SAND2007-3019P

Physical Protection Training

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Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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Key Program Activities

Training

- Develop & conduct training courses bilaterally, regionally, and with the IAEA internationally to ensure adequate understanding and implementation of the most current physical protection concepts and practices.

- **Since 1978, have trained over 546 students from over 70 countries in courses held in Albuquerque under IAEA auspices.**
- **Many graduates are responsible for physical protection in their respective countries.**

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Key Program Activities

Training

- International physical protection training mandated by 1978 Nuclear Nonproliferation Act, section 202.
  - *The Department of Energy…shall establish and operate a safeguards and physical security training program to make available to persons from states that have nuclear material for peaceful purposes.*

- **Training is long-term, global investment.**
- **NA-243 develops and conducts training on a number of key physical protection concepts.**
- **Use technical expertise resident at the national laboratories.**

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IAEA Physical Protection Support: Current Efforts

IAEA Physical Protection Program training

Existing Training

- International Training Course (ITC)
  - ITC-19 May 2006
  - Material updates
- Regional Training Courses (RTC)
  - China, Brazil, Argentina, Czech Republic, Australia
- Design Basis Threat (DBT)
  - Argentina, Korea, Morocco, Netherlands
- Foundations of Physical Protections
  - Armenia, Mexico, China, Pakistan
- Insider Protection
  - Lithuania
- Vital Area Identification
  - Argentina, South Africa
- Research Reactors
  - Australia, Netherlands

Mission: Develop and present Physical Protection courses and workshops to meet U.S. commitments to IAEA and in support of U.S. bilateral initiatives

Introductory

- Foundations of Physical Protection
- Physical Protection System Design Overview
- Physical Protection System Overview
- Crisis Incident Management

Basic

- International Training Course
- Design Basis Threat
- Vulnerability Assessment – Fixed Site
- Vulnerability Assessment – Transportation
- Vital Area Identification
- Fundamentals of Physical Protection
- Insider Protection
- Security Culture

Advanced

- International Security System Analysis and Modeling
- Insider Threat Mitigation
- Advanced VA Workshop

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Training Courses

- Foundations of the Physical Protection of Nuclear Facilities and Materials (1 week)
- International Training Course (3 weeks)
  - Regional Training Courses (2 weeks)
- Design Basis Threat Workshop (3 days)
- Physical Protection of Research Reactors (2 weeks)
- Insider Protection Course (1 week)
- Vital Area Identification Course (2 weeks)
- Security Effectiveness Evaluation (1 week)
- Transportation Security (1 week)
- International Security System Analysis and Modeling (2 weeks)
- Physical Protection for Nuclear Facilities Guard Force Officers (2 weeks)

Note: Courses may be redesigned to address unique requirements.

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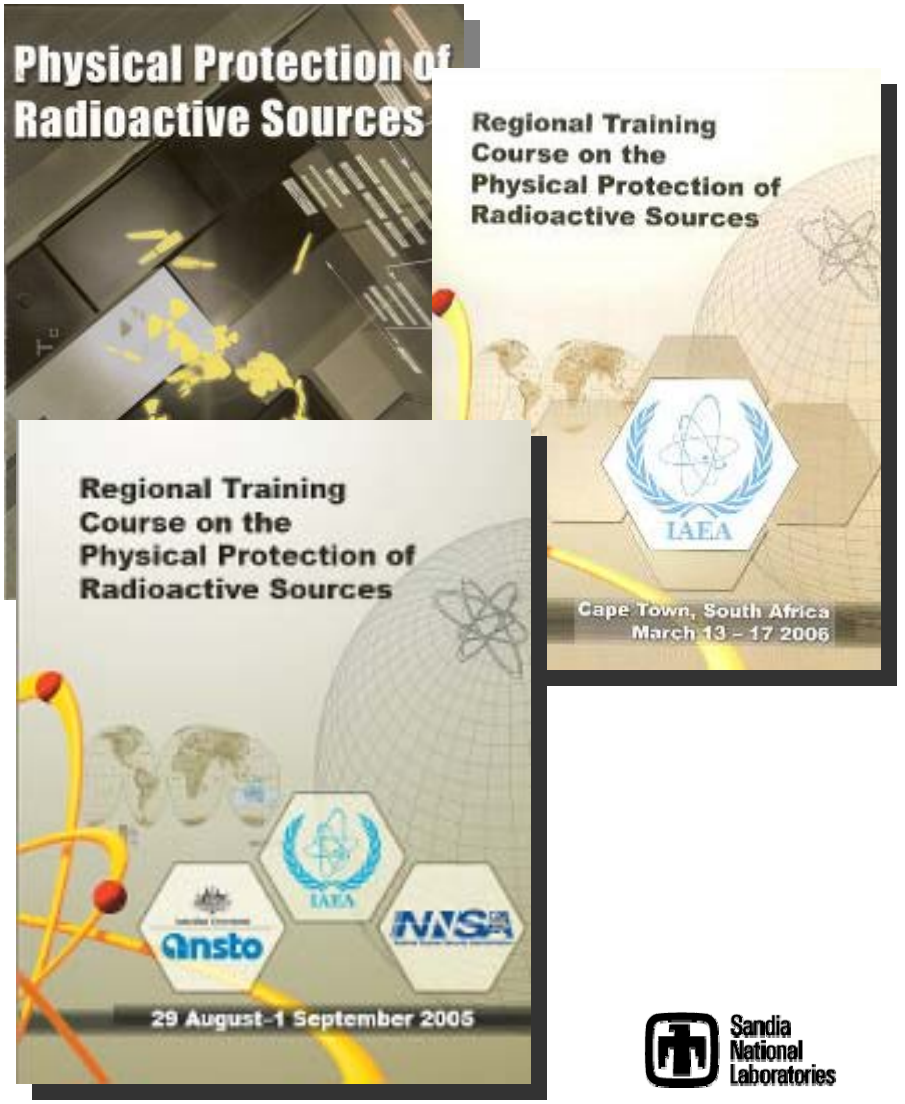
Training Course on Physical Protection of Radioactive Sources

