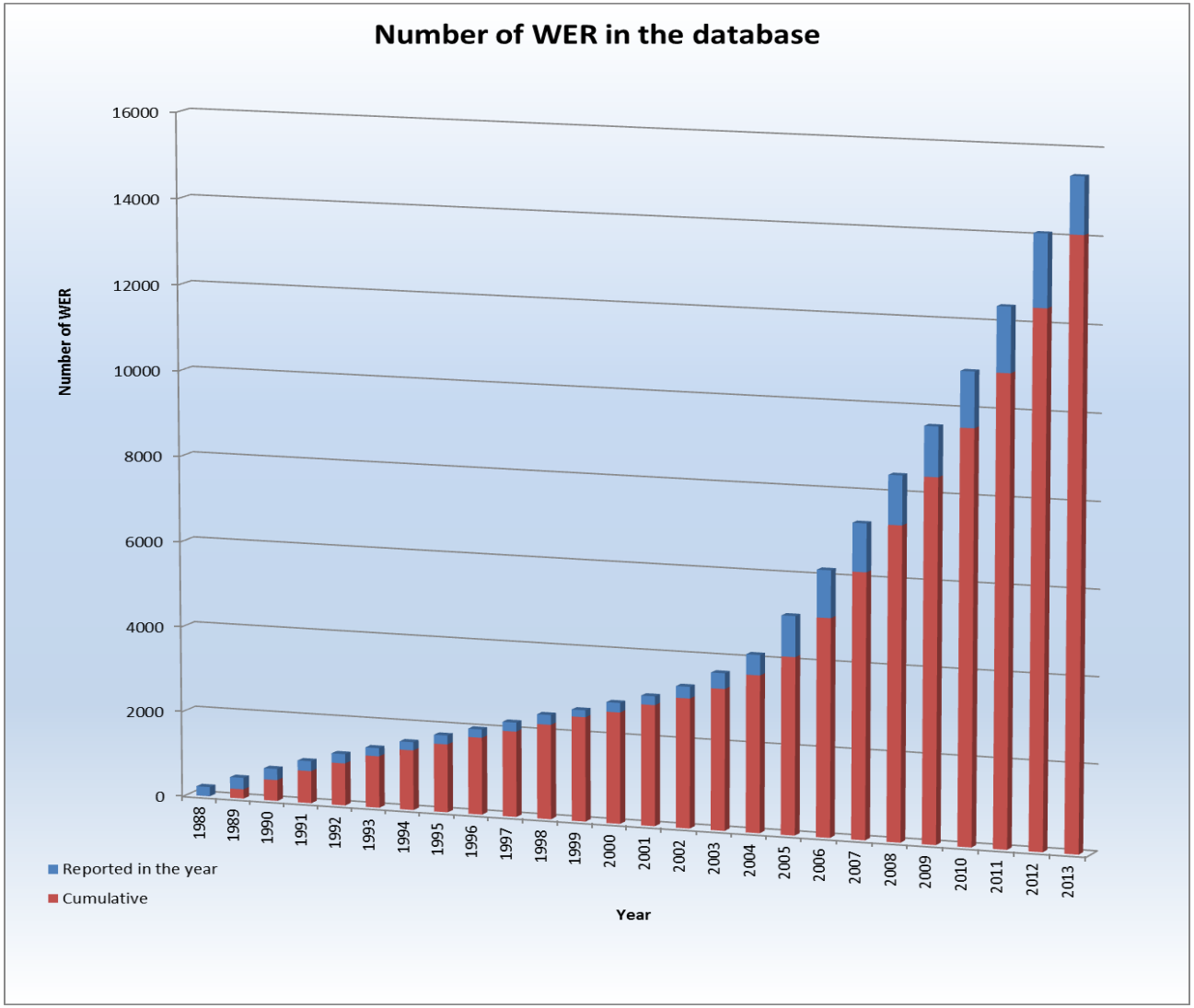
- Peer Reviews
- Pre-Startup Peer Reviews
- Corporate Peer Reviews
- Follow-up Peer Reviews

Operating Experience (OE)

The OE programme provides members with the opportunity to learn from incidents at other plants

- Significant Operating Experience Reports
- Significant Event Reports
- Just In Time Reports

Operating Experience (OE)



Professional & Technical Development (P&TD)

P&TD helps members to hone their skills and increase their knowledge through:

- Seminars and workshops
- Training courses
- Events and meetings:
  - Biennial General Meeting (BGM)
  - Site Vice Presidents' & Plant Managers' Conference
  - Small-Group CEO Meetings

Communications

This includes:

- WANO websites (public, member & Inside WANO)
- WANO publications including *Inside WANO* e-newsletter, Year End Highlights Report & regional newsletters
- WANO's social media channels and videos
- Media monitoring & engagement

Nuclear safety versus security

'Nuclear security' of the plant is the result of all actions taken by the plant to prevent and detect malicious human acts in a timely manner and mitigate the consequences for the nuclear safety of the plant

