24. Tabletop Analysis

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Albuquerque, New Mexico, USA
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Learning Objectives

After completing this module, you should be able to:

• Recognize evaluation recommendations from INFCIRC/225/Revision 5
• Describe a tabletop exercise
• Recognize roles and responsibilities and how to implement a tabletop exercise
• Describe a critical event and engagement
• Describe how to document and track the critical events and engagements properly
• Recognize how to determine results of critical events and engagements
INFCIRC/225/Rev.5 Guidance Evaluation of PPS

- The operator should evaluate and the competent authority should validate the design of PPS effectiveness to verify that it complies with the required level of protection.
- The State should ensure that evaluations include exercises to test the PPS, including training and readiness of guards and/or response forces.
- If the evaluation of the design of the PPS indicates ineffectiveness, the operator should redesign the PPS and re-evaluate the effectiveness.

What is a Tabletop Exercise?

**Tabletop exercise:** A method of simulating an adversary attack on a site’s existing or proposed physical protection system (PPS)

- Analyzes PPS elements:
  - Detection
  - Delay
  - Response
- Provides insight into a PPS that can stand alone or be used in other analysis tools.
- Supports decisions regarding whether a PPS is deemed adequate.
- Helps determine the most appropriate PPS upgrades.
When to Conduct a Tabletop Exercise

- To evaluate
  - Current and proposed PPS
  - Tactics, techniques, procedures, policies
  - Current and changing (postulated) threats
  - Interagency contingency plans
  - Scenario selection for use in other analysis tools
- As a training tool
  - Rehearses local and interagency contingency plans
  - Maintains guard and response force proficiency

Scenario Analysis Process

1. Design
2. Develop
3. Implement
4. Evaluate

Scenario Development
- Based on low probability of interruption/probability of neutralization (P/IPN) or delay paths
- By expert ‘Red Teams’

Scenario Evaluation
- Tabletop exercise
- Computer combat simulation
- Force-on-Force (FoF) exercises
Performing Simulations to Determine System Effectiveness Against Attack Scenarios

- Tabletop exercises serve as the simulation technique taught in this course to determine $P_E$ (qualitatively).
- When there is a choice of simulations, the best sequence of use is shown below:
  - Performance tests provide necessary input to Tabletop.
  - Tabletop exercises can often predict the analysis and logistic issues that will arise in computer simulations and FoF exercises.
    - In some cases, issues are identified in Tabletops that have to be addressed before other simulations can be performed.

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Performance Tests → Tabletop Exercises → Computer Combat Simulations → FoF Exercises
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Combine simulation results to estimate $P_E$ or $P_N$.

Organize Tabletop

- Gather all necessary participants.
- Determine teams:
  - Guard and Response Force Team
  - Adversary Team
  - Evaluation Team
  - Exercise Moderator

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Organize Tabletop (cont’d.)

• Gather Appropriate Resources
  ▪ Maps / Models
    • Types
    • Scales
  ▪ Whiteboards / Flip Charts
    • Track critical events and engagements
  ▪ Player Tracking
    • Dry-erase markers
    • Game pieces
  ▪ Tool to Determine Chance-based Outcome
    • Random number generator
    • Dice
    • Data tables

Roles and Responsibilities (1 of 3)

• Guard and Response Force Team
  ▪ Lay out initial response positions on game table (map, three-dimensional model, aerial photograph)
  ▪ Manage response actions and reactions
  ▪ Apply appropriate tactics based on contingency plan

• Adversary Team
  ▪ Lay out initial adversary positions on game table (map, three-dimensional model, aerial photograph)
  ▪ Manage adversary actions and reactions
  ▪ Apply appropriate tactics based on adversary plan
Roles and Responsibilities (2 of 3)

• **Evaluation Team**
  - Serves as referee or honest broker
  - Provides input to the moderator to determine results of critical events and engagements
  - Defines practical detection points
    - Communication protocols
    - Effectiveness of detection and assessment component capabilities
    - Effectiveness of delay components
  - Resolves conflicts between guard/response force and adversary teams

Roles and Responsibilities (3 of 3)

• **Exercise Moderator**
  - Serves as referee or honest broker
  - Facilitates the exercise
  - Determines (with input from the evaluation team) results of critical events and engagements
  - Ensures all player movements are properly annotated on the game table
  - Keeps the exercise on pace to reach final exercise objectives
Guard and Response Force Picture-in-Time

*Picture-in-Time*: A current snapshot of the exact locations and configurations of the existing security force

