

Human Resources

Nuclear Security Detection Architecture Module L

Nuclear Security Detection Architecture

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Module Objectives

Participants will have an understanding of the role of personnel in a nuclear security detection architecture and methods for developing human resource capabilities, including:

- Nuclear security culture
- Trustworthiness of personnel
- Awareness, training, and exercise

The information presented in this module is relevant to checklist questions:
24, 28, 67, 68, 69, 70, 72, 73, 74, 76, 78, 79, 80

Role of Personnel

- Personnel play a crucial part of the architecture by:
 - Operating and maintaining equipment
 - Assessing alarms and alerts
 - Creating and implementing policies and procedures
- A State should consider many factors when developing personnel, including:
 - Maintaining a nuclear security culture
 - Establishing trustworthiness
 - Awareness, training, and exercise

Nuclear Security Culture

The assembly of characteristics, attitudes and behavior of individuals, organizations, and institutions which serves as a means to support and enhance nuclear security

- Nuclear security culture is broad, includes prevention, detection, source protection, etc.
- Maintaining a nuclear security culture can help raise awareness and buy-in among stakeholders
- A culture is hard to cultivate or impose, but can be fostered through role models, training, positive reinforcement, etc.

Effective Nuclear Security Culture

Effective nuclear security culture can be characterized by:

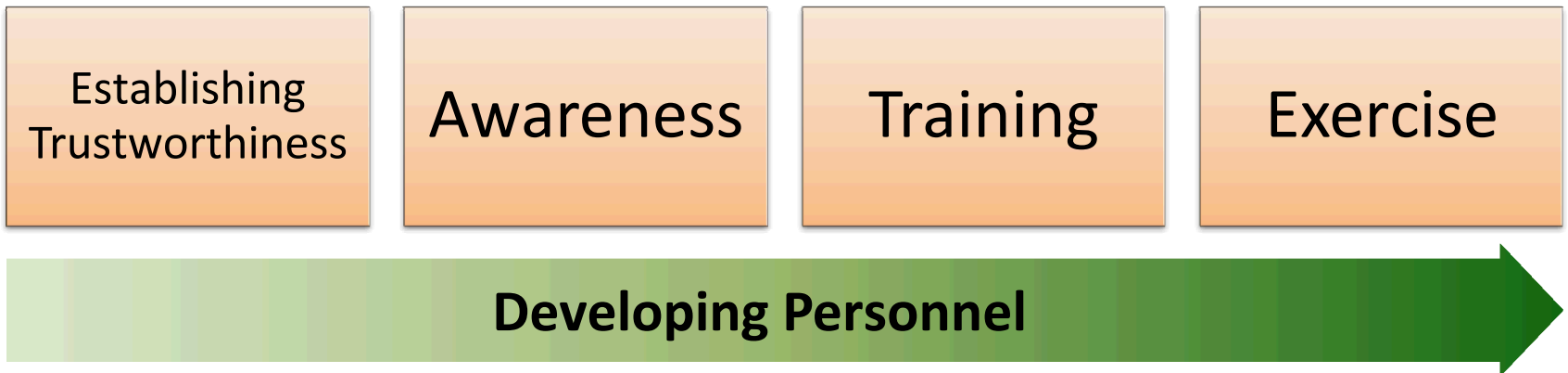
- Clear policies and legislation
- Clear mandates, roles, and responsibilities
- Leaders and managers who believe in the mission and emphasize nuclear security
- Effective recruitment and development of personnel
- Training and exercises that reinforce attitudes and behaviors that support nuclear security

Nuclear Security Culture Stakeholders

- To be effective a nuclear security culture should be developed for all stakeholders, including:
 - The State
 - Organizations
 - Managers and individuals
 - The public
 - The international community
- Appropriate strategies and approaches should be developed for engaging with each stakeholder

Developing Human Resources

- Unlike other capabilities, human resources cannot simply be purchased and is a process that must be developed
- Requires adequate planning and may involve an investment of time and money



