

## **Maritime Security Education and Training Needs Post-9/11: The Response of the United States Merchant Marine Academy**

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### **ABSTRACT**

The use of American commercial transportation carriers to carry out the terrorist attacks of 11 September 2001 provoked widespread recognition of manifold security vulnerabilities in the nation's port, maritime, and intermodal transportation systems. Effective deterrence of hostile action directed at merchant vessels, vehicles, and facilities and prevention of the utilization of cargo conveyances as a means of delivery for weapons and terrorists will require specific education, training, and research for those who must manage these threats. This paper characterizes the asymmetric warfare threat to the marine and intermodal transportation system, summarizes key personnel issues related thereto, and describes the education and training initiative developed by the U.S. Merchant Marine Academy in response to these threats.

### **1. Introduction**

The terror attacks of 11 September 2001 prompted a large-scale assessment of the nation's vulnerabilities to terrorist acts and other types of asymmetric warfare. The transportation system, for obvious reasons, is of particular concern. While the security of the U.S. commercial aviation system was the natural initial focus of this scrutiny after 9/11, other modes and dimensions of transportation infrastructure are now being similarly examined. Unfortunately, our transportation system as a whole clearly offers both a target-rich environment and a potential means of access for those who seek to harm America through asymmetric warfare in general and terrorism in particular.

While all modes of transportation have specific vulnerabilities to asymmetric and terrorist attacks, perhaps no sector is more dangerously exposed and woefully under-protected than ports and the intermodal freight transportation systems to which they are connected. The insertion of Weapons of Mass Destruction (WMDs) into freight containers is a particularly acute risk in this context. A recent CIA analysis concludes that the delivery of WMDs to the United States via this mechanism is more likely than via ICBMs (CIA, 2001). Given the consequences of failure in the new era in which we now find ourselves, the current system of cargo security and contraband interdiction does not offer an acceptable degree of protection. The successful smuggling of illicit drugs, counterfeit fashion wear, or endangered animal products results in outcomes that though highly undesirable do not begin to approach in magnitude the potential effects of nuclear weapon detonation, biological agent dispersal, or chemical attack utilizing cargo containers as vehicles.

### **2. The Federal Response**

The Federal government especially the U.S. Department of Transportation has moved rapidly to formulate new strategies and tactics to counter threats that before 11 September 2001 were perceived more as abstract possibilities than as imminent realities. Creation of the Transportation Security Administration (TSA), appointment of an Undersecretary of Transportation Security and an Associate Undersecretary for Maritime and Land Security, and the provision of grants for port security improvements are some examples of recent initiatives undertaken by DOT to this end.

Legislation on maritime anti-terrorism and port security has been passed in the U.S. Senate (S. 1214) and in the House of Representatives (H.R. 3983). Differences between these bills are presently being resolved in conference. The language of the legislation alludes to the need for maritime security education and training as an integral element of the national response to the events of 9/11.

Several federal agencies have moved to secure the containerized intermodal system against the threat of terrorism. The U.S. Coast Guard and the U.S. Customs Service have developed what are to some extent competing programs of international scope designed to provide point-of-origin to final destination visibility and control over containerized freight movements. Central to these initiatives is the accurate and timely flow of information on cargo and carrier movement and the identification of trusted shippers --those who demonstrate a degree of control over their loading facilities, personnel, and supply chains sufficient to justify characterization of their shipments as low risk.

The U.S. Coast Guard has also presented a 15-point proposal on port and maritime security to the International Maritime Organization (IMO) in London. The IMO is currently discussing the creation of a shipboard Security Officer, the duties of which position have yet to be defined.

An important demonstration project intended to show that international supply chains involving containerized freight can be managed to provide a high level of security against terrorist threats is Operation Safe Commerce (OSC). OSC relies on existing technology and collaborative relationships among supply chain partners to ensure the integrity of container loading and transportation (McHugh, 2002).

Dawning awareness of the fact that, in the war against terror, there are too many U.S. agencies possessing overlapping responsibilities and operating under unclear lines of authority has led to the White House plan for a cabinet-level Department of Homeland Security. The proposed department would incorporate the Transportation Security Administration, the U.S. Coast Guard, U.S. Customs, the Immigration and Naturalization Service, the Border Patrol, and other existing agencies into its structure. Presumably, the implementation of this plan will result in a more coherent and integrated use of federal agencies and resources that has been the case to date. While no comprehensive national strategy for education, training, and research in the context of transportation security has yet emerged, consolidation of diverse agencies with responsibilities for homeland security under one organizational umbrella can be expected to lend a more unified approach to the eventual development of such a plan.

