U.S. Ports and Terrorist Mining: A Critical Vulnerability

By

Public Policy and Administration/Homeland Security
PROSPECTUS: U.S. Ports and Terrorist Mining: A Critical Vulnerability

This dissertation prospectus will outline proposed research by outlining the problem statement, significance, background, framework, research questions, and nature of the study.

Problem Statement

By attacking the World Trade Center in New York, the Pentagon in Virginia, and, potentially, the White House in Washington, DC, al-Qaeda, an international terrorist network (Bajoria, 2008, p. 1), sought to inflict damage in American centers of economic, military, and government power, and to make clear that the United States, despite its superpower status, is highly vulnerable to asymmetric attack. It is a stated goal of al-Qaeda and its splinter organizations to further exploit this vulnerability, inflicting economic pain, panic, and mass casualties (Griset & Mahan, 2003). The United States is a nation reliant upon the sea for commerce and defense.

Ports are part of the U.S. Marine Transportation System (MTS), and represent critical economic/strategic infrastructure. The United States is served by some 360 commercial ports providing approximately 3,200 cargo and passenger handling facilities. Depending on the individual port facilities, these ports may accommodate anything from recreational watercraft, to barges, ferries, and ocean-going cargo and passenger ships. Governance of these ports in the United States is a function of various state and local public entities, such as port authorities, port navigation districts and municipal port departments. These ports are located along the Atlantic, Pacific, Gulf and Great Lakes coasts, as well as in Alaska, Hawaii, Puerto Rico, Guam, and the U.S. Virgin Islands. Of these 360 ports, the Port of South Louisiana is the largest, and the Port of Monroe, Michigan, the smallest. Of the 360 commercial ports, 150 are considered deep draft, and fall under the jurisdiction of 126 public seaport agencies (American Association of Port Authorities, 2013). These ports are essential to maritime commerce, are proximate to major population centers, handle highly hazardous materials, and are entered by approximately 7,500 foreign ships every year (Evans & Stutin, 2006, p. 26). There are many threats to American ports, with mines and underwater improvised explosive devices (UWIEDs) representing part of this threat spectrum.
According to the 2012 Department of Defense document, ‘21st Century US Navy Mine Warfare: Ensuring Access and Commerce,’ the inventories of more than 50 world navies contain more than 250,000 sea-mines representing more than 300 types. Over 30 countries produce sea-mines, and at least 20 countries export them. Highly sophisticated weapons are available to terrorists in the international arms trade, and UWIEDs can be fashioned from fuel bladders, 50-gallon drums, and even discarded refrigerators (US Department of Defense, p. 8).

Terrorist-deployed sea-mines/UWIEDs in American ports would have immediate and lasting effects on the economy and security of the United States (Sparks, 2005, p. 15). Their use is aligned with terrorist goals of inflicting economic pain, panic, and, potentially, mass casualties.

The US government has sponsored multiple critical infrastructure, threat, and vulnerability assessments regarding port security (General Accounting Office, 2002, p. 6). However, the primary focus of these have been on human infiltration—frogmen and suicide teams, such as those that crippled the USS Cole in Aden, Yemen—weapons of mass destruction, and the use of ships themselves as instruments of terror, and offer little or no mention of the threat from terrorist deployed sea-mines and UWIEDs. Also, these assessments neglect the myriad medium to small ports that represent the majority of Marine Transportation System (MTS) infrastructure (Evans & Stutin, 2006), always focusing on larger ports such as New York, Los Angeles/Long Beach, or Houston.

United States ports are vulnerable to terrorist attack. Though many threat vectors have been assessed, that represented by terrorist-deployed sea-mines/UWIEDs is under-researched. While major ports have received the lion’s share of threat assessments, most U.S. ports are medium to small in size, and may represent the most vulnerable of homeland MTS infrastructure, demanding additional research to fill this threat assessment/knowledge gap.

**Significance**

This qualitative study will focus on the threat of terrorist-deployed sea-mines/UWIEDs, and will examine the ability of the U.S. Navy to detect and sweep mines in smaller shallow-water ports, and will seek to increase understanding of the threat of terrorist-deployed sea-mines/UWIEDs, how the nation is currently mitigating the threat, and if there are better alternatives methods to said mitigation.
This study will make an original contribution by filling a gap in literature to further the goal of securing American ports, adding to the foundation of knowledge that key policy-makers and stakeholders rely upon to make decisions. The study will contribute to positive social change by highlighting the deficiency of Navy mine counter-measures (MCM) capability, the lack of Coast Guard MCM capability—a situation out of line with the organization’s mission to secure ports—by promoting enhancement of port security improvements by making recommendations to fill these deficiencies and capability gaps, with the ultimate goal of contributing to the advancement of security at port facilities and, thereby, United States homeland security.

Background

Selected articles relating to ports and the threat of terrorist sea-mines and UWIEDs are described here:

1. For the last twelve years, the United States Army and Marine Corps have been facing enemy land-mines and improvised explosive devices in Afghanistan and Iraq. These threats and the tactics developed to counter them offer a myriad of lessons relevant to fighting terrorist sea-mines and UWIEDs, including, the creation of combined explosives exploitation cells, drawing on weapons specialists from a variety of civilian and military agencies; exploit analysis capabilities, tapping oceanographic and meteorological expertise; creation of an easily searchable database and network for dissemination with technical and forensic information on sea-mines/UWIEDs; using more high-technology robots; and, revamping MCM force structure (Reynolds, 2013, p. 55).