Trustworthiness of Personnel



- Developing procedures to establish an appropriate level of trust can help mitigate an insider threat
 - The best defensive barriers, procedures, and equipment can be defeated with insider cooperation
 - Nuclear security information is often considered sensitive and could be harmful to nuclear security if handled inappropriately
- The level and amount of trust required in an individual is often related to the amount of access required for a certain role

Establishing Trustworthiness

Competent authorities could establish policies and procedures consistent with national laws to establish trustworthiness, including:

- An appropriate trustworthiness check, including:
 - History of employment
 - Financial situation
 - Legal history
 - Unusual associations
 - History of drug or substance abuse
- Making employment conditional based on the outcome of the trustworthiness check
- Periodically revalidate the trustworthiness check

Awareness



- For the security detection architecture to be effective, it is important that stakeholders and individuals be aware of the nuclear security mission
- Building awareness is a crucial part of:
 - Establishing belief in the mission
 - Sustaining the operational effectiveness of the architecture
 - Fostering a nuclear security culture
- All stakeholders, including the general public, should have an appropriate level of awareness

Establishing Awareness

- Stakeholders can be made aware of the mission through many means, including appropriate:
 - Awareness briefings
 - Training materials and procedures
 - Training exercises
 - Media outreach
- Awareness may involve educating stakeholders on aspects of nuclear security, including:
 - The dangers of radiation
 - The threats facing the state
 - Appropriate portions of the detection architecture

Examples of Appropriate Awareness

	General Public	Senior Leadership	Implementers
Desired Level of Awareness	<ul style="list-style-type: none"> • Understanding of threat posed by radiological and nuclear devices • Basic information on how to report suspected threats 	<ul style="list-style-type: none"> • Detailed knowledge of threat, including: <ul style="list-style-type: none"> • Domestic sources • History of smuggling • Understanding of strategy and role in architecture 	<ul style="list-style-type: none"> • Understanding of the threat and the need for vigilance • Detailed knowledge of the policies and procedures to execute
Strategies for Generating Awareness	<ul style="list-style-type: none"> • Publicizing radiation and threats, including: <ul style="list-style-type: none"> • Television advertising • Posters and billboards • Announcing exercises • News reports 	<ul style="list-style-type: none"> • Tailored awareness briefings outlining relevant information • Detailed threat briefings • Discussions and table-top exercises 	<ul style="list-style-type: none"> • Awareness briefings • Training materials on policies and procedures • Exercises involving nuclear security threats

Training



- Training mechanisms are necessary to effectively develop knowledge and skills
- Help reinforce nuclear security detection protocols and procedures
- Can also be used to build awareness, as well as to complement awareness efforts
- Should be given to all stakeholders at the level appropriate to their existing job duties

Training Considerations

- Based on a needs assessment
- Performed with regular frequency
- Addresses both technical and non-technical aspects
- Accounts for the disparate background of the participants
- Includes an evaluation portion

Training Needs Assessment

- Should be conducted to define the resources needed to execute the training
 - Human
 - Financial
 - Equipment
- Determines the scope and type of training by considering an individual's role within the architecture
- Should consider existing training capabilities, organizational structure, threat assessment, and national strategy



Job and Task Analysis Example

1 Identify Jobs

	Border Enforcement	Technical Support	Operations Support
Operate Detectors	✓		
Analyze Data		✓	
Maintain Equipment	✓	✓	✓
Coordinate Personnel	✓		✓