- Picture-in-Time provides the stakeholders with:
  - Post and Patrol
    - Locations
    - Activities
    - Equipment status
    - Numbers
  - Evaluation Team should be familiar with or briefed on contingency plans

Tabletop Preparation (1 of 3)

- Gather data and generate assumptions
  - Facility and PPS (Tour, Briefings)
  - Performance test data (PPS)
    - Detection probabilities
    - Barrier delay times
    - Alarm assessment and communication times
    - Guard and response force times
Tabletop Preparation

- Review necessary information
  - Facility and PPS
  - Picture-in-Time
  - Types and number of scenarios
  - Adversary scenario steps and timeline
  - Contingency plan implementation
  - Type of equipment, vehicles, weapons, and tactics that the adversary and the security force will use

Tabletop Preparation (3 of 3)

- Gather required documentation
  - Design basis threat
  - Adversary scenarios
  - Contingency plans
- Note: Have documentation readily available for the evaluation team to clarify adversary or response force assumptions made during the exercise
Definitions Used in Tabletop

**Critical Event:** Any event that requires attention and resources to overcome (detection, delay, engagement)

**Engagement:** An interaction that occurs between the guard and/or response force and the adversary along the adversary attack path

Simulate the Attack

- Adversary Timeline, Guard and Response Force, and Picture-in-Time are overlaid on the game table
- Each adversary event is played out during each time interval
- Tabletop timeline (Time 00:00) typically begins at initial point of detection or engagement
- Guard and response force will respond to adversary events within each time interval
Simulate the Attack (cont’d.)

- Critical events and engagements are discussed, determined, and recorded (who, what, when, where)
- Timeline and participant status are adjusted and moved forward to the next event in time
  - Update timeline to the next time interval
  - Update the players on both sides to the next time interval
  - Perform previously scheduled events (bomb detonation, detection, etc.)
- Critical events and engagements continue to be evaluated until the exercise objective is achieved

Three Ways to Analyze Engagements

1. Verify
   - Engagement feasibility
   - Line of sight between shooter and target
   - Target within range of weapon system
2. Identify characteristics of the persons involved
   - Standing still, walking, running, prone, kneeling, in vehicle
   - Type of weapon and round, number of rounds, mounted, bipod, supported
3. Identify characteristics of target
   - In/out of vehicle, level of armor on vehicle, speed of vehicle
   - Body armor level, behind cover, in prepared fighting position
   - Prone, kneeling, standing, walking, running, low crawling
   - Note: Determine probability of casualty calculations and declare the results of the engagement
Documenting Results

- Documentation provides
  - Outcome of the overall exercise
  - Explanation for each vulnerability identified in the exercise
  - Justification and rationale for each potential upgrade
- Document each engagement, vulnerability, outcome, and performance test issue
- Note: Ensure all documentation is accurate, clear, and concise to prevent misinterpretation

Hypothetical Probability of Casualty

- Probability of Casualty, $P_{\text{cas}}$
  - When a critical event occurs, use the following chart to determine if the shot causes a casualty

<table>
<thead>
<tr>
<th>Distance</th>
<th>Probability of Casualty (Rifle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 to 0 meters</td>
<td>100%</td>
</tr>
<tr>
<td>50 to 25.1 meters</td>
<td>80%</td>
</tr>
<tr>
<td>100 to 50.1 meters</td>
<td>50%</td>
</tr>
<tr>
<td>Greater than 100 meters</td>
<td>0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distance</th>
<th>Probability of Casualty (Handgun)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 0 meters</td>
<td>100%</td>
</tr>
<tr>
<td>15 to 5.1 meters</td>
<td>80%</td>
</tr>
<tr>
<td>25 to 15.1 meters</td>
<td>50%</td>
</tr>
<tr>
<td>50 to 25.1 meters</td>
<td>20%</td>
</tr>
<tr>
<td>Greater than 50 meters</td>
<td>0%</td>
</tr>
</tbody>
</table>
Random Number Generator

<table>
<thead>
<tr>
<th>Probability</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.05</td>
<td>Event Did NOT Occur</td>
</tr>
</tbody>
</table>

Instructions
This function requires entry of a probability (even the same one) to achieve a new random number.
Thus, if a guard had to shoot 3 times to kill an adversary, with a Probability of Hit and Kill of .35, you would enter .35 three times:
- 0.35 Event Did NOT Occur
- 0.35 Event Did NOT Occur
- 0.35 Event Occurred