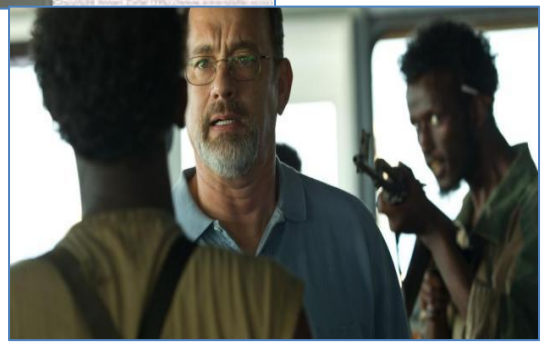
'**Nuclear safety'** of the plant is the result of all actions taken to prevent the radiation source to get unintentionally into contact with any possible target (human, environment)

Source: IAEA

Nuclear safety versus security

Risks for radioactive source barriers

caused by physics……or…..by malicious human acts



Hazard can be different, but consequences can be similar

Nuclear safety versus security

Events caused by

Physics:

not intentional

predictable behaviour

prescriptive procedural guidance

VERSUS

Malicious human acts:

(bad) intentional

confusing behaviour

ad hoc procedural guidance

Nuclear safety versus security

A solution for a problem is effective when:

- It prevents repetition
- It is within your control
- It meets your goals and objectives
- It does not cause other problems

Nuclear safety versus security

Nuclear security & safety issues follow the same path

analyse risk

define causes

define Corrective Actions (CA)

implement CA

- CA contain confidential and sensitive information
- WANO members are restricted to share this information

Nuclear safety versus security

911 effect: Preventive measures taken by plants to enhance nuclear security:

- Extra screening of personnel before accessing the site (28 days)
- Escorted access
- Double fences
- Video wall, cameras
- Cars removed from secured area
- Extra security patrols
- Extra access screening (biometrics)
- Four eyes principle
- Extra padlocks and compartments

Demotivate the potential intruder

Nuclear safety versus security

Fukushima-effect: analysis of design and Emergency Preparedness:

- Beyond design accidents analysis
- Stress tests
- Design Safety margins
- Cliff edge events
- Emergency preparedness (mobile safety equipment, external emergency centre, drills for multi-unit accidents)
- Increased attention for nuclear security by regulators

→ **Post Fukushima lessons learned are beneficial for nuclear security**

How to improve nuclear security?

Caveat

WANO has no mission regarding nuclear security

The opinions expressed hereafter are therefore not the official position of WANO or its members

To follow are some considerations to improve nuclear security from an operator point of view based on their own experience working in the nuclear industry

How to improve nuclear security?

- Governance & Oversight
- Risk Assessment
- Operating Experience
- Integrated Emergency Response

How to improve nuclear security?

Governance & Oversight (company)

- Raise the nuclear security profile to the company executive level (and not simply delegated to the security professionals)
- Acknowledge security risk and mitigation strategies as critical business considerations
- Promote a strong security culture throughout the organisation
- Create an independent Nuclear Security Review sub-committee of the Board to report to the Board of Directors periodically on security matters

How to improve nuclear security?

Governance & Oversight (international)

The nuclear operator community needs to recognise that proper management of nuclear security needs:

- Strong leadership
- Sharing and learning from operating experience
- Sharing and learning from good practices
- And ultimately industry peer evaluations

How to improve nuclear security?

Risk Assessment

- National or security agencies need to focus on the identification of, and strategies for countering, Design Basis Threats (DBT)
- Stations need to focus on their vulnerabilities to DBT plus protection of assets
- Need to make better use of analytical tools
  - Probabilistic Risk Assessments
  - Monte Carlo simulations
- Resulting actions should be based on Risk Informed Decision Making (RIDM)

How to improve nuclear security?

Operating Experience

- The nuclear industry has a very sophisticated OPEX program, probably one of the best
- Depersonalising of some OPEX reports has proven effective
- Security organisations do share information but is limited due to national or regulatory restrictions
- Whilst there are often good reasons for security to control information, I believe the nuclear security world is in urgent need of finding such a mechanism
  - WINS Best Practise Guides are a great source of practical hands-on information

How to improve nuclear security?

Integrated Emergency Response

- An integrated security/nuclear operator command & control system is a must during an intruder event
  - Security staff and operating staff acting independently during a security intrusion is a recipe for trouble
  - Realistic scenarios should be created, drilled and critiqued.

Summary

- WANO is a membership organisation to enhance safety and reliability in nuclear power plants
- All nuclear power plants in the world are member of WANO
- WANO has a confidentiality agreement with its members
- WANO is a kind of self-regulator, complementary to the regulator
- There are 4 main programmes to fulfil the WANO mission

Summary

- Enhancing nuclear security is not part of the WANO mission because of practical concerns (national or regulatory restrictions)
- A similar methodology for enhancing nuclear security as used for nuclear safety by WANO would be beneficial

Thank you for listening

For more information please visit

www.wano.info