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THESIS

**MARITIME SHIPPING CONTAINER SECURITY AND
THE DEFENSE TRANSPORTATION SYSTEM:
PROBLEMS AND POLICY IN THE 21ST CENTURY**

by

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June 2003

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TRANSPORTATION SYSTEM: PROBLEMS AND POLICY IN THE 21ST
CENTURY**

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ABSTRACT

The Defense Transportation System (DTS), led by the Military Traffic Management Command (MTMC), depends on the commercial maritime industry to provide movement of supplies and equipment around the world. The maritime shipping container is a critical asset in providing for this logistical support to the war fighter abroad. These 20- or 40-foot containers have become the backbone of the maritime industry, and will continue to proliferate as global commerce continues to expand. While the growth in the use of maritime shipping containers in the 21st century has accelerated the nation's economic trade substantially, it may also have become a significant problem. Containers are an indispensable but vulnerable link in the chain of global trade; approximately 90 percent of the world's cargo moves by container. Because of DoD's dependency on the maritime industry and these containers, it will and must continue to ride the wave of commercial practices, specifically in pursuit of better security throughout the maritime industry. In the wake of September 11, 2001, and with the new threats of WMD, the maritime shipping container may become a weapons delivery system. This thesis documented the need for security improvements for the maritime shipping container in protecting global commerce and DoD cargo shipments. Comprehensive reviews of government reports, books, articles, and Internet based materials, as well as interviews with MTMC personnel, have indicated that DoD is taking a series of measures to meet these challenges. DoD's Defense Transportation System and the commercial maritime industry will be challenged and tested by new policy requirements. MTMC has already adopted new business processes, cargo manifest requirements, and technological innovations that assure customers in-transit visibility and total asset visibility (ITV/TAV), including the Intelligent Road-Rail Information Server (IRRIS) system.

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I. INTRODUCTION

The growth in the use of maritime shipping containers in the 21st century has accelerated the nation's economic trade substantially, yet may have opened us up to a security pitfall. Containers are an indispensable but vulnerable link in the chain of global trade; approximately 90 percent of the world's cargo moves by container. Each year, nearly 50 percent of the value of all U.S. imports arrives via 16 million containers.

[HHS (2002), p. 3] In the 20th century, losses of products were equated to theft, damage and loss at sea. Today, we must add terrorism to the mix, increasing the concern for security and the need to protect our global trade. U.S. officials are increasingly concerned that terrorist objectives are not solely aimed at causing death and destruction within the U. S. but that they also aim to cripple America's economy by targeting or seemingly targeting vital U.S. interest such as trade. The vulnerability of the American economy through the disruption of our industries' supply chain due to sophisticated terrorist attacks is of great concern.

Maritime shipping container security is weak at best and at worst is vulnerable to terrorist activities, primarily through the use of weapons of mass destruction (WMD). The nation as a whole, as a consequence of the events of September 11, 2001 (9/11), has undertaken the enormous task of providing security for the U.S. homeland. While there is no absolute solution, every attempt will be pursued in making our maritime infrastructure better. In the Department of Defense (DoD), we rely on the Defense Transportation System (DTS) to transport needed parts, goods and supplies to our war fighters on the front lines. This system too must be scrutinized and upgraded. Weaknesses have been or will be discovered by the terrorists and their use of asymmetric warfare.

Due to the end of the Cold War and the disestablishment of forward basing in the Europe Theater, the Department of Defense relies on the use of shipping containers for our projection of forward military presence. The uses of these containers are a vital part of our National Military Strategy. The concern of how will we sustain supply movement and maintain security in support of the DoD must be addressed.

A. PURPOSE AND METHODOLOGY

Due to the openness of our borders and continued growth of international trade, any increase in maritime security may impact this country's global trade. Therefore, it is imperative that we develop a better understanding of what policies are in place that will control or limit our abilities to carry out the National Military Strategy (NMS). The Department of Defense relies on maritime shipping containers to move supplies that support our troops abroad. This research will uncover problems and policy that may impact the execution of the NMS.

This thesis will provide a general overview of the existing relationship between U.S. port support structures, the maritime industry, and our Defense Transportation System. Understanding this relationship allows us to comprehend maritime shipping container security policy and the need for new initiatives as we enter the 21st century.

Information was obtained through the following sources:

- Published documents and reports from various military and civilian transportation organizations, including the American Association of Port Authorities (AAPA), U.S. Transportation Command (USTRANSCOM), Military Traffic Management Command (MTMC), Military Sealift Command (MSC), the Department of Transportation (DOT), and the Maritime Administration (MARAD).
- Interviews with knowledgeable personnel in the shipping industry.
- Government reports and if appropriate, testimony to Congress by government officials on issues concerning Homeland Security, global commerce, maritime security, and maritime shipping container security.
- Additional information was obtained through a review of current professional journals, periodicals, and news briefs from various industry public affairs offices. A comprehensive compilation of this data provided the information needed to answer the research questions.

B. SIGNIFICANCE OF RESEARCH

There are two main issues concerning maritime shipping containers. One issue is that terrorism is on the rise, as illustrated by the attacks on U.S. soil, and the destruction of the World Trade Center. This attack was an attempt to hinder global trade, by destroying a symbol of world commerce unity, as well as to send a message to the civilized world. Yet, the real damage to U.S. trade lies within our maritime shipping

industry; because about 95 percent of U.S. trade by volume moves in ocean-going vessels, primarily in maritime shipping containers. [Muller (1999): p. 49] Therefore, it is imperative to focus on protecting this industry. If nothing is done, we will continue to be vulnerable and global commerce may be significantly damaged.

The other issue affecting maritime shipping containers is the policy structure: who are the key players, in control of protecting this vital lifeline to sustained economic growth? Who dictates U.S. policy in the maritime industry and how will business be affected following the events of September 11, 2001? An example is our Department of Defense, and the Defense Transportation System (DTS). We rely on the DTS to move assets, supplies and needed materials to our war fighters on the front lines abroad. Will the new focus on protecting the homeland hinder our ability to carry out the National Military Strategy? It is imperative that we understand the policies that determine how the military executes the National Military Strategy. This thesis will attempt to identify and describe the problem of maritime shipping container security policy and to determine the impact of new Homeland Security policies on the Defense Transportation System (DTS).

C. RESEARCH APPLICATION

The military and civilian port authorities and government transportation planners are the intended beneficiaries of this thesis. Planners may apply the findings and recommendations of this thesis in order to better understand the interrelationships, policies and requirements affecting DoD and civilian port operations. Specifically, the study is beneficial because:

- It is critically important that all stakeholders in maritime homeland security and U.S. global commerce – federal, state, local, and private industry – examine our operational strategies and policies and find the best ways to integrate our limited resources.
- It will examine the need for increased security measures in the use of maritime shipping containers and their impact on the Defense Transportation System.
- It will evaluate new policy, new initiatives, and possible unity of effort between government and private practices after the events of September 11, 2001.

D. ORGANIZATION OF THESIS

The first chapter of this thesis provides an introduction and general overview of issues pertaining to maritime shipping containers and their security. The Department of Defense, through the Defense Transportation System (DTS), depends on these maritime shipping containers for supporting the war fighters abroad, addressed in Chapter III. The first chapter also addresses the methodology used to analyze the principal research questions of this thesis.

Chapter II focuses on the history and background of the maritime shipping container and its impact on 21st century commerce. This chapter will allow the reader to understand the significance of the maritime shipping container and its impact on the industry. Also, the reader will develop an understanding of the need for better security and policy developments in this area.

Chapter III introduces the Defense Transportation System (DTS) and allows the reader to develop a broader understanding of the military implications of the use of maritime shipping containers.

Chapter IV provides an examination of the policies and regulations governing the use of maritime shipping containers. This chapter also provides a clearer understanding of the key players/agencies that are involved in this growing industry. Additionally, this chapter will introduce the New Homeland Security Department and initiatives from both the public and private sectors in an attempt to thwart terrorism.

Finally, Chapter V contains the summary, conclusions, and recommendations for further research.