- **Provides awareness on the need for radioactive source security and regulatory and practical approaches to source security**
- **IAEA, ANSTO, and NNSA collaborated in development and delivery of regional training course on physical protection of sources, primarily for regulators**
- **First delivered in Sydney, August 2005**
- **Subsequently delivered in South Africa, Argentina, India, Mexico, China, Spain, Bulgaria, Egypt and within the US**



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Search and Secure Workshops

- **Provides training on radiation detection and identification equipment for finding orphan sources**
- **Developed and implemented by NNSA in coordination with IAEA**
- **Equipment is provided to participating countries**

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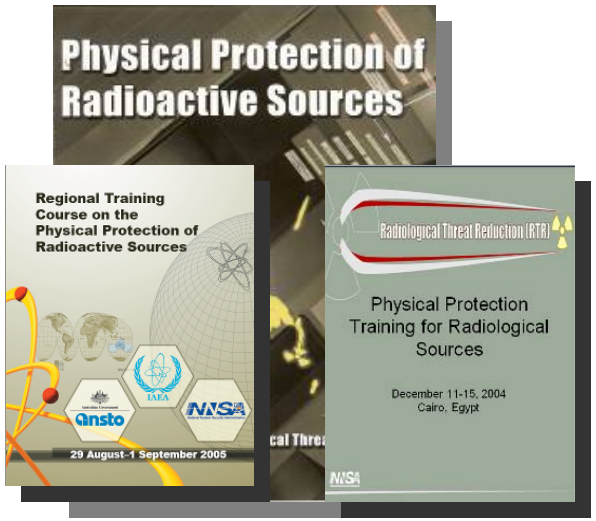
Nuclear/Radiological Threat Reduction
Radiological Focus

Objective

Prevent radiological dispersal events by terrorists

Approach

- **Reducing inventories/securing domestic and international radiological materials**
- **Detecting and interdicting smuggling of radiological materials**
- **Preventing sabotage of foreign nuclear facilities and materials**