It is apparent that if the United States is to protect and defend itself successfully against the dangers of terrorism and asymmetric warfare, an integrated strategy involving close cooperation among all relevant agencies and organizations will be required. Effective and efficient utilization of all available knowledge, experience, and personnel will be imperative if these threats are to be countered.

### **3. Nature of The Need**

What are the personnel, education, and training implications of the above-described context? Stated simply, the emerging transportation security regime will require: (a) the hiring of a large number of personnel to perform security-related tasks, (b) the education and training of new personnel and the retraining of existing security personnel to provide them with the knowledge and skills needed for successful performance in the new environment, and (c) the development of new mindsets and innovative approaches to transportation security.

It is difficult to quantify the need for new hires and retraining in the transportation security realm. However, the example of the U.S. DOT Transportation Security Administration is instructive in this regard. By the end of 2002, TSA will need to hire and train over 30,000 employees for transportation security-related duties (primarily airline passenger baggage screening). In number of personnel, this recruitment will produce an agency that is larger than the FBI, Customs Service, and Border Patrol (as currently configured) combined (Peckenpaugh, 2002). Secretary of Transportation Norman Mineta has indicated that TSA will ultimately have a workforce of 67,000. Beyond TSA, numerous other federal, state, and local government agencies--including the Coast Guard, FBI, local police forces, Customs, and port authorities--will expand their organizations to include personnel having special expertise in transportation operations and security matters, or will provide existing personnel with appropriate training and education. To a limited extent, this will also be true of parties in the private sector, such as terminal operators, intermodal carriers, and industrial shippers.

The two primary--and complementary--domains in which most education and training for transportation security will likely take place are undergraduate academic curricula and post-graduate professional training programs. There are at present very few course offerings in either domain that focus on the specific challenges of global intermodal supply chain security. While several colleges and universities offer courses and programs in terrorism and national security, these tend to be oriented more towards high-level strategy and conceptual matters than towards the practical realities of managing transportation security.

Developing a full understanding of opportunities for terrorist and other asymmetric attacks upon--or using--the port and intermodal freight transportation system and evolving effective ways to counter those threats will require expertise that goes beyond the conventional security paradigm of gates, guns, and guards. As undergraduate and professional education and training programs develop, it seems important to recognize that while knowledge of security and counter-terrorism *per se* will be essential in this war, in-depth comprehension of port and intermodal system structure and operations in conjunction with an understanding of security principles will be of critical importance in stemming the tide of potential threats. Knowledge of global supply chain structure and operations is of crucial importance in this connection. Information technology will certainly be an important element of the emerging homeland security effort (Ham & Atkinson, 2002). An appreciation of the importance of information sharing and consciousness of what technology can and cannot do in this context are also essential. Awareness of potential win/win scenarios in supply chain management, in which security and efficiency are simultaneously furthered (such as described by Wolfe, 2002) is necessary. Successful prevention of terrorist actions involving port and transportation systems will ultimately depend to a large extent on the degree to which those responsible for security understand the dynamics and operational particulars of those systems and are therefore able to identify and control their vulnerabilities.

#### **4. Institutional Capabilities**

The United States Merchant Marine Academy began educating and training deck and engine officers for U.S.-flag merchant vessels at Kings Point, New York in 1942; it was formally dedicated by President Roosevelt in 1943. In the decades that followed, the Academy established a worldwide reputation for the rigor of its programs and the quality of its graduates. Operated by the U.S. Department of Transportation through the Maritime Administration (MARAD), USMMA has consistently provided highly qualified personnel to both industry and the military. Graduates receive a Bachelor of Science degree, a U.S. Coast Guard license as Third Mate or Third Assistant Engineer (depending on the academic major chosen), and a commission in the U.S. Naval Reserve.