II. MARITIME SHIPPING CONTAINERS AND 21ST CENTURY COMMERCE

A. INTRODUCTION

The maritime shipping container may be perceived as nothing more than a storage box for ease of handling loose items. But through the introduction of containerization and intermodalism, this form moving goods from the supplier to the customer has revolutionized global trade. Containers are undoubtedly the most successful innovation in the transport sector over the past forty years. More than 600 million freight containers are now in service throughout the world. [Bohlman, (2001)]

Containerization refers to the use of shipping containers or van trailers when used in conjunction with other means of transport in the movement of goods. By this method, goods normally move from origin to destination without unloading or reloading. Van trailers, when carried by other means of transportation such as railroads or ship lines, are simply containers with wheels attached and therefore are properly included in the containerization concept. [Rinaldi, (1972)]

In the past, the maritime transportation industry primarily utilized breakbulk cargo ships for transporting dry goods, and DoD relied on commercial breakbulk ships for military shipments of supplies and ammunition to our forward deployed units. In the past twenty-five years, however, there has been a revolution in the transportation industry, leaving behind the traditional breakbulk methods and shifting to intermodal container transportation. The commercial maritime industry has developed internationally recognized standards allowing for the smooth operation of maritime shipping containers to operate intermodally [intermodalism] using ships, railroad, and trucks to efficiently transport shipping containers around the world.

The International Standardization Organization (ISO) has established standards for maritime shipping containers under the ISO 9000 series of standards. Governments and international organizations recognize the ISO freight container standards worldwide. Standards cover terminology, classification, dimensions, specifications, thermal and dry bulk requirements, handling, and security of containers, identification, and container

handling equipment. These ISO 9000 standards are under revision, and will be revisited for years to come, primarily due to the increase in terrorism, asymmetric warfare, and threat of weapons of mass destruction.

The most predominant container in use today is the twenty - foot container. The standard 20 - foot ISO end-opening container is 8 feet wide, 8 feet high, and 20 feet long. Traditionally, ship capacity is measured in Twenty-Foot Equivalent Units (TEUs), as both 20 – foot and 40 – foot containers are used in maritime shipping. These containers have a standard handling fitting on the top of the container, as well as forklift pockets along the bottom, for ease of movement. The end-opening container has been adopted and internally modified by the DoD, for movement of ammunition and supplies. (See Figure 1)

B. HISTORY

The maritime shipping container evolved from the founder of containerization, Mr. Malcolm McLean, in 1956. As Malcolm McLean recalls, the idea came from a question he asked himself: “Wouldn't it be great if my trailer could simply be lifted up and placed on the ship without its contents being touched?” [Maersk Sealand Inc., (2001)] A converted tanker, the Ideal X, was the first cargo ship carrying containers. It sailed from Newark, New Jersey to Houston, Texas. Its journey touched off the container revolution. This marked the first scheduled containership service in the world.

Prior to containerization, all products other than bulk commodities were moved piece by piece - in “breakbulk.” [Maersk Sealand Inc., (2001)] Boxes were loaded one by one onto a truck, which drove to a port. Dockside, each box was individually unloaded and then hoisted into the hold of the ship. At the destination, the boxes were unloaded one by one and put on a truck or train for delivery. Not only was the freight handling slow, piecemeal and repetitive, other modes of transport such as railroads basically added to the inefficiency. What's more, the cargo was exposed to potential damage and pilferage.



DOUBLE DOORS ONE END STANDARD 20' DRY FREIGHT ISO CARGO CONTAINER

20' DOUBLE DOOR ONE END STANDARD	Length		Height		Width		Door Opening	
	Exterior	Interior	Exterior	Interior	Exterior	Interior	Height	Width
FEET / INCHES	19' 10 1/2"	19'4 1/4"	8' 6"	7' 9 7/8"	8' 0"	7' 8 1/2"	7' 5 5/8"	7' 8 1/8"
METRIC	6,058	5,899	2,591	2,384	2,438	2,350	2,276	2,340

20' DOUBLE DOOR ONE END STANDARD	Tare Weight	Payload	Gross Weight	Cubic Capacity
LBS.	5,015	47,895	52,910	1,167 CU.FT.
KG	2,275	21,725	24,000	33 CU.M.

**ALL NEW CONTAINERS ARE MANUFACTURED
TO THE LATEST ISO STANDARDS.**

— STANDARD FEATURES —

- ▶ Corrugated steel sides, and roof
- ▶ 14 gauge locking steel double end swing doors
- ▶ 1 1/8" thick marine wood floors, forklift tested to 16,000 lbs per 44 square inches
- ▶ Tie down steel lashing rings, 4000 lbs. cap. each
- ▶ (2) way laden fork lift pockets
- ▶ Vents, (2) each

— OPTIONAL FEATURES —

- ▶ 2nd set of (2) way unladen fork lift pockets
- ▶ Manifest box (2) each
- ▶ Adjustable shelving brackets (6) sets
- ▶ Decking and shoring beams (18) each



Figure 1. Standard Maritime/Intermodal Shipping Container.

McLean's invention of containerization solved all those problems. A trailer carrying numerous boxes could be loaded at the shipper's door, sealed, sent by truck to the port, lifted off its chassis and simply stored aboard ship. At the destination, the process would be reversed.

This simple solution streamlined the process, sped up the delivery time, and made intermodal transportation far more feasible. But intermodality - that one giant cargo box could be handled by truck, rail and/or cargo ship - was just an idea. Still, McLean knew there could be a better way to integrate sea transportation together with door-to-door delivery via the various forms of land transportation. Crucial for true intermodality was the issue of standardization of container sizes and fittings. Vessels were able to carry 226 boxes in "trailer ships," which conformed to the maximum length for trailers allowed on the US highways at the time: 35 ft long x 8 ft. wide and 8 ft. high. Later, the standard size agreed upon became the 20 ft and 40 ft units used today. This meant that any box could lock on to any other box, trailer chassis or ship. [Maersk Sealand Inc., (2001)]

Containerized shipping developed as a result of the need to transport general cargo or product in lots too small for the traditional bulk system, as well as the need to move high-value and delicate cargo. Until the mid-1960's such cargo traveled in ship holds, loose or tied down with pieces of wood or burlap. Since this was an expensive, labor-intensive and a very slow process, the shipping costs of such a procedure were high, and shipping liners found it difficult to continue moving cargo in this manner and still make a profit. Pallets and containers were created to help reduce the costs involved with moving general cargo. Pallets can be fork lifted directly into bulk liners or placed inside containers and are commonly used today for break bulk and container shipments.

In 1966, the first deep-sea container service was introduced for the transport of general cargo. Since that time, container shipping has become a common way to move all types of products, especially high-value cargo. Due to decreased costs and lower rates, customer demand, and increasingly cost-efficient processes, the use of containers for seaborne cargo has seen a steady increase since its introduction in the mid 1960's. [Rinaldi, (1972)]

C. GROWTH IN GLOBAL COMMERCE AND U.S. TRADE

Each year, more and more world trade is being done with maritime shipping containers. In 2001, the international liner shipping industry carried approximately 18 million TEUs (twenty-foot equivalent units) of containerized cargo in America's international trade – roughly \$480 billion dollars worth of goods. That represents slightly over two-thirds of the value of the nation's entire ocean borne commerce. It represents approximately 4.8 million containers of U.S. export and 7.8 million containers of import cargo.¹ [World Shipping Council, (2002)] By the year 2005, these numbers are expected to double. (See Figure 2)

Some of the astounding facts provided by the U.S. Customs Service are:

- The volume of trade moving through the nation's 102 seaports has nearly doubled since 1995.
- In 2001, U.S. Customs processed more than 214,000 vessels and 5.7 million sea containers.
- Approximately 90 percent of the world's cargo moves by container.
- Globally over 200 million cargo containers move between major seaports each year.
- Each year, more than 18 million containers arrive in the United States by ship, truck, and rail.
- Customs processed 25 million entries in 2001.
- More than \$1.2 trillion in imported goods passed through the nation's 301 ports of entry in 2001. Almost half of the incoming U.S. trade (by value) arrives by ship. [U.S. Customs, Fact Sheet (2002)]

¹ Containers are different sizes, including 40 foot (most common), 45 foot, and 20 foot. For that reason a specific number of TEUs does not equal that number of containers, as a 40-foot container equals two TEUs.



Figure 2. Top U.S. Container Ports and Volume of Maritime Shipping Containers (2001). From: Transportation Research Board.

The 21st century will see a renewed focus on intermodal freight transportation driven by the changing requirements of global supply chains. Each of the transportation modes (air, inland, water, ocean, pipeline, rail, and road) has gone through technological evolution and has functioned separately under a modally based regulatory structure for most of the 20th century. With the development of containerization in the mid-1900s, the reorientation toward deregulation near the end of the century, and a new focus on logistics and global supply chain requirements, the stage is set for continued intermodal transportation growth.

