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Security Standards for Maritime Public Transportation

Presentation for CERF

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Purpose

- **I've recently had the opportunity to work with performance based safety and security standards, and have some observations and recommendations based on this experience**
- **As we move forward in this new era of heightened security, it is important to establish both prescriptive and performance based standards**

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Review: Prescriptive Standards

- **Based on Scientific Analysis and Operational History**
- **Easy to understand and apply**

<u>Negatives</u>

- **Compliance Culture**
- **Differing levels of Risk**
- **Restrict Innovation**

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Review: Performance Standards

- **Based on qualitative goals**
- **“acceptable” and “reasonable” are used**
- **Innovation and Cost Benefits**

- **Requires a greater understanding of underlying processes at work**

- **Different Role for the Design Engineer**

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Role of the Design Engineer

Prescriptive Security Standards:

- **Identify system requirements**
- **Identify applicable standards**
- **Ensure that system meets or exceeds the minimum requirements**

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Role of the Design Engineer

Performance Security Standards:

- **Define Project Scope/ Boundaries**
- **Identify Goals**
- **Define Objectives**
- **Develop Performance Criteria**
- **Develop and Evaluate Design**
- **Document**

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Staten Island Ferries

4400 Passengers, busiest US passenger run, 25% increase post 9/11

18 minute run, terminals on each end with transportation links

Busiest US Harbor

2 Major Terror Attacks in Lower Manhattan in the Last 10 Years

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- 2003 fully effective
- Result of ESTONIA (900) &
  HERALD OF FREE ENTERPRISE (200)
- Major Lifesaving Equipment Upgrade for Large Passenger Vessels
- Option for Risk Assessment in lieu of lifesaving equipment upgrades
- Opportunity to economize

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PERFORMANCE BASED REGULATORY ALTERNATIVE

- **Risk Assessment**
- **The Risk Assessment alternative must address:**
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- **The navigation and vessel safety conditions within the vessel's planned operating area, including:**

- **(i) The scope and degree of risks or hazards**
- **(ii) The existing vessel traffic characteristics and trends**
- **(iii) The port and waterway configuration**
- **(iv) Environmental factors.**

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- A comprehensive shipboard safety management and contingency plan
  (i) catastrophic vessel damage.
  (ii) Procedures to mobilize emergency response teams.
  (iii) Procedures for moving passengers
  (iv) Lists of external organizations
  (v) Procedures for establishing and maintaining communications
- (vi) Guidance on theoretical, practical, and actual simulation training

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Design Engineer

PRESCRIPTIVE REQUIREMENTS

- Find approved manufacturer of equipment
- Purchase required equipment
- Identify Stowage Locations
- Install equipment

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Design Engineer

PERFORMANCE REQUIREMENTS

- Define Goals
- Define System
  - vessel & port
- Define Approach
  -structured approach to large problem
- Carry Out Plan

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Risk Assessment

- For Performance Based Risk Assessment, a framework is needed to approach the problem in a rationale, repeatable way.
- Transparency & Documentation important since non-prescriptive decisions will likely be revisited during the life of the system

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Assessment Framework

- 1. Hazard Identification. – databases, interviews, site visits
- 1.1. Define System.
- 1.2. Identify events.

- 2. Risk Assessment.
- 2.1. Identify causes.
- 2.2. Frequency/ Likelihood Analysis – qualitative
- 2.3. Consequence Analysis.

- 3. Risk Control Options. (web of safety)
- 3.1. Identify options for reducing likelihood or consequences.

- 4. Cost Benefit Analysis.

- 5. Recommendations.

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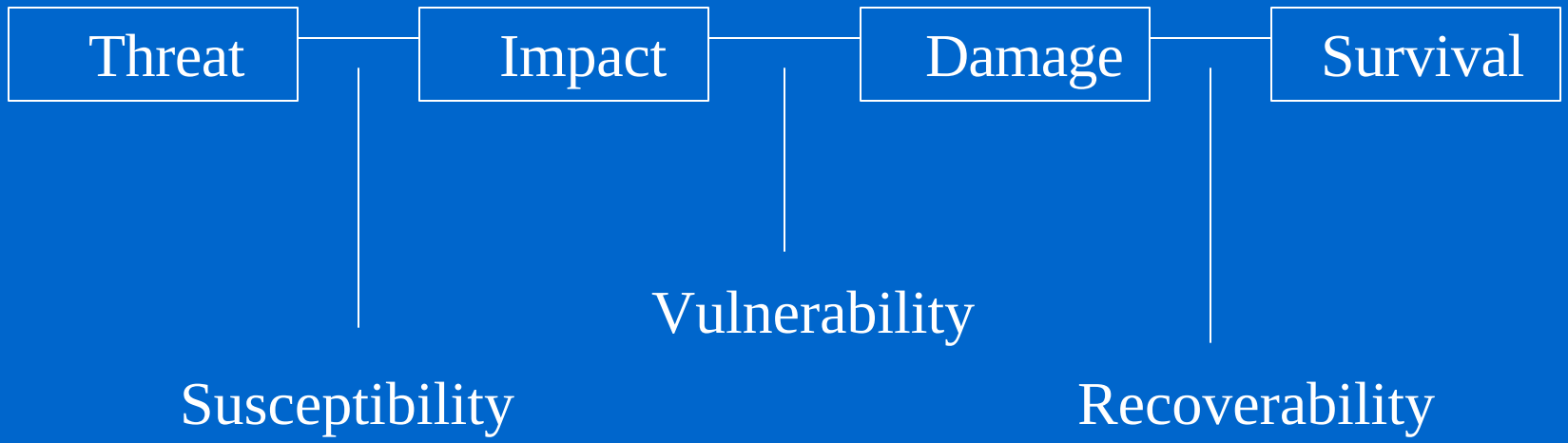
Casualty Sequence



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Risk Control

	Susceptibility	Vulnerability	Recoverability
Personnel			
Engineering			
Procedures			

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Terrorism

	Susceptibility	Vulnerability	Recoverability
Personnel	Security Personnel		Emergency Response Drills
Engineering	Increase visibility in passenger spaces	Egress routes to safe areas – low fire loading	
Procedures	Inspect packages, vehicles		

(Method Illustration Only)

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Staten Island Ferry

- Performed Risk Assessment in lieu of prescriptive requirements
- More work than prescriptive design
- Result is coordinated training/ exercise/ design package that addresses the most likely scenarios, determined by historical record and expert determination

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Three Levels of Readiness

- **Level I –threat of an unlawful act is, though possible, not likely.**
- **Level II –threat of an unlawful act is possible and intelligence indicates that terrorists are likely to be active**
- **Level III - threat of an unlawful act against a vessel or terminal is probable or imminent and intelligence indicates that terrorists have chosen specific targets.**

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Specific Security Measures

- Restricted Areas
- Security Guards
- Vehicle Inspection
- Perimeter Security
- Fences
- Lighting

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Specific Security Measures

7. Alarms
8. Video Surveillance
9. Communications System
10. Passenger Communications
11. Escape Brow
12. Personnel Training

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Importance to Transportation Security

- Common Approach, with Design Flexibility
- Adaptable to local conditions
- Better tool for determining equivalency in security and safety and survivability functions when funding limits require hard choices

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Issues to Address

- Standardization of approach
- Documentation – Lifetime Management
- Determining the adequacy of the result – is there truly an equivalent level of security?

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Role of the Design Engineer

What does it mean for engineers?

- Prescriptive standards – Design from my office
- Performance Standards – First principles, stakeholder interaction, “Pound the Pavement”
- Incorporation of training, operating procedures, and design in the performance-based security solution