United States
Nuclear Regulatory Commission

Public Meeting on the
Safeguards Performance Assessment Program

July 12, 2000

Agenda

8:30 - 8:45	Introductory Remarks - Glenn Tracy, Chief, IOLB
8:45 - 9:00	History - Richard Rosano, Chief, RSS
9:00 - 10:00	Principle Staff Comments on the SPA - RSS
10:00 - 10:15	Break
10:15 - 11:00	Critical Safety Functions - Jesse Arildsen, RSS
11:00 - 11:15	Stakeholder Comments - Edwin Lyman, NCI
11:15 - 11:30	Other Stakeholder Comments

History

SECY-99-0241	Rulemaking Plan, Physical Security Requirements for Exercising Power Reactor Licensees' Capability to Respond to Safeguards Contingency Events (October 5, 1999)
	Proposed re-evaluation of reactor security regulations, including exercise rule
SRM	Staff Requirements Memorandum (SECY-99-0241, November 22, 1999)
	Approved staff's proposed re-evaluation
SECY-00-0063	Staff Re-Evaluation of Power Reactor Physical Protection Regulations and Position on A Definition of Radiological Sabotage (March 9, 2000)
	Proposed use of performance criteria as basis for security regulations
SRM	Staff Requirements Memorandum (SECY-00-0063, April 12, 2000)
	Approved the staff's proposed use of performance criteria
SECY-00-0142	Status Report on the Safeguards Performance Assessment Pilot Program (June 26, 2000)
	Forwarded staff comments on Safeguards Performance Assessment Program

Principle Staff Comments on the SPA

-- Adversary Characteristics to Be Used in SPA

-- Limitations on Credit for Operator Actions

-- Enforcement of SPA Requirements

-- Changes to SPA During Pilot Program

-- Protection of Critical Safety Functions Versus Core Damage

Adversary Characteristics to Be Used in the SPA

Adversary characteristics commonly used in OSRE will continue in future safeguards performance assessments (OSRE, SPA, rule-based exercise program).

Adversary characteristics will be discussed in the closed meeting at 2:00 pm. Such changes, when approved, will become the basis for performance assessment.

Limitations on Credit for Operator Actions

Operator actions may be used to mitigate the consequences of the attack.

Credit for operational decisions is based on probability of success of those actions.

Probability of success depends on awareness of the options, training to carry them out, and capability to execute the appropriate option.

Criteria for Crediting Operator Actions to Place Mitigating Equipment in Service or for Recovery Actions

1) Sufficient time is available to implement these actions;

2) Environmental conditions allow access where needed;

3) Approved procedures exist;

4) Training is conducted on the existing procedures under conditions similar to the scenario assumed; and

5) Any equipment needed to complete these actions available and ready for use.

Prior to adversaries being neutralized, there can be no credit for “in-the-field” operator actions unless the operator is provided protection during movement.

Enforcement of SPA Requirements

Staff Requirements Memorandum (April 12, 2000) directed the staff to “clearly articulate how [it] intends to ensure compliance ...” under the Safeguards Performance Assessment Program.

Current OSRE inspections are conducted to ensure compliance with the performance objectives of 10 CFR 73.55(a) that “the physical protection system ... be designed to protect against the design basis threat of radiological sabotage....”

The replacement of OSRE program by SPA should be a requirement to satisfy this provision of 10 CFR 73.55(a) and incorporated into the Physical Security Plan.

Changes to SPA During Pilot Program

The OSRE replacement will be endorsed by the Staff and approved by the Commission before implementation.

Future changes to the SPA will be endorsed by the NRC before implementation and incorporated into licensee commitments and Physical Security Plans. .

Protection of Critical Safety Functions Versus Core Damage

The staff reviewed the definition of radiological sabotage and discussed ways to clarify it.

The staff determined that use of performance criteria associated with preservation of critical safety functions is more clearly and more directly related to ensuring plant security than the use of the concept of core damage.

Use of the concept of core damage still requires an understanding of critical safety functions to achieve a risk-informed strategy for security.

Therefore, the staff decided, instead, to identify critical safety functions that need to be protected.

SECY-00-0063 (March 9, 2000)

“The staff is developing performance criteria ... to protect the plant against a malevolent act by protecting critical safety functions....”

“The above performance criteria ... align security with other areas of regulation involving plant operations.”