On a more global scale, the world categorizes the leading container ports as “Mega Ports.” Figure 3 illustrates the world’s leaders in container port volume, with the Port of Long Beach/ Los Angeles, CA ranking 3rd in the world.



Figure 3. Top World Container Ports and Maritime Shipping Container Volume. From: Containerization International and the Transportation Research Board.

D. SUMMARY

Today, more than 300 U.S. seaports, river ports and two bordering countries allow for more than 18 million maritime shipping containers to enter the U.S. annually, of which U.S. Customs Service inspects only 2-3 percent. In the last decade, alone we witnessed a tremendous increase in the growth of maritime shipping container use. This accelerated growth can be attributed to the new concept of bigger container ships, and the need to carry more containers per leg of the journey (economies of scale).

Ships such as Maersk Sealand's modern container vessels can carry 10 or more times as much cargo as the old freighter. They can also be loaded and unloaded using

less labor, and in much less time. Previously, it took a crew of 20 longshoremen to load 20 tons per hour into a ship's hold. Now with containers and gantry cranes, a crew of just 10 can load twice as much in a matter of minutes. [Maersk Sealand Inc., (2001)]

One noticeable drawback is that these larger ships are too large to transit the Panama Canal. This was apparent in the fall of 2002 with the West Coast lockout, and the inability to get commerce ashore, or through to the East coast, via the Panama Canal.

The concept of containerization proved to be safer, faster and cheaper than the existing methods of transporting commodities. It minimized damage and pilferage, and precluded other types of perils. It cut labor and insurance costs dramatically and was the catalyst for new and improved types of cargo ships and dockyard machinery. Its impact on the world should not be understated. Twenty-first century commerce depends on these containers and the industry intends to further develop the size, capabilities and security of these assets.

Containerization and intermodalism have changed more than the way we transport goods around the world. They are responsible for the economic success of port cities and their surrounding regions. By enabling easier access to the exchange of goods, they have opened up new markets for export and import. Asia, in particular, started to prosper from such a cost-effective and efficient solution. In fact, it has been said that containerization has contributed to the welfare and well being of the world.

III. MARITIME SHIPPING CONTAINERS AND THE DEFENSE TRANSPORTATION SYSTEM (DTS)

A. INTRODUCTION

The Department of Defense is a major user of the commercial shipping industry. In order to meet forward deployed requirements, most supplies transit via the maritime shipping container in the hands and under the control of the commercial sector. The system that provides this critical interface between DoD and its commercial partner is the Defense Transportation System (DTS).

The Defense Transportation System is an integral part of the total United States transportation system and involves procedures, resources, and interrelationships of several Department of Defense (DoD), federal, commercial and non-U.S. activities that support DoD transportation needs. Support of national strategy must include a modern, flexible, and responsive global transportation system capable of integrating military, commercial, and host-nation resources. Assignment of transportation responsibilities should be the same in peacetime and in wartime. The single manager of the DTS is the U.S. Transportation Command (USTRANSCOM). The transition period from peacetime to war may be extremely short; thus the concept of operations for USTRANSCOM includes the concept of Global Transportation Management. This concept establishes an integrated transportation system to be used across the range of military operations providing the most effective use of airlift, sealift, and rail, pipeline, and land transportation resources from origin to destination. [Joint Pub 4-01]

Under USTRANSCOM, there are three Transportation Component Commands: Air Mobility Command (AMC) which handles air transportation, Military Sealift Command (MSC) which is responsible for ocean transportation (including charter shipping), and Military Traffic Management Command (MTMC) which manages land transportation, maritime liner shipping, and use of ports. (See Figure 4)

This chapter will examine AMC, MSC and MTMC and their use of the maritime shipping container. MTMC has been charged with sole responsibility for cargo

movement via maritime shipping containers, and will be the focus of this chapter. We will also discuss U.S. Strategic Seaports from which DoD cargo is processed and forwarded onto the war-fighter abroad.

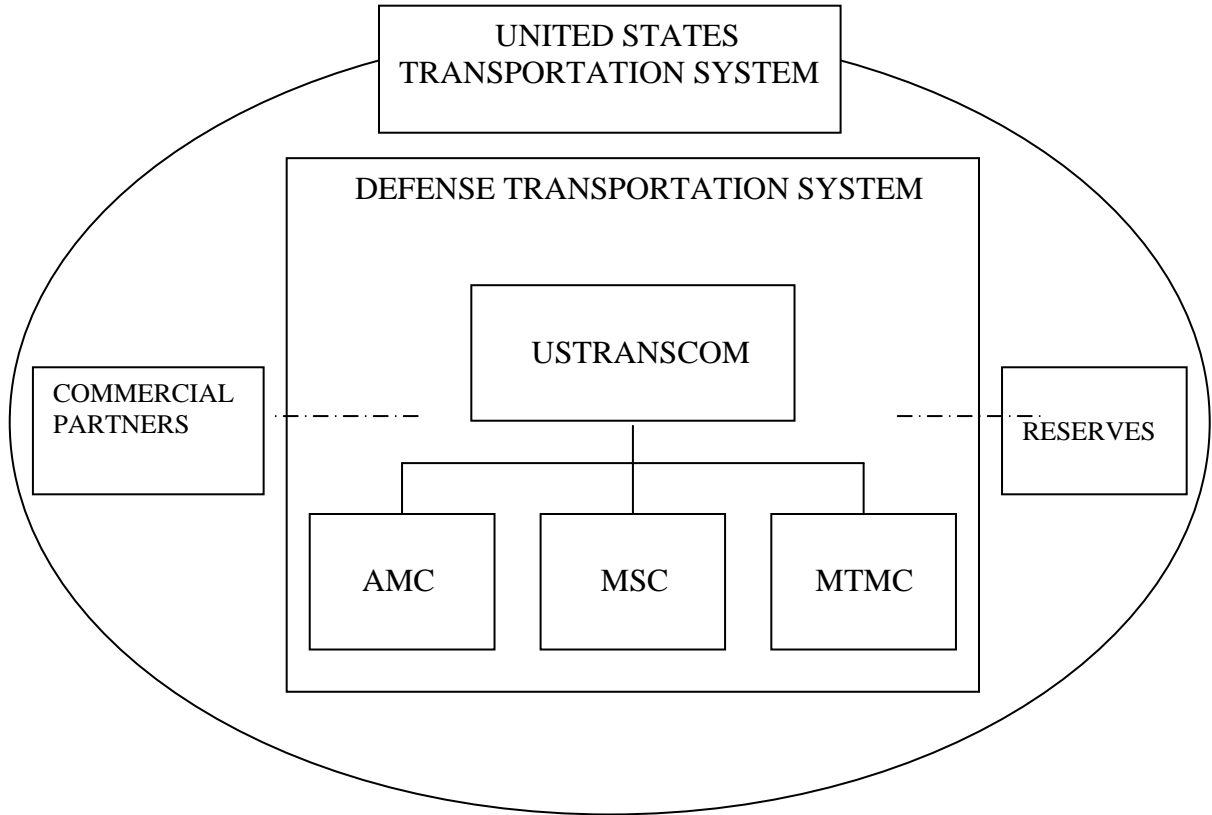


Figure 4. The Defense Transportation System.

B. DTS COMPONENT RESPONSIBILITIES

Headquartered at Scott Air Force Base, Illinois, USTRANSCOM provides global transportation management, employing an integrated transportation system across a range of military operations. In 1987, USTRANSCOM was established as the DoD's single manager for defense transportation during peace and war. This action transferred AMC, MSC, and MTMC, as well as all common-user transportation assets of the military departments to USTRANSCOM.

To carry out its mission, USTRANSCOM coordinates the movement of troops and material via military and commercial modes of transportation. Additionally, the command provides direction, control, and supervision of cargo and passenger

transportation services. USTRANSCOM serves as the focal point for transportation management of all common-user organic and commercial lift. USTRANSCOM executes its mission through three Component Commands (AMC, MSC, and MTMC), reserve components and commercial partners. [USTRANSCOM Handbook 24-2]

Also headquartered at Scott Air Force Base, Illinois is the Air Mobility Command (AMC). AMC provides common-user and exclusive-use airlift, air refueling, and aero medical evacuation services for deploying, employing, sustaining, and redeploying U.S. forces wherever they are needed worldwide. Additionally, AMC is the worldwide aerial port manager and, where designated, operator of common-user aerial ports of embarkation (APOEs) and/or aerial ports of debarkation (APODs). AMC is the single point of contact with the commercial airline industry for procurement of DoD domestic and international airlift services and administers and executes the Civil Reserve Air Fleet (CRAF) program. [USTRANSCOM Handbook 24-2]

AMC's role in the handling of the maritime shipping container is very limited due to size and weight limitations of its organic aircraft. The maritime shipping container is predominately transported via land and sea; therefore AMC has been rarely utilized for the movement of containers. On occasion AMC has been called upon to airlift a few containers using organic assets. The Afghanistan campaign (2002), due to being land-locked, utilized AMC to transport some containers to the area of operation.