The U.S. Merchant Marine Academy and its faculty, staff, midshipmen, and alumni are naturally positioned to become prominent contributors to strategy development, solution formulation, and law enforcement where port and intermodal security is concerned. In short, the Academy possesses specific capabilities that are impelling it to assume a national leadership role in this effort. These include:

1. A comprehensive undergraduate program in logistics, port operations and intermodal transportation focused on developing in midshipmen an international perspective and a hands-on, end-to-end understanding of port and containerized freight transportation management. The program includes the most heavily subscribed academic major at USMMA.
2. Faculty and staff members with practical experience in maritime, port, and transportation system operations, both commercial and military.
3. An active and interested alumni group that comprises a significant force in the management of carriers and transportation facilities.
4. Midshipmen with experience at sea, in ports, and in military practices and protocol.

5. The largest maritime and transportation continuing education program in the United States, with training capability in port operations, intermodal transportation, security, and related subjects.
6. Personnel with substantial consulting and applied research experience in port and terminal operations, logistics and intermodal transportation, and marine affairs.

## **5. Initiatives**

Because of its focus on ports and global intermodal freight logistics, the U.S. Merchant Marine Academy's Logistics and Intermodal Transportation Program is the locus of the institution's response to the port and intermodal security crisis. Based on the capabilities of program personnel and the needs of the nation, the following initiatives are underway:

1. The Logistics and Intermodal Transportation Program curriculum and its supporting elements are being enhanced to focus directly on the pressing need for personnel able to address homeland security concerns related to ports and intermodal transportation.
2. Existing collaborative relationships with individuals and institutions possessing expertise in relevant security matters are being further developed.
3. The popular Logistics and Intermodal Transportation Guest Lecture Series is being used to provide midshipmen, faculty, and staff with exposure to qualified counter-terrorism and security experts from government, industry, and military sectors.
4. Outside experts of national and international stature are being engaged in the development of new courses focused on port and intermodal transportation security.
5. Securing the global containerized cargo system against terrorism was the theme of the capstone Logistics and Intermodal Seminar in the most recently concluded academic term. All First Class L&IT majors (approximately 65 midshipmen) were engaged in analysis of global intermodal supply chain operations with the objective of maximizing security while preserving the free flow of trade. Midshipmen, working in teams, generated written reports of their analyses and briefed senior government, military, and industry personnel on their work at the end of the term.
6. An elective course in Port and Intermodal Security is in operation. The course enrollment consists of 28 Logistics and Intermodal Transportation majors. Topics include terrorism, Weapons of Mass Destruction, cargo theft, passenger vessel and terminal security, contraband smuggling, organized crime, and piracy.
7. Through an Academy alumnus, a relationship is being developed between the Logistics and Intermodal Transportation Program and personnel at the Monterey Institute of International Studies, who have been asked to provide guest lectures, possible assistance with course development, and midshipman research supervision on security topics. MIIS has also indicated willingness to offer special short courses for USMMA faculty and midshipmen in its areas of expertise. The Institute's Center for Nonproliferation Studies (CNS) is the largest nongovernmental organization in the world devoted to curbing the spread of WMDs.
8. Via introduction by the Academy's first Visiting Professor of Logistics and Intermodal Transportation, the prestigious Center for Strategic and International Studies (CSIS) in Washington has been approached to investigate potential synergies between USMMA and CSIS in the transportation security arena. The CSIS staff of 190 researchers and support personnel addresses the full spectrum of new challenges to national and international security.
9. A concerted effort is being made to communicate the capabilities of the enhanced L&IT program to internal and external audiences concerned with port and transportation security issues. Among other things, this involves faculty participation in panels and national conferences on transportation security.

10. The Academy is cooperating with a Baltimore company to stage the September 2002 *U.S. Maritime Security Conference and Expo* in New York City. This collaboration includes assistance with conference planning, developing recommendations for speakers, providing midshipmen as conference interns, and organization/facilitation of a conference workshop on supply chain security.
11. The capacity of Logistics and Intermodal Transportation Program faculty, staff, and midshipmen to conduct applied research on port and intermodal security issues and challenges is being organized to serve the needs of the nation in this realm.
12. Synergies are being pursued between the redefined undergraduate program and GMATS, which offers some security-related short courses and would be the natural site of a comprehensive program of continuing port and transportation security training. GMATS annually trains a large number of personnel from government, military, and private sector organizations in a wide variety of maritime, engineering, and transportation courses.
13. Opportunities for graduates of the Logistics and Intermodal Transportation Program are actively being sought in the Transportation Security Agency, Coast Guard Port Security detachments, and in other agencies and organizations that can benefit from the distinctive competencies of these Kings Pointers. The Maritime Administrator is personally involved in this effort. Interested midshipmen are being provided with assistance in obtaining job placement in port and intermodal security-related organizations.