Staff Requirements Memorandum (April 22, 2000)

“The Commission has approved the staff’s proposed approach to re-evaluate the power reactor physical protection regulations ... by providing performance criteria as the basis for physical protection requirements.”

“The staff should ... test these concepts in the industry Self-Assessment Program”

Critical Safety Functions*

(1) reactivity control

(2) reactor coolant makeup for maintaining reactor and spent fuel pool inventory

(3) reactor and spent fuel pool heat removal

(4) containment of radioactive materials

(5) process monitoring necessary to perform and control the above functions

(6) actions necessary to support the operation of the equipment used for safe shutdown

* As stated in SECY-00-0063

Relationship of CSFs to Safeguards

(1) Critical Safety Functions (CSFs) are provided by critical safety systems, structures and equipment (CSSSEs).

(2) CSSSEs combine to make list of potential targets for sabotage.

(site-specific)

(3) Licensees identify “protected target sets,” or PTSs (with due concern for margin of safety). Analysis may lead licensees to concentrate on the protection of certain targets and to choose not to protect others to more effectively preserve/protect the CSFs.

(site-specific)

(4) From the protected target sets, licensees develop tactical response strategies (TRSs).

(site-specific)

Note: Item (1) will be detailed by NRC.
Items (2) through (4) will be identified by licensees.

Reactivity Control

Critical safety systems, structures and equipment (CSSSEs): (site-specific)

- Control Rods
- Chemical Poison Delivery Systems (e.g., SLC or RWST)
- Reactor Protection System (RPS)
- Spent Fuel Racks

Protected target sets (PTSs): (site-specific)

- RPS

Tactical response strategies (TRSs): (site-specific)

- Detection and Assessment:
  - Prior to adversary access to RPS
- Delay/Deny:
  - Access control measures/barriers to RPS
- Deployment and Response Tactics:
  - Guards respond to predetermined positions to protect RPS
- Defensive Positions:
  - Establish hardened defensive positions for prepositioning protective force to intercept adversary prior to adversary gaining access to RPS

Result: Reactivity control is maintained.

Reactor Coolant Makeup for Maintaining Reactor Inventory

Critical safety systems, structures and equipment (CSSSEs): (site-specific)

- Refueling Water Storage Tank (RWST)
- Chemical Volume Control System
- Residual Heat Removal System (RHR)
- Emergency Core Cooling Systems (ECCS)
- Feedwater System
- Reactor Water Makeup System
- Fire Protection System
- Reactor Water Cross-tie Equipment

Protected target sets (PTSs): (site-specific)

- ECCS train
- RWST

Tactical response strategies (TRSs): (site-specific)

- Detection and Assessment:
  - Prior to adversary access to either ECCS train or RWST
- Delay/Deny:
  - Access control measures/barriers to ECCS train and RWST
- Deployment and Response Tactics:
  - Guards respond to predetermined positions to protect ECCS train and RWST
- Defensive Positions:
  - Establish hardened defensive positions for prepositioning protective force to intercept adversary prior to adversary access to either ECCS train or RWST

Result: Reactivity coolant inventory is maintained.

Makeup for Maintaining Spent Fuel Pool Inventory

Critical safety systems, structures and equipment (CSSSEs): (site-specific)

- Spent Fuel Pool (SFP) Coolant Circulation and Makeup System
- Makeup Cross-tie Equipment
- SFP Structure
- Fire Protection System

Protected target sets (PTSs): (site-specific)

- SFP Coolant Circulation and Makeup System
- SFP Structure

Tactical response strategies (TRSs): (site-specific)

- Detection and Assessment:
  - Prior to adversary access to SFP area
- Delay/Deny:
  - Access control measures/barriers to SFP area
- Deployment and Response Tactics:
  - Guards respond to predetermined positions to protect SFP area
- Defensive Positions:
  - No specific defensive position needed

Result: Spent fuel pool inventory is maintained.

Reactor Heat Removal

Critical safety systems, structures and equipment (CSSSEs): (site-specific)

- Residual Heat Removal System (RHR)
- Emergency Core Cooling Systems (ECCS)
- Auxiliary Feedwater System
- Isolation Condenser

Protected target sets (PTSs): (site-specific)

- RHR train

Tactical response strategies (TRSs): (site-specific)

- Detection and Assessment:
  - Prior to adversary gaining access to RHR train
- Delay/Deny:
  - Access control measures/barriers to RHR train
- Deployment and Response Tactics:
  - Guards respond to predetermined positions to protect RHR train
- Defensive Positions:
  - Establish hardened defensive positions for prepositioning protective force to intercept adversary prior to adversary gaining access to RHR train

Result: Reactor heat removal capability is maintained.

Spent Fuel Heat Removal

Critical safety systems, structures and equipment (CSSSEs): (site-specific)
- Spent Fuel Pool (SFP) Cooling System
- Fire Protection System
- SFP Cross-tie Equipment

Protected target sets (PTSs): (site-specific)
- SFP Cooling System

Tactical response strategies (TRSs): (site-specific)
- Detection and Assessment:
  - Prior to adversary gaining access to SFP Cooling System
- Delay/Deny:
  - Access control measures/barriers to SFP Cooling System
- Deployment and Response Tactics:
  - Guards respond to predetermined positions to protect SFP area
- Defensive Positions:
  - No specific defensive position needed

Result: Spent fuel heat removal capability is maintained.

Containment of Radioactive Materials

Critical safety systems, structures and equipment (CSSSEs): (site-specific)
- High Level Radioactive Waste (HLRW) Systems
- Reactor Containment

Protected target sets (PTSs): (site-specific)
- Reactor Containment
- HLRW

Tactical response strategies (TRSs): (site-specific)
- Detection and Assessment:
  - Prior to adversary gaining access to either Reactor Containment or HLRW
- Delay/Deny:
  - Access control measures/barriers to Reactor Containment and HLRW
- Deployment and Response Tactics:
  - Guards respond to predetermined positions to protect Reactor Containment and HLRW
- Defensive Positions:
  - No specific defensive position needed

Result: Radioactive material is contained.

Process Monitoring Necessary to Perform and Control CSFs

Critical safety systems, structures and equipment (CSSSEs): (site-specific)

- Reactor Vessel Level Indication System
- RPS Controls
- RCS Temperature Indication System
- ECCS Actuation Indication
- ECCS Controls
- RCS Pressure Indication System

Protected target sets (PTSs): (site-specific)

- Reactor Vessel Level Indication System (RVLIS)
- RCS Temperature Indication System

Tactical response strategies (TRSs): (site-specific)

- Detection and Assessment:
  - Prior to adversary gaining access to RVLIS or RCS Temperature Indication System
- Delay/Deny:
  - Access control measures/barriers to RVLIS and RCS Temperature Indication System
- Deployment and Response Tactics:
  - Guards respond to predetermined positions to protect RVLIS and RCS Temperature Indication System
- Defensive Positions:
  - Establish hardened defensive positions for prepositioning protective force to intercept adversary prior to adversary access to RVLIS or RCS Temperature Indication System

Result: Necessary process monitoring capability is maintained.

Actions Necessary to Support the Operation of Equipment for Safe Shutdown

Critical safety systems, structures and equipment (CSSSEs): (site-specific)
- Trained and qualified operators
- Means for operators to access safe shudown equipment
- System equipment required by the procedures used

Protected target sets (PTSs): (site-specific)
- Trained and qualified operators
- Means for operators to access safe shutdown equipment

Tactical response strategies (TRSs): (site-specific)
- Detection and Assessment:
  - Prior to adversary gaining access to operators
- Delay/Deny:
  - Access control measures/barriers to locations of specified safe shutdown system equipment
- Deployment and Response Tactics:
  - Guards respond to predetermined positions to protect vulnerable operators
- Defensive Positions:
  - Establish hardened defensive positions for prepositioning protective force to intercept adversary prior to adversary gaining access to operators

Result: Necessary support for safe shutdown is maintained.

RELATED REGULATIONS, REGULATORY GUIDES AND GUIDELINES:

10 CFR Part 50 - “Domestic Licensing of Production and Utilization Facilities”

Appendix A to Part 50 - “General Design Critieria for Nuclear Power Plants”

Appendix R to Part 50 - “Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979"

10 CFR Part 50.34 - “Contents of applications; technical information”

10 CFR Part 50.36 - “Technical Specifications”

Regulatory Guide 1.29 - “Seismic Design Classification”

Regulatory Guide 1.153 - “Criteria for Safety Systems”

Review Guideline No. 17 - Definition of Vital Areas

Regulatory Guide 1.97 - “Instrumentation and Control”

Backup Slide