The Military Sealift Command (MSC) is a Navy major command headquartered in Washington, D.C. As the Navy component of USTRANSCOM, MSC provides common-user and exclusive-use sealift transportation services to deploy, employ, sustain, and redeploy U.S. forces around the globe between seaports of embarkation (SPOEs) and seaports of debarkation (SPODs). MSC provides sealift with a fleet of government-owned and chartered U.S. flagships. MSC executes the Voluntary Intermodal Sealift Agreement (VISA) contracts for chartered vessels. [USTRANSCOM Handbook 24-2]

Even though MSC is an integral part of the maritime functions in supporting the movement of cargo and troops around the world, their tasking of maritime shipping

container management is very minimal. MSC will be tasked by MTMC for movement of containers. However, management of the maritime shipping container is the sole responsibility of the Military Traffic Management Command (MTMC).

MTMC is an Army major command headquartered in Alexandria, Virginia. As the Army component of USTRANSCOM, MTMC provides common-user ocean terminal, commercial ocean liner service, and traffic management services to deploy, employ, sustain, and redeploy U.S. forces on a global basis. MTMC also conducts transportation engineering to ensure deployability and feasibility of present and future military systems, administers the Contingency Response (CORE) program, serves as the single port manager to the geographic Commander in Chief (CINC), and develops integrated traffic management systems. MTMC also executes VISA contracts for ocean liner service. [USTRANSCOM Handbook 24-2]

Throughout the world, MTMC coordinates force movements to seaports, prepares the seaports for ships and cargo, and supervises loading/unloading operations. MTMC also administers the DoD highways, railroads, ports, and intermodal programs for national defense. As single port manager, MTMC performs those functions necessary to control the strategic flow of deploying forces, their equipment, and supplies via the maritime shipping container.

Major General Kenneth L. Privratsky, U.S. Army, the former Commander of MTMC, made the following statement before the House Committee on Government Reform's Subcommittee on National Security:

In addition to coordinating security for unit deployments through U.S. ports, we (MTMC) manage the movement of arms, ammunition, and explosives through military ports. It is important to note that except in very small quantities during contingencies, arms, ammunition, and explosives are not moved through commercial ports. Almost all of this high-risk cargo is moved through military airfields or military port facilities in North Carolina, Washington and California. These port facilities are designed specifically for the movement of this cargo with significantly enhanced infrastructure and complete government control. [Privratsky, July 2002]

MTMC has four subordinate units, three of which manage ports. More specifically, the 597th Transportation Terminal Group, Sunny Point, N.C., recently assumed responsibility as the major subordinate headquarters for the command's port terminal units in the United States and Puerto Rico. The 598th Transportation Group, Rotterdam, the Netherlands; and the 599th Transportation Group, Wheeler Army Air Field, Hawaii, manage the command's remaining worldwide terminal units. The fourth subordinate unit, the Transportation Engineering Agency (TEA), Newport News, VA, manages global deployability engineering and analysis to support national security requirements and influences transportation engineering policies. [USTRANSCOM Handbook 24-2]

There are several non-DoD agencies with a role in the DTS. The most significant of these is the Department of Transportation, including the Maritime Administration (MARAD), Federal Aviation Administration, Federal Highway Administration, Federal Railroad Administration, the Office of Emergency Transportation, and the Transportation Security Administration (TSA).

MARAD has a significant role in developing, implementing and nurturing commercial maritime policy. MARAD manages the Ready Reserve Force (RRF) of ships, passing operational control to MSC when ships are activated. MARAD is also the agency responsible for administering the Voluntary Intermodal Service Agreement (VISA) with the U.S.-flag maritime shipping industry, a program established in 1996. MARAD also seeks to ensure that the United States enjoys adequate shipbuilding and repair services, efficient ports, effective intermodal water and land transportation systems, and reserve shipping capacity in time of national emergency.

On November 19, 2001, the President signed into law the Aviation and Transportation Security Act (ATSA), which among other things established a new Transportation Security Administration (TSA) within the Department of Transportation. Established to enhance transportation security, TSA protects the nation's transportation systems to ensure freedom of movement for people and commerce. TSA has joined the U.S. Coast Guard, U.S. Customs and MARAD in making ports and cargo more secure.

TSA provides grants towards port improvements and employment of new security technologies. TSA funds business driven initiatives to enhance security for the movement of cargo through the supply chain.

A public-private partnership initiative called Operation Safe Commerce (OSC) on tracking and securing cargo from Eastern Europe to New Hampshire was backed by TSA. This initiative was completed in June 2002 and was considered very successful by all agencies involved. OSC is unique in that it involved collaboration between various federal agencies and state and local partners. Today, OSC is being implemented throughout the country and on an international basis. Both the TSA and OSC will be discussed further in Chapter IV.

Additionally, USTRANSCOM relies heavily upon its partners in the Reserve and National Guard components. With roughly one-half of USTRANSCOM's organic capability coming from the reserve component, no unified command is more dependent on early call-up of its reserves than USTRANSCOM. These forces work every day with their active-duty counterparts in the three component commands as part of an integrated team.

C. CONTAINER USE/MILITARY APPLICATION

Recent changes in national defense strategy and U.S. military downsizing have increased the emphasis placed on the use of commercial equipment, such as containers and chassis, and the intermodal transportation system to assist in the deployment of forces during a national emergency. MARAD is required by law (46 CFR Part 340) to identify container and/or chassis suppliers that can provide DoD with the equipment needed to meet contingency requirements with minimum disruption to the commercial sector. [Bureau of Transportation Statistics]

The Department of Defense relies on the use of the intermodal container (maritime shipping container), supporting resources, organic assets, and services furnished by the commercial transportation industry when doing so is responsive to military requirements. Due to the rapidly changing maritime industry, MTMC (DoD's container manager) is reviewing its current practices that may need adjustment to match industry practices.

Intermodalism and the use of the DoD intermodal container system are integral to the efficiency and effectiveness of DTS support and joint operations. The term “DoD intermodal container system” refers to all DoD –owned, -leased, or –controlled intermodal containers and flatracks as well as supporting equipment such as generator sets, chassis, CHE, MHE, information systems, and other infrastructure that supports the DTS. [Joint Pub 4-01]

It is DoD policy that DoD Components attain and maintain a container-oriented distribution system of sufficient capability to meet DoD-established mobilization and deployment goals while ensuring commonality and interchange ability of intermodal containers, hardware, and equipment between the Military Services and commercial industry, which collectively constitute the DoD container-oriented distribution system. The container-oriented distribution system must interface with and complement the movement and control of all other noncontainerized DoD cargo. [DoD Inst. 4500.37]

MTMC has been designated by DoD as the point of contact for all matters pertaining to the establishment, amendment, and transport of DoD ammunition. Thus, the transportation of ammunition is done solely through the use of DoD–owned, controlled and monitored containers. Containers owned by DoD are subject to DoD Regulation 4500.37, which requires periodic inventory of all government-owned containers. All DoD requests for shipping containers are assigned by MTMC. Currently, DoD owns over one hundred thousand containers, broken out by service, including containers that have been purchased by units as well as those moved by MTMC to support peace and wartime operations and sustainment. (See Figure 5)

Containers not owned by DoD are supplied by industry under the provisions of Universal Service Contract No. 4 (USCO4). USCO4 is a new ocean services contract, revising USCO3 (August 2002) covering both container and breakbulk transport for Defense Department shippers. Conditions under this contract guarantee U.S.-flag and foreign-flag carriers minimum cargo volumes as required by DoD.

The DoD maritime shipping container is used for many shipment types including supplies, ammunition, cargo, and equipment and is the preferred method of shipment. When military shipping is utilized under contract, charter service, or MSC, MTMC leases

commercial containers or Containerized Ammunition Distribution System containers (CADS). These ammunition shipments use a modified version of the TEU. CADS are specially modified for the protection of sensitive materials. In safeguarding these sensitive shipments, keeping pace with industry practices, and implementing new homeland security requirements, MTMC has developed a tracking system for DoD shipments.