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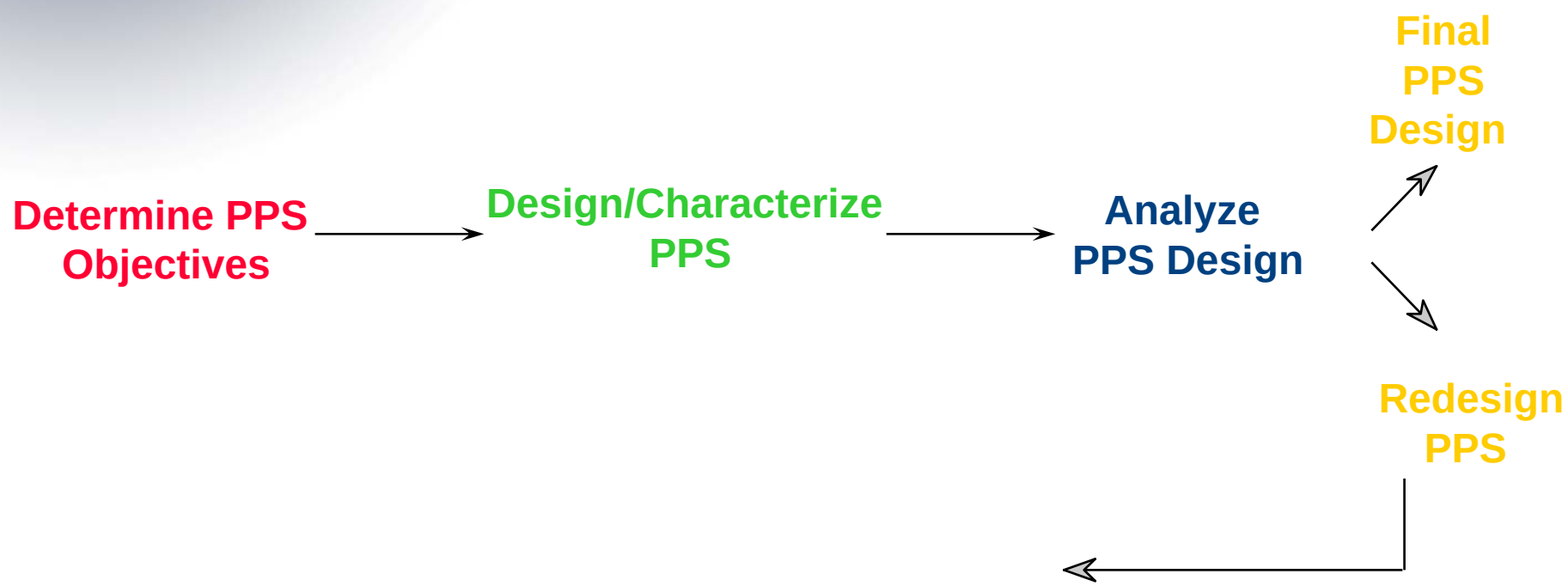
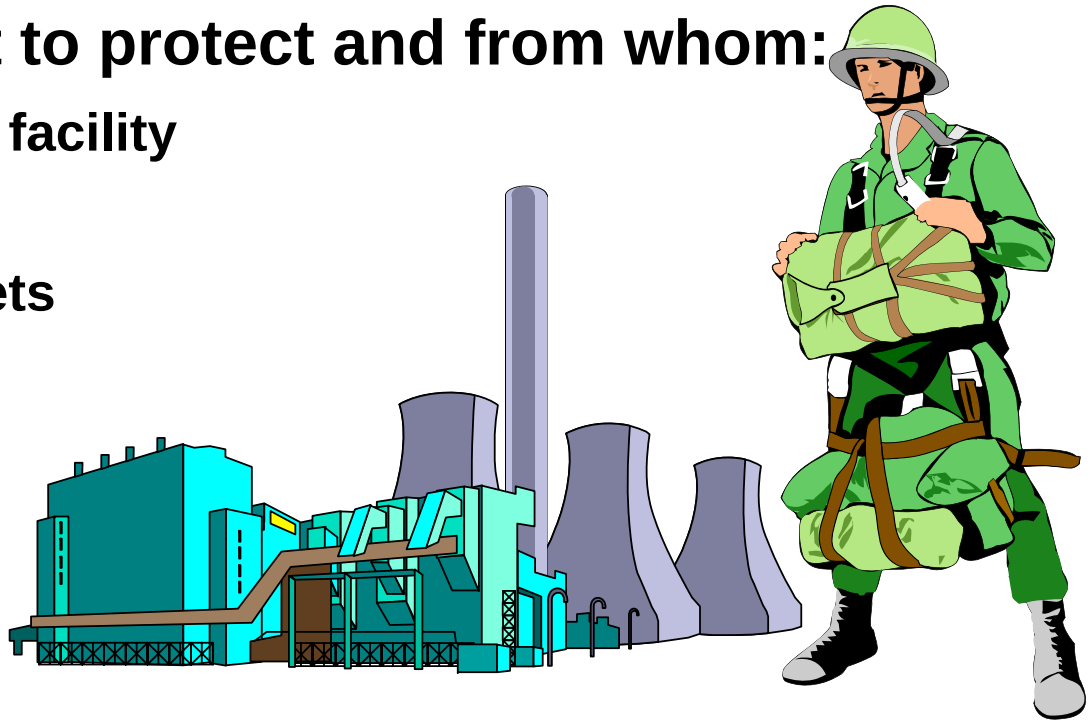
System Engineering Physical Protection – The DEPO process



