Learning Objectives

After completing this module, you should be able to:

- Describe the need for a nuclear security Trustworthiness Program
- Identify elements of framework for implementing a Trustworthiness Program
- Describe benefits of a Trustworthiness Program
IAEA Nuclear Security Series 13 (NSS-13)

3.14 Taking into consideration State laws, regulations, or policies regarding personal privacy and job requirements, the State should determine the trustworthiness policy intended to identify the circumstances in which a trustworthiness determination is required and how it is made, using a graded approach.

3.14 In implementing this policy, the State should ensure that processes are in place to determine the trustworthiness of persons with authorized access to sensitive information or, as applicable, to nuclear material or nuclear facilities.

International Commitments

Convention on Physical Protection of Nuclear Material (Annex I)

“For Category I material...access is restricted to persons whose trustworthiness has been determined...”

Code of Conduct on the Safety and Security of Radioactive Sources

“Every State should ensure...measures to determine, as appropriate, the trustworthiness of individuals involved in the management of radioactive sources...”

United Nations Security Council Resolution 1540 Reporting Matrix

Measures to account for, secure, or otherwise protect nuclear weapons and related material include “Reliability Check of Personnel”
Potential Risks and Consequences

- Nuclear energy and research programs offer many benefits but also certain risks, including:
  - Accidents involving release of radioactive material
  - Sabotage of facilities
  - Theft or diversion of materials, technology, or information
  - Use of material in a radiological dispersal device or improvised nuclear device
- Nuclear security events can lead to severe consequences, including:
  - Injury and/or loss of life
  - Environmental damage
  - Economic impact
  - Social disruption

The Human Dimension

- All of these nuclear security risks have a human dimension
  - Personnel have a positive role to play in preventing, detecting, and responding to nuclear security events
  - Under certain circumstances, personnel may also play a negative role, facilitating nuclear security incidents through
    - Lack of awareness
    - Negligence
    - Accidental or unintentional acts
    - Malicious acts – the insider threat
The Insider Threat

- Recall that an insider is an adversary ...
  - With authorized access to a nuclear facility, a transport operation, or sensitive information
  - Who can take advantage of their access, complemented by their authority and knowledge of the facility, to bypass dedicated physical protection elements or other provisions such as safety or NMAC (NSS-8)
- Trustworthiness Programs are a way to mitigate the Insider threat by
  - Ensuring the integrity, reliability, and suitability of individuals working in positions that afford them access to nuclear materials, facilities, technology, or sensitive security information

General Trustworthiness Programs

- No single “blueprint” for implementation of a nuclear security Trustworthiness Program
  - Every country presents a unique context and requirements
- Other terms may be used to describe these programs:
  - Trustworthiness Assessments (IAEA)
  - Human Reliability Programs (WINS, U.S. DOE)
  - Fitness-for-Duty Programs (U.S. NRC)
Assessment is Integral to Program

- For individuals in a Trustworthiness Program, assessments consider:
  - Motivational factors
  - Greed
  - Financial factors
  - Ideological interests
  - Psychological factors
  - Desire for revenge (e.g., due to perceived injustice)
  - Physical dependency (e.g., drugs, alcohol, sex)

Trustworthiness assessments are initial and ongoing assessments of an individual’s integrity, honesty and reliability in pre-employment checks and checks during employment that are intended to identify the motivation or behavior of persons who could become insiders. 

Framework for Implementing Program

- Currently, no international consensus on a framework for implementation
- However, Trustworthiness Programs generally include four primary elements:
  1. Threat and risk assessment
  2. Program requirements
  3. Implementation plan
  4. Review and assessment
1. Threat and Risk Assessment

- Similar to other protection systems, development of a Trustworthiness Program should be informed by an assessment of threats and risks
  - Potential adversaries, including their intent, capabilities, and tactics
  - Types of nuclear materials, facilities, and information that may be exploited by such adversaries
  - Opportunities and motivations for insiders to assist or otherwise be exploited by potential adversaries

Graded Approach

- Risks vary depending on the facility or materials under consideration
  - Nuclear Research Facility VS. Nuclear Power Facility VS. Waste Storage Facility
  - Facility Janitor VS. Lab Researcher VS. Technician VS. Control Room Operators VS. Facility Guards

- The same is true of associated personnel
2. Program Requirements

- Requirements can include:
  - Identification of access level
    - Information clearance levels (e.g., Confidential, Secret, Top Secret)
    - Access to specific facilities or areas of facilities (e.g., limited areas)
  - Eligibility criteria for access levels
    - Need-to-Know

- Requirements should be codified through appropriate legal and regulatory mechanisms

Remember – Personnel security requirements should always be informed by the threat and risk assessment