#### **6. Synergies and Value Added: An Example**

A recent interaction with industry and other government agencies in the context of transportation security demonstrates the manner in which the Academy is supporting ongoing homeland security efforts.

A major conference on counter-terrorism was hosted at the U.S. Merchant Marine Academy in April 2001. Organized jointly by the U.S. Department of Energy National Nuclear Security Administration (NNSA) and the Academy's Global Maritime and Transportation School, this two-day event drew approximately 250 senior decision makers and subject matter experts. Presentations and conference sessions focused on dimensions of the current terrorist threat and strategies that might be employed to address it.

Approximately 60 USMMA midshipmen participated in the conference at various times. As the result of participant interaction with these students and a presentation on the capabilities of the Academy with respect to transportation security matters, representatives of NNSA headquarters and field units (specifically, the NNSA national research laboratories) expressed interest in the possibility of NNSA and USMMA engaging in some form of collaboration.

The ensuing discussions produced an agreement for a cooperative venture that would begin with a briefing by DOE/NNSA personnel for USMMA faculty and midshipmen who were already working on applied transportation security research in the capstone Logistics and Intermodal Seminar. This briefing consisted of a presentation on NNSA, its mission, and the capabilities of its national labs. At the conclusion of the briefing, NNSA personnel charged midshipmen with the task of analyzing how best to protect global intermodal freight systems against terrorist attack, with a corollary question being posed as to how the DOE/NNSA labs should best focus their efforts and resources toward this end.

These challenge questions were immediately integrated into research already underway and became a major focus for the 65 midshipmen who, working in teams, sought to develop creative and viable solutions to the pressing problems of global intermodal supply chain security.

The short-term culmination of this process was the oral presentation of results by selected groups to a visiting panel of VIPs. The panel included representatives of DOE/NNSA, the Council on Foreign Relations, MARAD, a major transportation consulting firm, and the steamship line/intermodal sector. Before the panel and a large audience, four groups delivered formal briefings on their recommendations for

enhancement of container system security, followed by commentary by each of the panelists. The event was fully successful and served to provide midshipmen with valuable feedback on their work and a sense that their research and proposed solutions had genuine merit, while at the same time conveying to the panelists innovative and informed ideas for addressing transportation security challenges.

## 7. Conclusion

The terror attacks of 11 September 2001 brought to light a troubling array of vulnerabilities in our nation's critical infrastructure and global transportation systems. The country's failure to properly organize and adequately fund the agencies responsible for filtering the good from the bad at ports and borders was also brought into sharp focus. As Flynn (2002) notes: For years U.S. policymakers, trade negotiators, and business leaders have operated on the naive assumption that there was no downside to building frictionless global networks of international trade and travel. Facilitation was the order of the day. Inspectors and agents with responsibility for policing the flow of people and goods passing through those networks were seen as nuisances at best and at worst, as barriers to competitiveness who should be marginalized, privatized, or eliminated wherever possible.

The time has clearly come to quickly reverse this state of affairs. For the indefinite future, there will be a critical need for transportation security personnel who understand the nation's global intermodal supply chains at an operational level, who are able to think in terms of improving security while at the same time enhancing customer service and efficiency, who appreciate the overarching importance of information and information sharing in security management, who recognize the capabilities and limitations of technology, and whose focus is whole systems and not functional silos and organizational stovepipes.

As a federal institution of higher education and training, the U.S. Merchant Marine Academy offers unique resources for the development of such personnel that are being marshaled to support what will clearly be a long-term struggle to prevent attacks upon, or using, the nation's ports and intermodal transportation systems. With their military training, their seagoing experience, and their education and training in port operations, intermodal transportation, and global logistics management, graduates of the Academy's Logistics and Intermodal Transportation Program bring a unique combination of knowledge, skills, and abilities to this campaign.

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