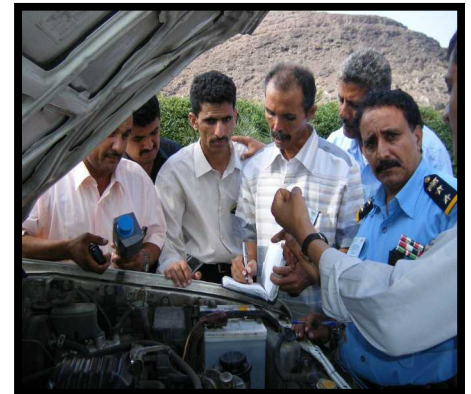
3 Correlate Jobs and Tasks

2 Identify Tasks

Exercise



- Have many uses, including:
 - Reinforcing training materials
 - Assessing detection capabilities
 - Improving architecture effectiveness
 - Providing awareness
 - Evaluating policies, procedures, equipment, and operations
- Can take on many forms:
 - Table-top exercises
 - Drills
 - Limited-objective pilots
 - Full-scale field exercises



Exercises: Objectives and Benefits

Objectives and benefits of exercises include:

- Fostering dialog across organizations
- Building a nuclear security culture
- Evaluating and validating architecture implementations
- Identifying vulnerabilities
- Testing new ideas

Exercise Execution Overview

Executing an Exercise

- Resource and time investments related to type, size, and scope
- All aspects of exercises should be established in advance
- Typically involves three phases
 1. Planning
 2. Executing
 3. debriefing

Plan

Determine:

- Scope and budget
- Goals, objectives
- Exercise type
- Venue
- Participants

Develop Scenario

- Storyline that drives exercise
- Realistic and credible
- Must meet exercise goals and objectives

Execute

Facilitators Should:

- Ensure safety and security of participants
- Deliver necessary information
- Control the progression of the exercise
- Provide key data to prompt desired actions
- Ensure all objectives are met

Debrief

Immediate

- Short sessions after exercise
- Allows for immediate feedback to and from participants

Planned

- Typically a few days after exercise
- Forum for planners, facilitators, and evaluators to provide feedback
- Useful for future improvements

Additional Exercise Considerations

- Should be appropriate to the size of the national security detection effort
- Can involve multiple local and national agencies, members of the public, private partners, and other key stakeholders
- A methodology for evaluating results should be established in advance
- Results should be carefully recorded and assessed

Case Study

BUILDING SPANISH AWARENESS TO NUCLEAR AND RADIOACTIVE MATERIAL

The Challenge

- Spain had to begin activities related to a nuclear detection architecture in 2003
 - Align with international recommendations
 - Meet national and international regulations
- Due to wide range of implications and required technical expertise, it was clear no single institution could lead the project
- Several issues highlighted in a 2005 meeting:
 - Organizations did not have previous relationships with each other or knowledge of activities, including nuclear detection functions
 - Technical expertise of each organization was excellent, but coordination was difficult

How could Spain build the awareness level of stakeholders and improve collaboration?

The Solution

- Between 2005 and 2008 Spain identified and executed a number of opportunities to build awareness
 - National workshops on nuclear security
 - Articles in nuclear sector magazines discussing security concepts
 - International workshops with IAEA coordination on physical protection
- Additionally, two important activities were held in 2008:
 - A table-top exercise held in Madrid exploring the hypothetical scenario of theft of radioactive material leading to an attack in Spain
 - An international field training exercise focused on a scenario in which a vehicle with an RDD was found near a public park

The Benefits

- Deepened relationships between Spanish organizations and personnel which improved cooperation and coordination
- Increased knowledge on topics such as nuclear and radioactive materials, nuclear security detection, and potential threats
- Media coverage increased general public knowledge of nuclear security
- Increased awareness helped establish the Spanish Protocol for action in case of detection of inadvertent movement or illicit trafficking of nuclear and radioactive materials in 2009

Module L

DISCUSSION QUESTIONS

Discussion Questions

1. What are some of the challenges that a State may face when attempting to establish a nuclear security culture and how can they be mitigated?
2. How are awareness, training, and exercise related? When is it appropriate to institute each program?
3. A State is considering modifying their concept of operations at a border checkpoint – how can awareness, training, and exercises be leveraged to help architects design, evaluate, and implement these new concepts?