That system is called the Intelligent Road/Rail Information Server (IRRIS) tracking system. IRRIS provides real-time information about road conditions, construction, incidents, and weather. It retrieves data about U.S. highways, bridges, traffic, military installations, and seaports. It accesses multiple military databases at once including strategic seaports, the national railway network, and the national highway network. IRRIS also tracks items like video logs of primary routes, road congestion, and aerial photo and satellite imagery. This new tracking technology has been in use for one year and is currently being used in the Afghanistan campaign (2002). The MTMC Operations Center uses IRRIS to monitor all arms, ammunition, and explosive movements, particularly those shipments done by commercial carrier.

In addition to the IRRIS tracking system of DoD shipments, MTMC's Transportation Engineering Agency (MTMCTEA) is implementing additional security measures in order to safeguard DoD maritime shipments. MTMCTEA employs state-of-the-art computational and analytical tools as well as the most advanced information system technologies to satisfy the war fighter's total force projection needs. This subordinate unit of MTMC also provides global deployability engineering and analysis to support national security requirements and influence national transportation engineering policies.

The use of these CADS and DoD's 20-foot (TEU) containers may become an issue in DoD's future if the commercial maritime industry migrates to sole use of the 40-foot ISO container. DoD would have to either change to an unfamiliar practice, using a bigger container that would require reconfiguration of load-out techniques or remain with the TEU and risk industry acceptance. The biggest concern is for the shipment of ammunition, in that increasing the shipment size may be dangerous. Industry-accepted

standards have a 2-TEU configuration (two 20-foot containers tied together) that can be applied to DoD's needs, but DoD is not comfortable with this practice. Current theater operations are restricted to use of only the 20-foot (TEU) containers mainly due to organic support equipment limitations. [Friedman, February 2003]



ISO REGISTRY DATA



<u>SERVICE</u>	<u>CONTAINERS</u>
USA	34,200
USN	16,499
USAF	7,505
USMC	30,158
UNKNOWN	3,084
MTMC CADS	9,597
TOTAL	101,043

Figure 5. Department of Defense ISO Container Inventory (October 2001). From: MTMC, Alexandria, VA.

D. TRAFFIC PATTERNS AND PORT USAGE

Cargo movement and port management are the two critical components of the surface movement core process. To meet the cargo movement mission, the Joint Traffic Management Office develops best-value transportation options, and manages the transportation of freight such as tanks, fuel ammunition, vehicles, food and other commodities to locations around the world. In support of the port management function, MTMC serves as the single port manager at 24 locations worldwide. MTMC professionals handle all aspects of the ship loading process, from planning, staging, cargo loading, documentation and unloading of cargo. In addition to its 24 ports, MTMC can

establish operations at any port where there is a need. On a yearly basis, MTMC contracts for the loading and unloading of between three and five million tons of cargo. [USTRANSCOM Handbook 24-2]

Within the continental United States, there are established strategic seaports, i.e., ports that have been designated as fit to satisfy the needs and demands of DoD requirements. Strategic seaports are U.S. ports designated to support major deployments under the National Port Readiness Network. These ports are chosen based on an evaluation of port capabilities compared to the military's deployment requirements. A team comprised of Maritime Administration (MARAD) and MTMC staff selects the ports and establishes the number of vessel berths, staging areas, and other assets required. [Privratsky, July 2002]

There are currently 18 designated strategic seaports, four of which are DoD facilities primarily used for movement of arms, ammunition, and explosives. The four DoD strategic seaports are the Military Ocean Terminal Sunny Point, NC; the Military Ocean Terminal Concord, CA; the Indian Island Naval Magazine, WA; and the Naval Base Ventura County, Port Hueneme, CA. It is through these strategic seaports that DoD shipments, in ISO maritime shipping containers, are controlled, monitored, and tracked. (See Figure 6)



Figure 6. Strategic U.S. Seaports (January 2003). From: MTMC, Alexandria, VA.

E. SUMMARY

Because the commercial maritime industry is constantly changing, the DoD and DTS must also adjust. For years the DTS has relied on the standard ISO 20-foot container for movement of supplies, equipment, and ammunition. But the industry is moving towards making the 40-foot ISO container the norm. This change will impact the way DoD does business through the commercial maritime industry. DoD's current inventory of approximately 100,000 TEU's will become obsolete in the eyes of the commercial maritime industry. New acquisitions are in order if DoD is to utilize commercial shipping.

MTMC is ahead of current industry practices for the tracking and monitoring of cargo in maritime shipping containers (container shipments). Both DoD's IRRIS system and the TEA are integral components in safeguarding military cargo shipments that use maritime shipping containers. The DoD community with its partners in industry will continue to make improvements to the use and security of the maritime shipping container. But even the most highly sophisticated IT systems will fail in a real-world contingency unless issues such as aging equipment, lack of qualified people (such as truck drivers trained for DoD shipments), or shrinking port capacity are addressed. Without cooperation between the DoD and commercial communities and without congressional support, solutions are not possible-except by government mandate, which neither community wants. Continued funding is needed to enhance the systems (security) and to replace aging organic equipment.

The Defense Transportation System (DTS) and its commercial partners are uniting in the effort to increase security throughout the transportation industry. Special consideration is being given to safeguarding the maritime shipping container from being used as a weapon of mass destruction. The DTS is attempting to improve security in the use of the maritime shipping containers through its infrastructure. The DTS continues to seek better practices and procedures through innovation and new technology in providing the best support to its customers. Also, the new Homeland Security Strategy policy mandates better security applications in the use of international shipping containers (to be discussed in Chapter IV).

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IV. MARITIME SHIPPING CONTAINER SECURITY POLICY

A. INTRODUCTION

In the current unsettled international security environment, the world's transportation infrastructure is at risk, vulnerable to terrorism and the threat of the use of weapons of mass destruction. At the heart of this infrastructure is the maritime shipping container and its growing use in global commerce. There is also a growing concern over the struggle between the demands of free trade and a need for tighter security.

Since September 11, 2001, federal agencies, state and local authorities, and private sector stakeholders have done much to address vulnerabilities in the security of the transportation infrastructure and those of the maritime shipping container. The U.S. Coast Guard, in particular, has acted as a focal point for assessing and addressing security concerns, anticipating many of the requirements placed upon them by the new Homeland Security Department. Other key federal agencies -- the U.S. Customs Service, MARAD, and the Transportation Security Administration (TSA) -- have also begun addressing issues of homeland security, particularly the issue of shipping container security.

Since the maritime shipping container must operate within the maritime industry, maritime policies affect the security of these containers. Because the Constitution does not establish the regulation of seaports as a federal responsibility, the United States has no national port authority. Federal, state, and local governments share jurisdiction over U.S. ports and harbors. Under the 10th Amendment, the primary responsibility rests with the states. Article I of the Constitution does grant the federal government power "To regulate commerce with foreign Nations and among the several States..." To accomplish such regulation, federal agencies establish their presence at US seaports. Consequently, there are a number of stakeholders involved in security, trade, and cargo movement at U.S. seaports, categorized as operators and users of ports, State and local officials, and federal regulators. [U.S. Congress, Government Reform Committee Hearing... (November 13, 2002)]

In an attempt to balance homeland security requirements and world commerce, new methods, new policies, and new legislation need to be developed to enable the identification of higher risk shipping containers that warrant additional scrutiny. This will facilitate the rapid movement of all other cargo and enhance overall security.

This chapter will address the competing requirements of a flourishing global commerce and the need for improved security in the use of the maritime shipping container. We will examine the policies and regulations governing the use of shipping containers and focus on those agencies and organizations that have a direct influence on the security requirements needed for the maritime shipping container. This chapter will identify for the reader the changing dynamics and initiatives signaling the need for change, in the wake of September 11, 2001.

B. INDUSTRY AND COMMERCE

This section will address the private components of the maritime industry and their impact on the security of the maritime industry's infrastructure, particularly the maritime shipping container. It will also attempt to define the maritime industry.

The present international maritime shipping industry has grown organically over the centuries and encompasses both recent technological improvements in transport as well as remnants of ancient trade practices. As it has for centuries, international trade involves passing goods from one party to another along routes that employ different modes of transport over land, air, and sea. The development of the maritime shipping container and its applications has aided tremendously in the growth of global trade.

