U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Risk-Informing Security

2nd Annual International Regulators Conference on Nuclear Security

Brian Holian
Director, Office of Nuclear Security and Incident Response
12 May 2016

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Can We Risk-Inform Security?

- Unlike safety initiating events, security initiating events are not random
- Difficult to assess the likelihood of an event that is initiated non-randomly

  ⇒ Risk = P_{Event} x Consequence
- However, risk information can be applied to security policy

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

NRC's Five-Step Design Basis Threat (DBT) Development Process

- Involves intelligence analysis, coordination with US intelligence community (IC) and federal law enforcement (FLE), stakeholder feedback, decision by NRC Commission
- Step 1 – Routine staff review of threat reporting
- Step 2 – Screening (who, what, where, why how)
- Step 3 – Working-level interaction with IC and FLE
- Step 4 – Staff technical analysis
- Step 5 – Preparation of a plan (communication)

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Force on Force (FoF) Inspections

- 3 FoF exercises to 2 per inspection
- Increased oversight of licensee exercises
- Significance determination process revisions
- Evaluating use of performance indicators
- Clarifying immediacy of compensatory measures

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Risk-Informing Activities Following 9/11/01

- Late 2001 – 2003
  - Initial security assessments
  - Immediately-effective security orders to certain licensees
  - Formation of single Security Office in NRC
  - Revision of DBT
- 2003 – 2007
  - Comprehensive security assessments, including mitigation following aircraft attack
  - Inclusion of order requirements in regulations, including explicit consideration of cyber attacks (2007)

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Risk-Informing Activities Following 9/11/01

- 2009 – Cyber security regulation for power reactors
- 2013 – New regulation on security of Category 1 and 2 quantities of radioactive material (10 CFR Part 37)
- 2014 – FoF Program adjustments
- 2015 – Cyber reporting regulation

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Areas of Opportunity

- Uncertainty of initiating events
- Simulation tools
- Collaboration between safety/security
- Cyber Security
- Improved metrics
- Consideration of material forms
- Insider mitigation
- Credit for “FLEX” equipment

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Current Activities

- Use of Simulation Modeling
- Cyber Security
- Nuclear Security Assessment Methodologies (NUSAM)

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

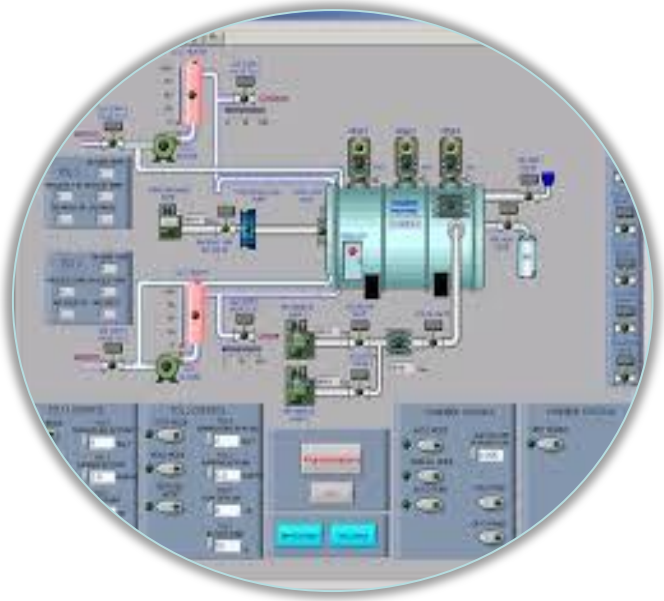
Use of Simulation Modeling

- Numerous licensees have begun to use modeling and simulation tools
- NRC has received physical security plan change requests, supported by the tools
- NRC has begun staff training and is reviewing
- NRC's Advisory Committee on Reactor Safeguards has expressed interest

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Cyber Security

- Reactor cyber security implementation under way
- Critical digital assets (CDA) addressed using a consequence-based approach to consider fewer controls for CDAs with lower consequences
- Fuel cycle facility rulemaking uses a similar approach



U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

NUSAM

- IAEA Coordinated Research Project
- Develop guidance on the conduct of security assessments
- Case Studies
  - NPP
  - Irradiator Facility
  - Rad Material Transport
  - Low Enriched Uranium Fuel Fabrication Facility
  - Spent Fuel Storage Facility

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Conclusion

- NRC continues to assess the concept of risk-informing security
- Need to overcome historical biases
- Need to continue to evaluate safety/security interface
- Risk improvements benefit regulatory bodies and licensees

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment