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Approach for Design and Implementation of Protection Measures for the Insider Threat

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U.S. DEPARTMENT OF ENERGY

NNSA National Nuclear Security Administration

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Contents

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Security Plan

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- Basis for licensing
- Based on defined threat
- Based on identified targets
- Based on analysis
- Site specific
- Describes measures to meet Physical Protection requirements
  - Includes Insider Mitigation Programme

Insider Mitigation Plan – How

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Principles

Policies

Procedures

Insider Mitigation Plan – How

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Principles

Based on Regulations, define protection strategy

Principles – Insider Threat Examples

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- *Authorizing access will be strictly controlled.*
- *Trustworthiness determinations and behavioral observation programs will be implemented using a graded approach, where the most rigor is applied to personnel with access to nuclear material, vital areas and sensitive information.*
- *Insider threat mitigation will be an integral part of planning and analysis at the facility level, when designing and implementing protection systems*

Insider Mitigation Plan – How

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Policies

Rules that implement Principles

Insider Mitigation Plan – How

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Policy development – Design Process

Defined or derived

Evolve or mature

Policies – Insider Threat Examples

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- Identity verification for entrance into the Protected Areas will include finger vein biometric verification.
- Only the minimum number of individuals shall be granted authorized access to any designated security area or system.
- No individual shall be granted singular access to nuclear material or critical systems.
- Continuous surveillance will be implemented when personnel require direct access to Category I nuclear material or critical systems in order to perform assigned job duties.

Insider Mitigation Plan – How

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Procedures

How the rules are implemented

Procedures, continued

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Administrative Procedures

Procedures, continued

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Technical Procedures

Procedures, continued

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Procedures for all situations

Procedures for all situations

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Normal – situations that have been reviewed

Procedures for all situations

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Off-normal or Exceptions – for situations that have been reviewed

Procedures for all situations

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New or Special – situations not previously reviewed

Procedures for all situations

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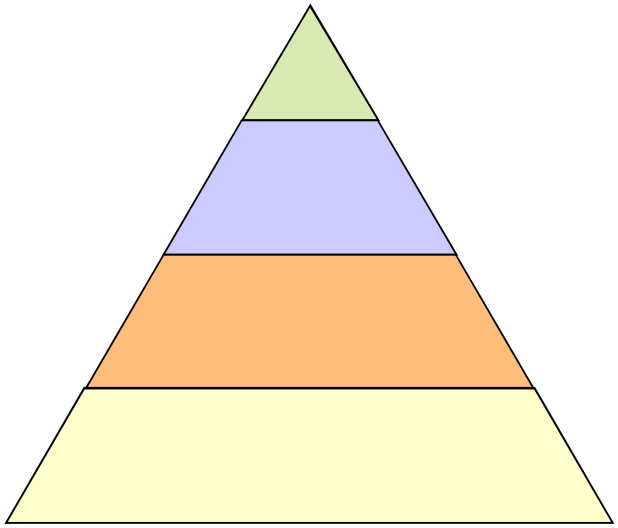
Incident – safety or security

Framework

- Principles – regulations
- Policies – rules
- Procedures - implementation



Approach

- Recognize the principles – regulations
- Establish policies – rules
- Establish and document procedures

Example – Required Result

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Printing and issuing a credential (badge) to an individual

Example – Requires

Access that is

Example – Questions

Where:

Does access need to be controlled?

Example – Questions

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Who:

Authority to Authorize?

Determines this authority?

Example – Questions

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What:

Rules to determine access?
Rules to limit authorized access?

Example – Questions

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When:

When (time of day) is access to each area allowed?

Example – Questions

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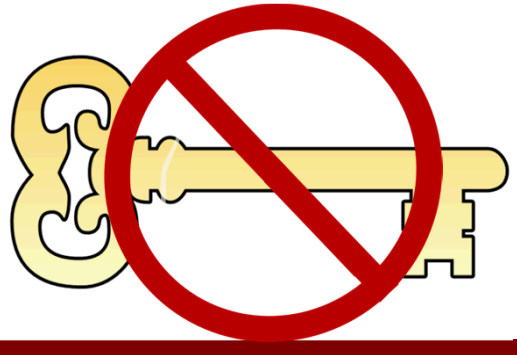
How:

Trustworthiness determined?

Authorized access maintained?

Key control?

Access is terminated?



Example – Principles

- Authorization for access will be strictly controlled.
- Trustworthiness determinations and behavioral observation programs will be implemented using a graded approach, where the most rigor is applied to personnel with access to nuclear material, vital areas and sensitive information.

Example – Policies

- Compartmentalization shall be implemented where feasible.
  - Review of all operational safeguards and security processes shall be reviewed and compartmentalization criteria determined and implemented
  - Compartmentalization criteria should consider individuals with designated authority or specific knowledge.
- Employees working in vital areas or on critical equipment must be vetted and must be in a Behavioral observation program prior to being granted access to the area or equipment.
- Separation of duties shall be applied to job duties in order to limit access to critical equipment and to meet the compartmentalization policy.

Example – Procedures

- Processes for hiring and onboarding, including pre-employment identity and reference checks.
- Process for hiring manager to request employee be issued a badge, including area access requirement/justification.
- Processes to determine need for and enrollment into trustworthiness program
- Review and approval process for access authorization including designation of the individuals with designated approval authority for designated security areas.
  - Includes ensuring authorized access meets rules for compartmentalization and separation of duties

Example – Procedures, continued

- Process for security of personal and sensitive information.
- Process for an employee to receive badge and enroll a personal identification number and biometrics into entry control system.
- Process for removing access when not required and periodic review of required access, including trustworthiness

Example - Electricians

- Hired to perform testing, routine and unscheduled maintenance and to complete minor installations and modifications for electrical systems at a facility.
- Specialized training required to work on control systems, fire alarm system and the security alarm system
- Requirement for 24/7 onsite response to security alarm system outages
- Compartmentalization of systems – location of components and access to the components
  - Emergency Power
  - Reactor Control Systems
  - Communication Network
  - Security system components

Example – Electrician Duties

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Hypothetical Facility

			Protected Area				Building 1							
Employee	**General Job Duties**	**HRP ? / HRP status**	**Pedestrian Entrance Day / Night**		**Vehicle Entrance Day / Night**		**Main Entrance Day / Night**		**Room 10 (E-power Control Equip) Day / Night**		**Vault 20 (TPR Code Required) Day / Night**		**Room 30 (Reactor Control Room) Day / Night**	
Sammy Smith	LAA Normal Power	No												
Jessie Jones	PA/VA Normal Power	No												
Orville Ortiz	Reactor control systems Maintenance	Yes / In process												
Cassie Clawson	Security Alarms Maintenance	No												
Vladimir Vigil	Security Alarms Maintenance	Yes / Current												
Paddy Perez	Security Alarms Testing	Yes / Current												
Francesca Gao	Emergency Power Systems	Yes / Current												

Example – Authorized Access

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Hypothetical Facility

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Jessie Jones	PA/VA normal power	No	Yes	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
Orville Ortiz	Reactor control systems maintenance	Yes / In process	Yes	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
Cassie Clawson	Security alarms maintenance	Yes/Current	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No
Vladimir Vigil	Security alarms maintenance	Yes / Current	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No
Paddy Perez	Security alarms testing	Yes / Current	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No
Francesca Gao	Emergency power systems	Yes / Current	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No

Note: Authorized means Unescorted Access.

Example – Authorized Access

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Example – Authorized Access

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Evaluation

If the insider mitigation program is not effectively designed and implemented:

Anyone, regardless of job description or access level, could be or become an insider adversary.

Evaluation – Two Parts

1. Evaluation of the established principles, policies and procedures to requirements
2. Evaluation of the implementation of the procedures to intended design.

Evaluation – Using this Approach

- Advantage 1
  - Measures evaluated prior to implementation
    - The level of detection identified as part of design.

Evaluation – Using this Approach

- Advantage 2
  - Allows design to be based on insider scenarios – NSS13 recommendation

Evaluation – Using this Approach

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- Advantage 3
  - Access Authorization based on individual job duties, not job description or organization
    - Eliminates assumptions about access that are associated with “Grouping”

Conclusion

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- Insider Mitigation Framework and Approach
  - Recognize the principles – regulations
  - Establish policies – rules
  - Establish and document procedures
- Addresses complexities
- Access authorization –based on assigned job duties not organization title
- Evaluation
  - Evaluate principles, policies and procedures
  - Evaluate implementation to intended design