The international supply chain involves a number of parties. Some have physical control of the shipment (i.e., the supplier, inland carriers, shipper consolidators, ocean carriers, warehouse, port terminal operators, and the consignee). Others (i.e., banks, insurers, customs brokers, freight forwarders/non-vessel operating common carriers) are responsible for logistics, coordination, filing documentation and other activities that do not require physical handling of the shipment but do give them access to key information. Although there are fairly discrete stages and roles within the supply chain, companies that previously served a single role are increasingly diversifying and assuming multiple roles

(e.g., many carrier lines now offer freight forwarding and customs brokerage services). A typical cargo transaction will involve as many as 25 different parties and will generate anywhere from 30-40 different documents. [Joint Pub 4-01]

The most politically predominant influence in the U.S. maritime industry is the American Association of Port Authorities (AAPA). Founded in 1912, AAPA is a trade association that represents more than 150 public port authorities in the United States, Canada, the Caribbean and Latin America. In addition, Association members include more than 300 sustaining and associate members, firms and individuals with an interest in the seaports of the Western Hemisphere. AAPA promotes the common interests of the port community, and provides leadership on trade, transportation, environmental and other issues related to port development and operations. AAPA also works to educate the public, media, local, state and Federal legislators about the essential role ports play within the global transportation system. [AAPA, 2003]

While AAPA is faced with the expansion of the global economy and other economic pressures, it is now challenged with the need for a balance between commerce and security. The Maritime Transportation Security Act (MSA) of 2002, dated November 15, 2002, is intended to assist AAPA in its focus towards achieving this balance. (MSA 2002 will be discussed in the next section).

The AAPA has teamed up with the international maritime community in pursuit of increased security measures throughout the maritime industry. The International Cargo Handling Co-ordination Association (ICHCA), founded in 1952, and recently renamed ICHCA International Limited, promotes efficiency and economy in the handling and transportation of cargo by all transport modes. Overall, it is completely independent, non-political and non-profit-making. Its international membership extends to 76 countries with a network of 17 national sections, based out of London. With the increase in global commercial trade, the role and influence of ICHCA is expected to increase globally. [Branch, p. 126]

The major effort of seeking better security practices throughout the maritime industry and for the maritime shipping container has been the innovative partnership of Operation Safe Commerce. Operation Safe Commerce (OSC) is an innovative public-

private partnership dedicated to enhancing security throughout international and domestic supply chains while facilitating the efficient cross-border movement of legitimate commerce. This initiative began in New England as a local public-private partnership where federal, state and local law enforcement entities and key private sector entities combined efforts to design, develop, and implement a means to test available technology and procedures in order to develop secure supply chains. The OSC New England initiative analyzed a supply chain shipment between Eastern Europe and New Hampshire. The full container shipment was fitted with onboard tracking, sensors and door seals. It was constantly monitored through the various transportation modes as it traveled through numerous countries and government control functions. [OSRAM SYLVANIA, 2002]

After initial phase completions, Operation Safe Commerce (OSC) is in full operation with applications and concentration on the Ports of Los Angeles, Long Beach, Seattle, Tacoma, and the Port Authority of New York and New Jersey. This second phase of OSC will distribute grants to the above-mentioned ports to accomplish the following actions: (1) identify specific supply chains along particular trade routes and (2) analyze every aspect of the supply chain, from packaging to delivery, for vulnerabilities. Based on their analysis, the ports will propose plans to improve security throughout the supply chain. OSC will validate security at the point of origin and will demonstrate what is needed to ensure that parties associated with commercial shipping exert reasonable care and due diligence in packing, securing, and manifesting the contents of a shipment of goods in a container. In addition, OSC will demonstrate various methods to ensure that the information and documentation associated with these shipments is complete, accurate, and secure from unauthorized access. The project will ultimately gauge the security of the supply chain with these new procedures in order to determine their viability.

Congress funds this public-private partnership and management oversight through an Executive Steering Committee. The committee consists of at least one representative from the following organizations: US DOT, Associate Deputy Secretary (Co-Chair); US Department of Treasury, US Customs, Deputy Commissioner (Co-Chair); US DOT, Transportation Security Administration; US DOT, United States Coast Guard; US Department of State (S/CT); US Department of Commerce; US Department of Justice

(DAG). Congress, through the 2002 Supplemental Appropriations Act, provided 28 million dollars in funding for OSC to improve the security of container shipments during this second phase of these pilot projects. President Bush signed this measure (H.R. 4775) into law (P.L. 107-206) on August 2, 2002.

C. POLICIES DEVELOPED AND IMPLEMENTED BY GOVERNMENTAL AGENCIES

This section will address the public components of the maritime industry and their impact on the security of the maritime industry's infrastructure, particularly the maritime shipping container.

In the pre-9/11 era, governments' interest in the international shipping industry was largely focused on accounting for trade volume, imposing tariffs on imports, controlling export of strategically valuable assets, and prevention and detection of smuggled goods and people. Today, maritime security due to terrorism has been added to this list. Accordingly, several U.S. government agencies have acquired additional security responsibilities for different aspects of the international maritime transportation process.

In order to address the security issues surrounding the movement of maritime shipping containers through the international, intermodal transportation system, an interagency Container Working Group was established in December 2001. The Container Working Group's activities are focused in four subgroups: Information Technology, Security Technologies, Business Practices, and International Affairs. Recommendations addressed improving the coordination of government and business efforts as they relate to container security; enhancing data collection; improving the physical security of containers; initiating activities on the international front; and considering all possible uses of advanced technologies to improve the profiling of containers and to increase the physical security of containers. These recommendations and findings are being passed on to the Department of Homeland Security (DHS).

The DHS, including the U.S. Coast Guard, the Transportation Security Administration (TSA), and the Border and Transportation Directorate, have taken the lead in protecting America's ports and maritime industry. The Border and Transportation

Security directorate encompasses the U.S. Customs Service, the Immigration and Naturalization Service, the Federal Protective Service, the Transportation Security Administration, the Federal Law Enforcement Training Center, part of the Animal and Plant Health Inspection Service, and the Office for Domestic Preparedness. Even though ports, for the most part, are owned and operated by port authorities with relatively few federal controls, they are located on international borders, and the federal government is responsible for approving and inspecting international cargo moving into and out of ports. It is the security of the maritime shipping container that is driving the need for a cooperative effort involving all parties in this industry to seek a balance between security and continued growth in global commerce. [HHS, (2002)]

Within the National Strategy for Homeland Security and the newly formed Department of Homeland Security, the President specifically noted six critical mission areas, one of which is “Borders and Transportation.” Within this area he states two major initiatives that need special attention as they relate to this thesis research:

- Increasing the security of international shipping containers
- The implementation of the Aviation and Transportation Security Act of 2001.

The following excerpts come from the president’s homeland security strategy, released in August 2002:

Containers are an indispensable but vulnerable link in the chain of global trade; approximately 90 percent of the world’s cargo moves by container. Each year, nearly 50 percent of the value of all U.S. imports arrives via 16 million containers. The core elements of this initiative are to establish security criteria to identify high-risk containers; pre-screen containers before they arrive at U.S. ports; use technology to inspect high-risk containers; and develop and use smart and secure containers. The United States will place inspectors at foreign seaports to screen U.S.-bound sea containers before they are shipped to America, initially focusing on the top 20 “mega” ports (including Rotterdam, Antwerp, and Le Havre), because roughly 68 percent of the 5.7 million sea containers entering the United States annually arrive from these seaports. [HHS, (2002)]

On November 19, 2001, the President signed into law the Aviation and Transportation Security Act of 2001. The act established a series of challenging but important milestones toward achieving a secure air travel system. More broadly, however, the act fundamentally changed the way transportation security will be performed and managed in the United

States. The continued growth of the world economy—and, in particular, commercial transportation and tourism—depends upon effective transportation security measures being efficiently applied. The act recognized the importance of security for all forms of transportation and related infrastructure elements. This cannot be accomplished by the federal government in isolation and requires strengthened partnerships among federal, state, and local government officials and the private sector to reduce vulnerabilities and adopt the best practices available today. Protection of critical transportation assets such as ports, pipelines, rail, and highway bridges, and more than 10,000 FAA facilities is another key requirement established by the act. Additionally, the Transportation Security Administration will coordinate federal efforts to secure the national airspace—an essential medium for travel, commerce, and recreation. The federal government will work with the private sector to upgrade security in all modes of transportation. Areas of emphasis will include: commercial aviation and other mass transportation systems; intermodal transportation; hazardous and explosive materials; national airspace; shipping container security; traffic-management systems; critical infrastructure; surety of transportation operators and workers; linkages with international transportation systems; and information sharing. We will utilize existing modal relationships and systems to implement unified, national standards for transportation security. [HHS, (2002)]

These two initiatives, noted by the president, are being accepted and implemented throughout the maritime industry. The U.S. Customs Service and the U.S. Coast Guard are the lead agencies overseeing these initiatives.