3. Implement

Example: Identify Site Vulnerabilities

Vulnerability: At times the guard force is divided

- **Scenario conditions:**
  - 2 guards at entry portal
  - 3 guards at guard house

- **Results from Path Analysis**
  - Adversaries = 3 (DBT)
  - Guard Force = 5

- **Expected results from vulnerability based scenario**
  - **Task Plan A:**
    - 3 Adversaries vs. 2 Guards
    - Surprise advantage to adversaries
  - **Task Plan B:**
    - 3 Adversaries vs. 3 Guards
    - Surprise advantage to adversaries

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### Task Plan A Engagement

<table>
<thead>
<tr>
<th>Start Time</th>
<th>Adversary Activity</th>
<th>End Time</th>
<th>Start Time</th>
<th>Response Activity</th>
<th>End Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00</td>
<td>A1, A2, and A3 drives vehicle up to the gate</td>
<td>00:40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>00:40</td>
<td>A1 waits until P1 and P2 arrive at vehicle</td>
<td>00:50</td>
<td>00:40</td>
<td>P1 and P2 exit gate house to speak to driver</td>
<td>00:50</td>
</tr>
<tr>
<td>00:50</td>
<td>A1 engages P1 while A2 and A3 exit vehicle</td>
<td>00:55</td>
<td>00:50</td>
<td>P1 outcome?</td>
<td>00:55</td>
</tr>
<tr>
<td>00:55</td>
<td>A2 and A3 engage P2</td>
<td>01:00</td>
<td>00:55</td>
<td>P2 outcome?</td>
<td>01:00</td>
</tr>
<tr>
<td>01:00</td>
<td>A2 and A3 breach gate</td>
<td>01:30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01:30</td>
<td>A1 drives vehicle through gate and picks up A2 and A3</td>
<td>01:45</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Task Plan B Engagement

<table>
<thead>
<tr>
<th>Start Time</th>
<th>Adversary Activity</th>
<th>End Time</th>
<th>Start Time</th>
<th>Response Activity</th>
<th>End Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>01:45</td>
<td>A1 drives to guardhouse and A1, A2 and A3 dismount.</td>
<td>03:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03:00</td>
<td>A1, A2 and A3 surround guardhouse and wait for guards to exit</td>
<td>03:30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03:30</td>
<td>Adversary team engages guards in guardhouse</td>
<td>04:00</td>
<td>03:30</td>
<td>Guards outcome?</td>
<td>04:00</td>
</tr>
</tbody>
</table>
Results of Engagement(s)

• Log results of each engagement

<table>
<thead>
<tr>
<th>Engagement</th>
<th>Shooter Status</th>
<th>Target Status</th>
<th>Weapon Type</th>
<th>Range (Meters)</th>
<th>Rate of Fire (Sec)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Plan A: A3, A4 and A5 engagement between P3 and P4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>00:50</td>
<td>00:55</td>
<td>A1</td>
<td>P1</td>
<td>Rifle</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>00:55</td>
<td>01:00</td>
<td>A2 /A3</td>
<td>P2</td>
<td>Rifle</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>Task Plan B: A1, A2 and A3 engagement between Guardhouse Guards (P3,P4,P5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03:30</td>
<td>04:00</td>
<td>A1/A2/A3</td>
<td>Rifle</td>
<td>30</td>
<td>3</td>
<td>P3/P4/P5 ?</td>
</tr>
</tbody>
</table>

Evaluation Meeting

• Evaluation meetings are held with appropriate stakeholders and participants after the exercise has been completed

• Evaluation criteria:
  ▪ Win or loss
  ▪ Response force casualties
  ▪ Access to target
  ▪ Duration of engagement
  ▪ Compensatory measures
  ▪ Performance testing concerns
  ▪ Response discrepancies
  ▪ Vulnerabilities, where exploited

• Note: Use the evaluation criteria to determine consistency with results from different analysis tools
Evaluation Meeting Activities

- Discussion by experts
- Capture lessons learned
  - PPS strengths
  - Opportunities for improvement
  - Sensitivity cases
- Provide recommendations for improving the overall effectiveness of the PPS
- Identify and discuss potential upgrades that should be modeled in subsequent analyses
- Identify adversary scenario variations for additional analysis
- Determine the qualitative effectiveness of the PPS

Summary

- A tabletop exercise is a method of simulating an adversary attack on a site’s existing or proposed PPS
- Critical events and engagements must be documented and analyzed for a productive result
- Tabletops provide valuable insight, are simple, cost effective, and require minimal resources