Physical Protection System Objectives

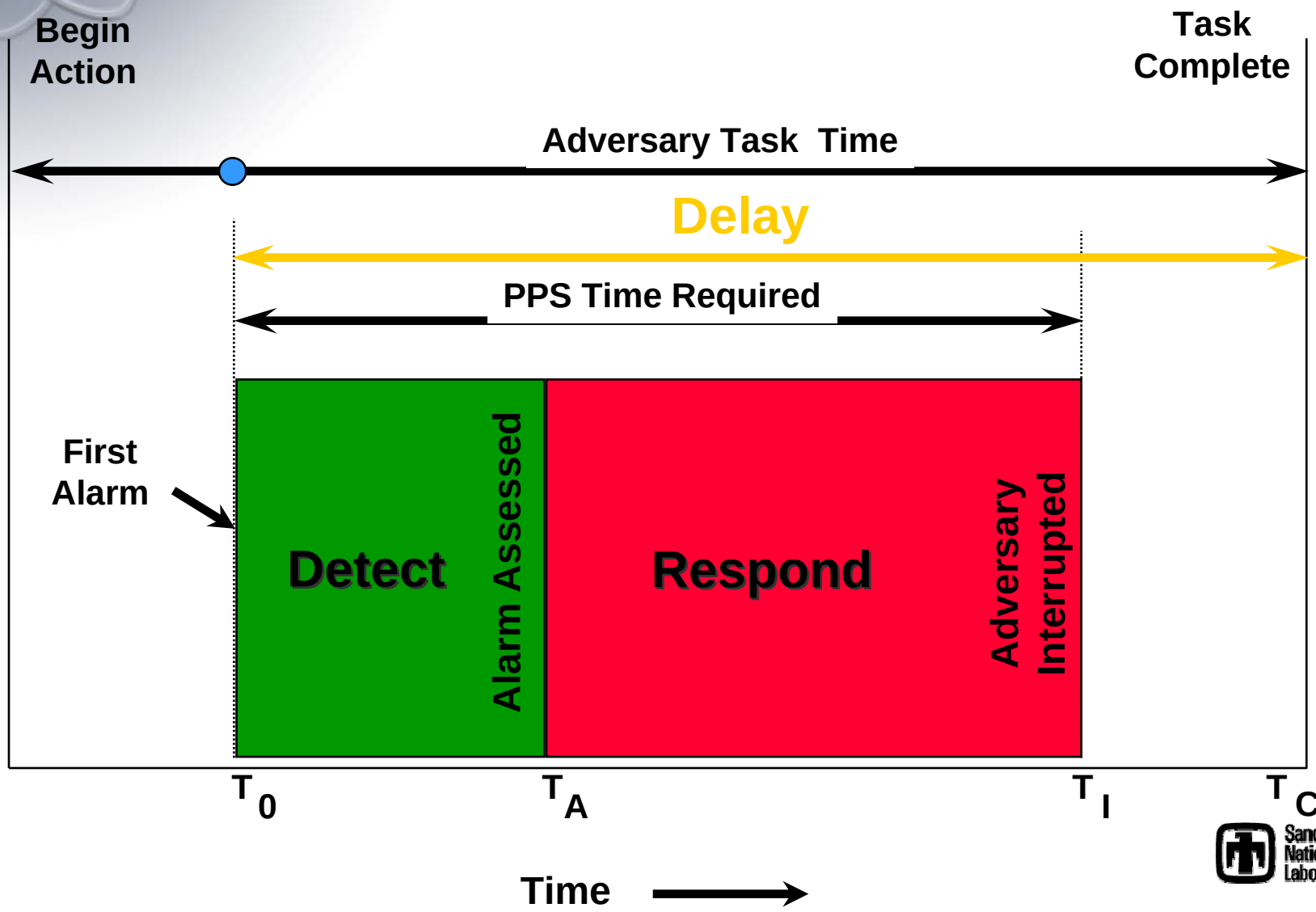
- **Understand what to protect and from whom:**
  - **Characterize the facility**
  - **Define the threat**
  - **Identify the targets**