U.S. Customs is undergoing a major shift in its focus and mission. In the past, Customs focused mainly on monitoring regulatory compliance and collecting duties. The U.S. Customs Service is the nation's principal statutorily established border agency, with law enforcement and regulatory authority to ensure that all persons and cargo entering the U.S. do so in accordance with U.S. laws.

Since September 11, 2001 this focus has shifted to security first. Now as an agency within the Department of Homeland Security, the U.S. Customs Service has launched several new security initiatives, realizing that cooperation is needed on a global scale for successful implementation. U.S. Customs has engaged the assistance of the trade community to assist in the war against terrorism. A joint government-business partnership created the Customs-Trade Partnership Against Terrorism (C-TPAT), offering businesses an opportunity to play an active role in the war against terrorism.

C-TPAT is a voluntary program between the U.S. Customs Service and the international trade community and industry, designed to protect the security of cargo entering the United States while maintaining or improving the flow of trade. C-TPAT minimizes terrorists' ability to exploit the worldwide commercial supply chain. This calls upon the "ultimate owners of the supply chain" (importers, carriers, brokers, warehouse operators and manufacturers) to ensure the integrity of their security practices and those of their partners in the chain. Specifically, participants in C-TPAT must sign an agreement that commits them to assessing their current supply chain security practices and developing and implementing plans to improve security along the entire chain. This includes measures to control access to shipments and to screen persons having such access. In exchange, participants will receive preferential treatment at U.S. ports of entry (e.g., reduced border times, assigned Customs account managers, and expedited cargo processing). This self-policing initiative relies upon the international industry to tighten security in ways that would be impossible for the U.S. government to mandate.

Those companies that choose not to participate in this new initiative (C-TPAT) will be subject to scrutiny and continued security measures resulting in delays. At a minimum the screening process will include an inspection of the container(s) using large-scale x-ray or gamma ray inspection systems and radiation detectors. [C-TPAT, 2002]

The other initiative, lead by the U.S. Customs Service, is the Container Security Initiative (CSI). CSI is a co-operative working agreement between the U.S. Customs Service, foreign governments, customs authorities, port officials, importers, and ocean carriers. CSI was implemented to establish international criteria for identifying high-risk containers prior to departure for and from U.S. ports. CSI consists of four core elements: (1) establishing security criteria to identify high-risk containers; (2) pre-screening those containers before they arrive at U.S. ports; (3) using technology to pre-screen high-risk containers, and (4) developing and using smart and secure containers. [CSI, 2002]

To achieve this objective of safe cargo from abroad, U.S. Customs has placed Customs officials in the world's top "mega-ports" (see Chapter III) that send containers to the United States. This new practice has been referred to as "Pushing Out Our Borders." CSI has received a major endorsement from the World Customs Organization,

representing over 160 member nations, to accept this CSI model for immediate implementation worldwide. On the other hand, the American Association of Port Authorities (AAPA) challenges this program, expressing its concern over unnecessary cargo processing delays.

To support the CSI program, U.S. Customs has mandated the requirement for cargo manifests 96 hours in advance of cargo arriving at U.S. seaports, and 24 hours prior to loading the maritime shipping container on to ships at the point of origin, for cargo bound for the United States.

Also, to support the effort to identify high-risk cargo shipments, U.S. Customs has introduced the Sea Cargo Targeting Initiative. This is an automated system that identifies high-risk sea-going shipments into U.S. ports of entry and establishes new policies for dealing with these shipments. This initiative requires the following: (1) adding new criteria to U.S. Customs' automated systems, reflecting the latest information about possible terrorist activities; (2) ensuring that all manifests are processed through the Automated Targeting System and reviewed by trained personnel; (3) standardizing U.S. Customs' procedure and practice when the system pinpoints a high-risk shipment.

[Customs and Border Protection]

Other principal agencies involved in security concerns relating to homeland security, global trade, and the maritime shipping containers are the U.S. Coast Guard and the Transportation Security Administration.

The U.S. Coast Guard is now under the Department of Homeland Security with the additional tasking of providing security for the homeland. The Commandant of the Coast Guard will report directly to the Secretary of Homeland Security. However, the USCG will also work closely with the Under Secretary of Border and Transportation Security as well as maintain its existing independent identity as a military service. Upon declaration of war or when the President so directs, the Coast Guard would operate as an element of the Department of Defense, consistent with existing law. The U.S. Coast Guard has jurisdiction over maritime law enforcement, marine safety, hazardous cargo control, maritime security and national defense. The Maritime Transportation Security

Act of 2002 (S.1214), described in the following paragraphs of this section, defines the importance of the role of the U.S. Coast Guard in maintaining maritime security and the flow of commerce.

The Transportation Security Administration (TSA) is a new agency within DHS that oversees all modes of transportation. TSA is also responsible for all modal security functions. Since its inception, TSA has focused primarily on aviation safety issues and is just beginning to stand up its maritime and land security programs. While TSA's role in container security is still evolving, it appears that one component of its mission will involve establishing standards for intermodal containers and seaport security. The TSA is one of the key participants in the Operation Safe Commerce program.

Additionally, the Maritime Administration (MARAD) and the Department of Defense (DOD) contribute to, but play a less direct role in, preventing terrorist exploitation of containerized cargo shipments. MARAD facilitates the efficient and secure movement of people and cargo in domestic and international waterborne commerce to promote America's economic growth and international competitiveness in a safe and healthy environment. The Department of Transportation's Maritime Administration is charged with ensuring a viable US Merchant Marine and maritime industry to meet national security needs. The Maritime Administration, in cooperation with the Navy, supports programs directed towards sustaining the maritime infrastructure. As mentioned in Chapter III, MARAD has a significant role in developing, implementing and nurturing commercial maritime policy. Specifically, MARAD's focus has been on Port and container shipments – security.

Prior to September 11th, from a DOT perspective, the primary concern was the efficient movement of containers through the transportation system. The advent of just-in-time business processes and the use of the transportation system as a rolling inventory linked the transportation system even more closely to the economic vitality of this country. [Joint Pub 4-01]

The Department of Defense (DoD), through MARAD, has port planning orders in place in 17 commercial seaports (Strategic Ports) that identify tentative arrangements for the use of facilities and services needed for military deployments. The Military Traffic

Management Command (MTMC) works with MARAD and the commercial strategic ports to help each side have a better understanding of the concerns and requirements of the other.

Recently MTMC has mandated detailed documentation for DoD shipments. Undocumented cargoes have been a problem for decades. Inadequate documentation delays processing and increases security risks. For troops in the field, unmarked containers contribute to distribution and warehouse challenges and delay delivery of vital cargoes to customers. MTMC prefers not to repeat the situation of unmarked, undocumented and misplaced DoD container shipments, as happened in Desert Storm in 1991. The overwhelming task of looking through thousands of containers, trying to find needed supplies for the war fighter's mission, was labor intensive, time consuming and unwarranted. This pile of misfit containers became known as "The Iron Mountain." Since 1991, MTMC has initiated tracking systems, especially for ammunition shipments. And now since 911 and the maritime industry's need for better documentation on shipments, MTMC has mandated documentation from its customers on all DoD shipments. [Friedman, Robert, February 4, 2003]

Numerous laws, regulations, guidance and directions govern the Defense Transportation System's (DTS) movement of cargo, to include specific restrictions indicating which commercial carriers can be used to transport DoD cargo and passengers. Notable laws include the Cargo Preference Acts of 1904 and 1954, the Jones Act, and the Fly America Act. The role of the DTS is established in Joint Pub 4-01, "Joint Doctrine for the Defense Transportation System," and USTRANSCOM's charter established by DoD Directive 5158.4, "United States Transportation Command." The primary source for DTS procedures is the Defense Transportation Regulation (DoD Regulation 4500.9). DoD Regulation 4500.9, Defense Transportation Regulation's (DTR) Part II (Cargo Movement), specifically addresses the practices and procedures in the use of shipping containers. [USTRANSCOM Handbook 24-2]

All shipping containers must arrive at the port with a packing list affixed to the interior door as well as on the exterior in a weatherproof envelope. This list must

indicate all items within the container. Specific attention must be given to identification of hazardous cargo (including classification) and sensitive cargo. Containers with hazardous cargo must contain appropriate placards. [DoD Regulation 4500.9]

DoD Regulation 4500.9-R-1, “Management and Control of the DoD Intermodal Container System,” referred to in the previous chapter, assigns responsibility and procedures for moving DoD cargo using commercial or DoD carriers. MTMC’s new documentation requirements for shipping containers are in line with the U.S. Customs’ requirements for manifest requirements on all cargo movements in and out of the United States.