2. The Department of Homeland Security (DHS) recently expressed: “We are increasingly concerned with terrorists using mines or underwater improvised explosive devices in domestic U.S. ports and waterways. … [T]errorists can use these weapons for military effects and psychological terror—with the potential for significant harm to the global economy (US Department of Defense, 2012, p. 3).”

3. When considering terrorist mining of U.S. harbors, the central issue is one of preserving open access. This is the greatest threat posed by sea-mines/UWIEDs, and is why they have the potential to single-handedly cripple our economy. Many ports are strategic sealift ports, whereby the United States relies upon their infrastructure to send and
receive by sea forces essential to the defense of the nation. Therefore, ports are of critical importance whose availability must be continuously ensured (Evans & Stutin, 2006, p. 26).

4. “The economic consequences of a terrorist mine attack on the United States have the potential to be enormous” (Dowd, 2004, p. 3).

5. Mine counter-measures (MCM) is slow, tedious, and resource intensive. It involves specialized personnel and equipment (Dowd, 2004, p. 6).

6. The United States has neglected MCM. A July 1993 paper by the Center for Naval Analyses described a recurring cycle: “Mines cause a problem in war. MCM becomes a hot topic. Post-war budgets decline. MCM must compete with sexier programs. Interest wanes as memories fade. Little, if anything, really changes” (Lyons, Jr., Baker, Edlow, & Perrin, p. 2). United States maritime forces currently are in the ‘Interest wanes as memories fade’ stage of this mine warfare cycle.

7. The Department of Homeland Security is charged with specific missions including: the prevention of terrorist attacks within the United States; and, the reduction of vulnerability of the United States to terrorism (Sparks, 2005, p. 20). The U.S. Coast Guard is part of the Department of Homeland Security. The Homeland Security Act of 2002 delineated Ports, Waterways and Coastal Security (PWCS) as the primary homeland security mission. Alongside search and rescue, the then Commandant of the Coast Guard designated PWCS as the service’s primary focus. The PWCS mission entails the protection of the U.S. Maritime Domain and Marine Transportation System (U.S. Coast Guard, 2013).

8. As of 2013, the U.S. Coast Guard has no ability to detect or sweep sea-mines/UWIEDs in ports. Instead, the nation relies on the U.S. Navy (Department of Defense)—a service tasked with maintaining, training, and equipping combat-ready forces capable of winning wars, deterring aggression, and maintaining freedom of the seas (U.S. Navy, 2013)—to handle this task, a responsibility the service is ill-prepared to fulfill.

**Framework**

The theoretical framework for this study will be normative. Normative theory is an umbrella term for a model that evaluates alternatives and suggests how, ideally, something should work. The normative ideal of this study is that American defense services—including the
U.S. Coast Guard and Navy—exist to protect the nation and its interests, that decisions, policies, and procurements should be solely subordinate to this purpose, and not be subject to bureaucratic infighting and rivalry that can counter this purpose. This normative ideal will be used to measure current MCM missions and policy.

Additionally, this study will utilize theory related to the organization of bureaucracy. Max Weber wrote in his 1922 work “Economy and Society” that bureaucracy constitutes the most efficient and rational way to organize human activity, making it indispensable to the modern world. Robert K. Merton expanded on Weber's theories in his 1957 work “Social Theory and Social Structure,” whereby bureaucracies are more likely to defend their own entrenched interests than to act to benefit the whole, and that bureaucrats resist changes to established routines, even when such changes are logical and geared towards betterment of the whole. U.S port security falls to several organizational bureaucracies, including the Departments of Defense and Homeland Security, as well as myriad state and local organizations. Each has areas of specialization and duties, though many share overlapping capabilities, jurisdictions, and responsibilities. This creates administrative and budgetary inefficiencies that contribute to security vulnerabilities, and presents resistance to reform that perpetuates this vulnerability, and contributes to waste and ineffective public policy.

Research Questions

RQ1: What lessons can be learned from the US Army and Marine Corps experience with improvised explosive devices (IEDs) in Afghanistan and Iraq over the past 12 years?

RQ2: What is the nature of the terrorist sea-mine/UWIED threat to American ports?

RQ3: What improvements to current capabilities can be made to defend American ports from terrorist mining?

RQ4: What new capabilities or mission shifts would promote mitigation of this the threat?

Nature of the Study

The nature of this study will have a qualitative focus. Qualitative research is consistent with analysis of current security policy and the use of case studies to make recommendations for policy modifications, reform, and/or new policy.
Possible Types and Sources of Information and/or Data

1. Declassified information from the U.S. Department of Defense regarding MCM techniques and current capabilities.
2. Declassified information from the U.S. Department of Homeland Security regarding the threat of terrorist mining with the U.S. maritime domain, as well as potential deployment methods.
3. Declassified sea-mine war-games by the U.S. Naval War College
4. Analysis of implications of port attacks compiled, including economic and transport interruption, as compiled by the U.S. Department of Transportation.
5. Data regarding the manufacture of sea-mines and the inventories of nations.
6. Declassified information from the U.S. Naval Institute regarding MCM techniques.
References