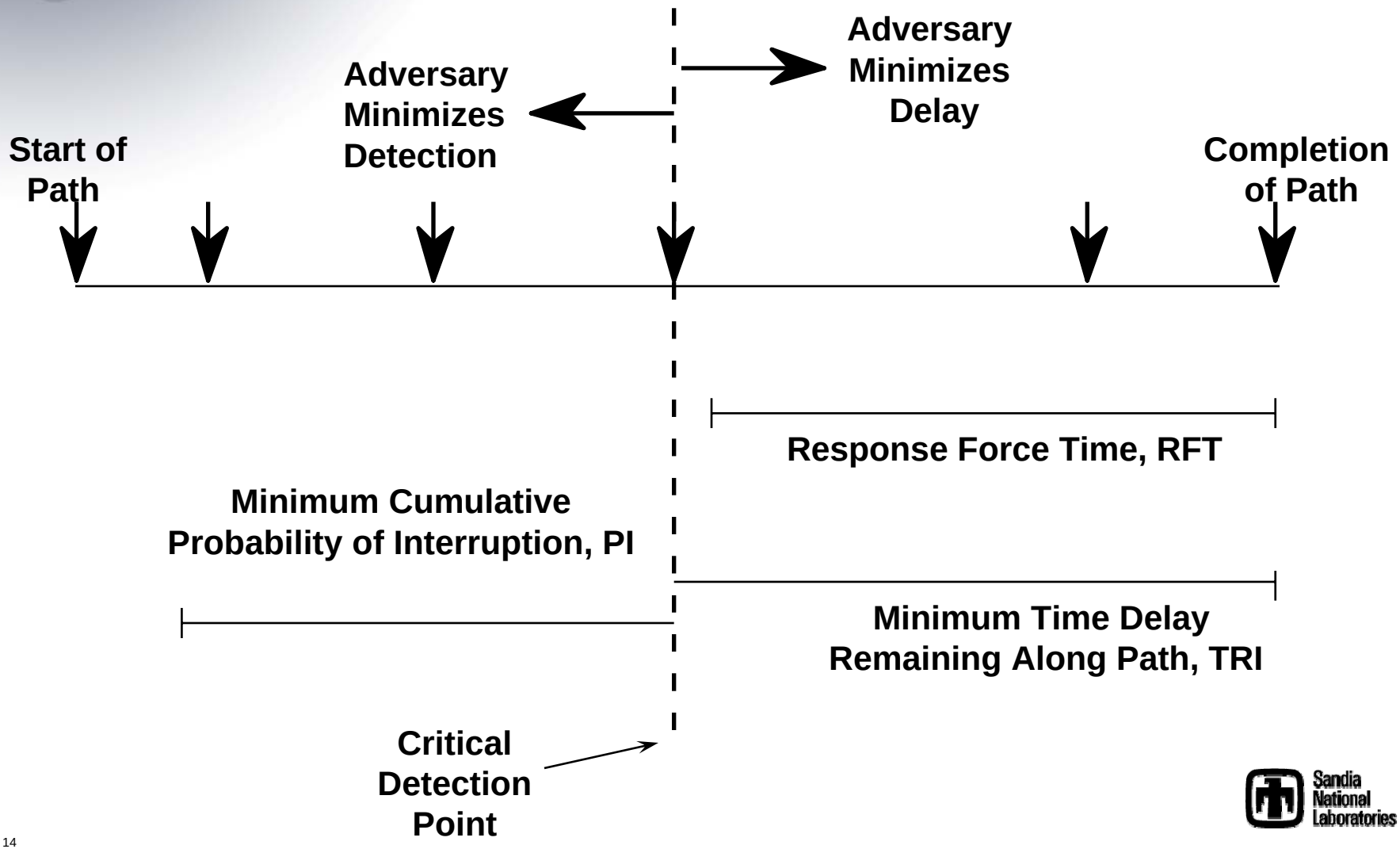
Characterize Physical Protection Systems (PPS)

- **Will be discussed in terms of**
  - **Overall objectives of the PPS**
  - **Functions of a PPS**
    - **Detection**
    - **Delay**
    - **Response**
  - **Elements that make up the functions**
  - **Characteristics of an effective PPS**
  - **Design criteria of a PPS**