3. Implementation Plan

- Translate the security requirements into an implementation plan
- Include establishing and implementing a standardized personnel screening process to potentially cover:
  - Pre-employment interviews, background checks, and investigations
  - Psychological and medical evaluations
  - Regular file review and re-investigation
  - Adjudication mechanisms for handling disputes
Importance of Nuclear Security Culture

- Formal trustworthiness requirements and processes should be supported by a robust nuclear security culture, which is:
  - The assembly of characteristics, attitudes and behavior of individuals, organizations and institutions that serves as a means to support and enhance nuclear security (NSS-7)
- Organizations and individuals can reinforce best practices through promoting certain values:
  - Awareness
  - Reporting
  - Flexibility
  - Learning
  - Just practices

4. Review and Assessment

- A Trustworthiness Program should be regularly reviewed and assessed to determine its effectiveness
- Implementers should determine appropriate criteria for evaluation
- Personnel security incidents of concern should be investigated to determine root causes of personnel security failure
Introduction to Trustworthiness

Implementation Cycle

- The Trustworthiness Program should be responsive to changes, including:
  - Evolving threats
  - Implementation lessons learned
  - Changes in the legal and regulatory environment
  - Acquisition of new capabilities, facilities, technologies, and materials

US Perspective

- NRC
  - Regulates commercial nuclear power plants and other uses of nuclear materials, such as in nuclear medicine, through licensing, inspection and enforcement of its requirements
  - 10 CFR 73.56 – Access Authorization Program/Fitness for Duty
- DOE
  - Regulates non-commercial nuclear materials and nuclear weapons
  - 10 CFR 712 – Human Reliability Program
NRC Access Authorization Requirements

- **10 CFR § 73.56** – Personnel access authorization requirements for nuclear power plants
- **Objective:** Access authorization program must provide high assurance that potential employees are trustworthy and reliable, such that they do not constitute an unreasonable risk to public health and safety or the common defense and security, including the potential to commit radiological sabotage.
- **Applicability:**
  - Any individual with unescorted access to nuclear power plant’s protected or vital areas
  - Any individual whose duties and responsibilities permit them to take actions by electronic means, either on site or remotely, that could adversely impact operational safety, security, or emergency preparedness
  - Any individual who has responsibilities for implementing a protective strategy, including, but not limited to, armed security force officers, alarm station operators, and tactical response team leaders

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**Background Investigation**
- In order to grant an individual unescorted access to the protected area or vital area of a nuclear power plant, the individual must complete a background investigation

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<th>Elements of the Investigation</th>
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<td>8. Psychological assessment</td>
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DOE Human Reliability Program (10 CFR 712)

• Objective
  ▪ The Human Reliability Program (HRP) is a security and safety reliability program designed to ensure that individuals who occupy positions affording access to certain materials, nuclear explosive devices, facilities, and programs meet the highest standards of reliability and physical and mental stability

• Process
  ▪ This objective is accomplished under this part through a system of continuous evaluation that identifies individuals whose judgment and reliability may be impaired by physical or mental/personality disorders, alcohol abuse, use of illegal drugs or the abuse of legal drugs or other substances, or any other condition or circumstance that may be of a security or safety concern

10 CFR 712 – Human Reliability Program (cont’d)

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<td>6. Management evaluation</td>
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<td>7. DOE personnel security review</td>
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Who Should Be In Human Reliability Program?

- Any individual who
  - Has access to Category I Special Nuclear Material (SNM) or has responsibility for transportation or protection of Category I quantities of SNM
  - Has duties that involve nuclear explosives or has responsibility for working with, protecting, or transporting nuclear explosives, nuclear devices, or selected components
  - Has a position that affords access to information concerning vulnerabilities in protective systems when transporting nuclear explosives, nuclear devices, selected components, or Category I quantities of SNM; or
  - Affords the potential to significantly impact national security or cause unacceptable damage

General Requirements for HRP Certification

- DOE “Q” access authorization
- The annual submission of the Questionnaire for National Security Positions
- No use of any hallucinogen in the preceding five years and no experience of flashback
- A psychological evaluation
- An initial drug and alcohol test and random drug and alcohol tests at least once each 12 months
- Counterintelligence evaluation, which includes a polygraph examination
Introduction to Trustworthiness

Graded Risks = Different Programs

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Other Trustworthiness Program Benefits

- A more positive work environment where coworkers look out and protect each other
- Confirmation of training activities to ensure staff perform their duties safely and securely
- Increased productivity and reduced operational costs with improved safety and security
- Detection of health issues earlier via medical screening
- Identification and resolution of problems before they occur
Introduction to Trustworthiness

Summary

• Trustworthiness Programs can help ensure the integrity, reliability, and suitability of individuals working in critical positions at nuclear facilities

• Trustworthiness Programs are a means of mitigating the Insider threat

• Trustworthiness Programs generally include four elements:
  ▪ Threat and risk assessment
  ▪ Program requirements
  ▪ Implementation
  ▪ Review and assessment