Adversary Task Time vs. PPS Time Requirements

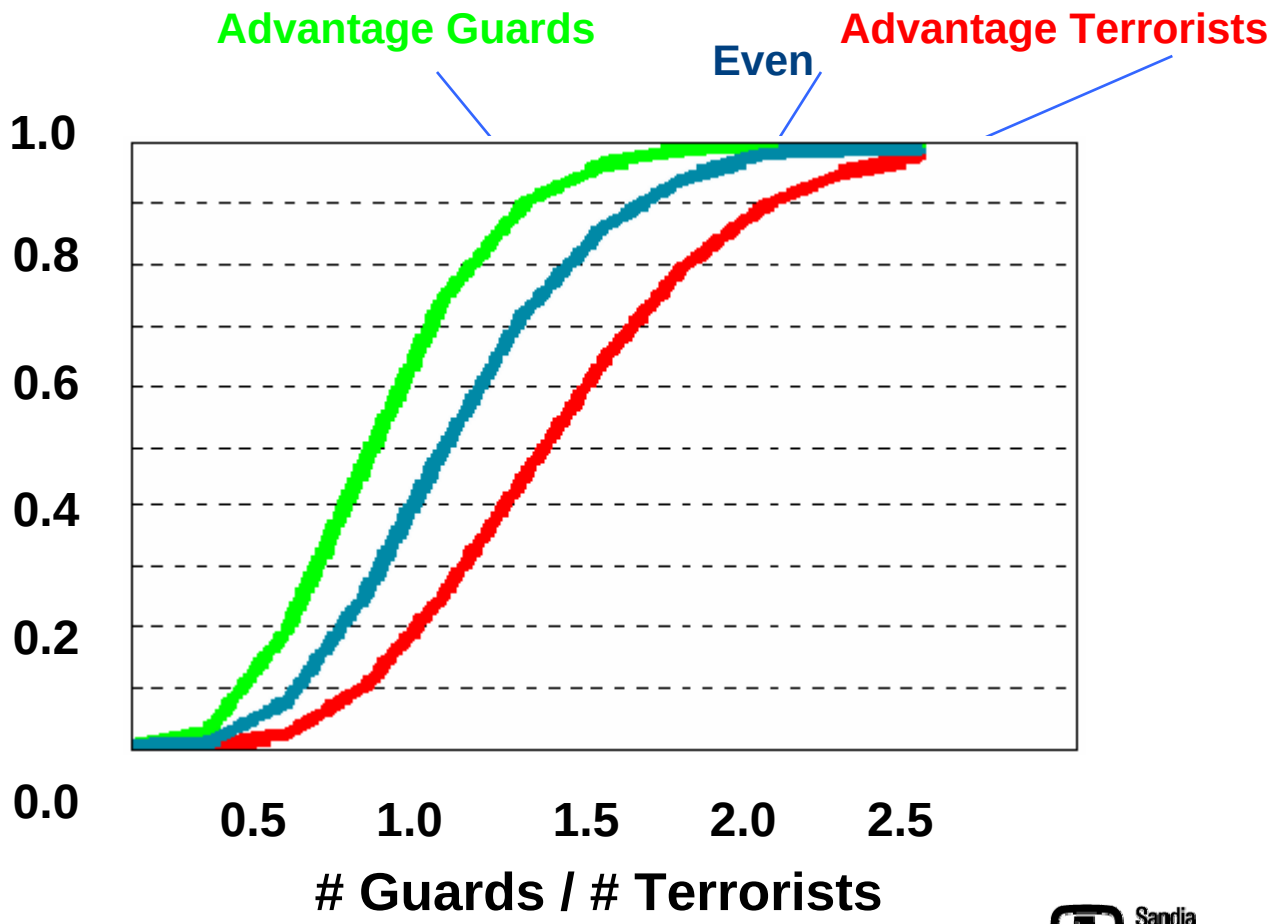


Timely Detection as a Measure of System Effectiveness



Response Force / Response Force Communication Data

- Consider Threat AND Response Force Capabilities
  - Numbers
  - Equipment
  - Training
  - Motivation
  - Knowledge **P_N**
- Determine Value for Probability of Neutralization (P_N)



Global Security Program Foundations

Applied S&T
- Technology applications
- Technology test and evaluation
- Technology development

Cooperative Monitoring Centers
- Technology testing and demonstration
- Technology training courses and workshops
- Visiting scholars program, research, and analysis
- Technology integration and operation

International Business Center
- International Programs Building
- International Procurement
- Export Control
- Foreign Interactions
- International Travel Clinic