The Federal Bureau of Investigation, the Department of State, and the Central Intelligence Agency are also key components in the pursuit of a more secure global trade. These agencies investigate possible threats of WMD, drug trafficking, and international trade policies, all in an effort to make the maritime industry safer and more secure. Specifically, the Department of State conducts U.S. foreign policy and coordinates international activities of other U.S. government agencies, directs U.S. export control policy of defense articles and services, and oversees the Office of Defense Trade Controls.

The Maritime Transportation Security Act of 2002 (S.1214) became public law (107-295) on November 25, 2002, aimed at bolstering port security around the country. This Act is an attempt to integrate the activities of a myriad of federal, state, local and private law enforcement agencies overseeing the security of the international borders at America’s seaports. The bill authorizes more security officers, more screening equipment, and the building of important security infrastructure at seaports. On August 2, 2001, the Senate Commerce Committee unanimously approved a previous version of the Port and Maritime Security Act that focused on crime, cargo theft, and smuggling. Following September 11, 2001, this bill was dramatically expanded to address the new threat of terrorism at America’s seaports. The bill specifically addresses needed improvements in shipping container security.

In section 101 (Findings) of MSA 2002, Congress noted that the variety of trade and commerce carried out at ports includes bulk cargo, containerized cargo, passenger transport and tourism, and that intermodal transportation systems are too complex to secure. Current inspection levels of containerized cargo are insufficient to counter potential security risks. Also, technology is currently not adequately deployed to allow for the nonintrusive inspection of containerized cargo. But Congress points out that by securing entry points and other areas of port facilities and examining or inspecting containers, increased security at United States ports could be achieved. Also, because United States ports are international boundaries, increasing intelligence collection on cargo and intermodal movements will determine areas of potential threat to safety and security. Finally, Congress noted that it will take time to promote private sector procedures that provide for in-transit visibility and support law enforcement efforts directed at managing the security risks of cargo shipments. [MSA, 2002]

This MSA is intended to provide more security to the supply chain and the trade system by allowing for secure maritime borders and an efficient cargo transportation system. The United States and the users of the Marine Transportation System should benefit from a system where ocean vessels and the cargoes they carry will be screened, inspected and cleared sooner and more efficiently. Also, there will be a Transportation Oversight Board to establish a trade program to develop standards to enhance the physical security of cargo containers, including standards for container seals and locks.

The primary target of MSA 2002 is the U.S. Coast Guard, permitting more funding and guidance to aid in their new responsibilities of port security as well as continuing with the traditional role (fisheries laws, drug interdiction, search and rescue, pollution control). To ensure this balance, the bill requires the Coast Guard to examine and report to Congress its expenditures by mission area before and after September 11, 2001, and the level of funding needed to fulfill the Coast Guard's additional responsibilities.

D. SUMMARY

The shipping container has revolutionized world trade. Now it is a potential carrier of terrorists and their weapons. New policies and initiatives are warranted. As

important as it is to prevent a WMD from reaching U.S. shores, preserving the flow of legitimate commerce across our borders is critical to protecting our economic well-being.

Ninety-five percent of U.S. overseas trade (imports and exports) is conducted through our nation's 361 seaports (with the top 50 seaports handling 90 percent of the cargo tonnage). The economic damage of just a two week shutdown would be in the billions of dollars. Following the attacks of September 11th, just two days of increased wait times at U.S. ports of entry almost forced America's top three automakers to close down several major plants and lay off thousands of American workers. [Joint Pub 4-01]

Therefore, it is imperative that continued efforts between private and public sectors continue to pursue a common ground of commercial growth and better security. Because so many different private parties and U.S. government agencies are involved in the shipping chain, one challenge is to bring together all relevant information collected by these different organizations so that it can be evaluated effectively. In addition to collecting and centralizing such information, analytic procedures are needed to "connect the dots" and thereby allow intelligent decisions about where to focus inspection and law enforcement resources.

The world as we know it changed on September 11, 2001, and business as usual ceased to exist. Many changes and security initiatives have required and will require shippers to change their processes, provide more information sooner to various governmental agencies overseeing trade, get to know their trading partners better, and generally pay more attention to security throughout their supply chains. Some of these initiatives may raise shipper's costs, and require investments in new information technology. In the overall scheme of things, however, they are a small price to pay to secure the free flow of commerce around the world.

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

There is no denying that our world is a decidedly different place from the one we knew in the previous century of world wars and the long struggle between the U.S. and its NATO allies and the Soviet Union and Warsaw Pact. It is a vitally important time in the history of the world as we work to solve the challenges posed by global terrorism and other asymmetric threats.

We have new challenges today, challenges that were intensified, but not created, by the events of 9/11. Today, our adversaries' goals include creating terror through disruption of our economic system and by striking America and its allies at home and abroad. America's infrastructure is vulnerable to Weapons of Mass Destruction (WMD), particularly due to its reliance upon global commerce. The transportation infrastructure is vulnerable, due to antiquated equipment, outdated information systems, and lack of funding to thwart global terrorism.

This thesis has examined of the need for security improvements for the maritime shipping container in protecting global commerce, as we know it today. It has also illustrated the impact of the maritime shipping container on global commerce and the dependency of the Defense Transportation System on the commercial maritime industry. DOD relies on the commercial industry to meet its requirements of getting supplies to the war fighter around the globe.

Finally, this thesis has addressed some of the changes needed for improved security in the use of the maritime shipping container. The volume of maritime shipping containers will continue to grow, as the industry will depend on them more and more in the future. Thus, a balance must be achieved between the growth of global commerce and the new requirements for security.

B. SUMMARY AND REVIEW OF RESEARCH QUESTIONS

This thesis set out to answer the primary question: What is the impact of the 21st century maritime shipping container security policy development on the Defense

Transportation System? The impact is uncertain due to newly emerging requirements and regulations developed by the new Department of Homeland Security. The maritime industry is in flux, as is DoD as it moves towards transformation. However, MTMC, as the manager of cargo and container requirements for DoD, has recently developed and implemented documentation requirements for all of its customers. Additionally, MTMC has put in place a tracking system (IRRIS) for total visibility of DoD shipments that is in line with newly developing industry changes.

Several non-DoD agencies have roles in the DTS. The most significant of these is the Department of Transportation, including the Maritime Administration (MARAD), Federal Aviation Administration, Federal Highway Administration, Federal Railroad Administration, the Office of Emergency Transportation, and the Transportation Security Administration (TSA). Together these agencies have undertaken the task of seeking better security practices throughout the maritime industry and for the maritime shipping container via a project called Operation Safe Commerce, supported and funded by the Department of Homeland Security. This project will ultimately gauge the security of the supply chain, develop new innovative practices, and create new policies requirements for the industry and the Defense Transportation System.

There is no question that this issue is in need of immediate attention. The DTS needs to aggressively stay in line with new developing policy requirements. The biggest challenge for the DTS will be relying on an industry that is set in its ways of doing business and at times reluctant to change. The commercial maritime industry will face an uphill battle of new federal regulations and it will take time to accept and implement these changes. The Defense Transportation System needs to lead the way in accepting change by setting the example.

In addition to the primary question, this thesis answered a series of secondary questions, beginning with: What is the role of maritime shipping containers in international and U.S. commerce? The container is the backbone of the industry now that most items are transported via container vice the seldom-used bulk movement. The container provides ease of commerce movement as well as security and containment of the products. The entire maritime industry has transitioned to the use of the maritime

shipping container and relies on it as a necessity. Containers are an indispensable but vulnerable link in the chain of global trade; approximately 90 percent of the world's cargo moves by container. Each year, nearly 50 percent of the value of all U.S. imports arrives via 16 million containers.

The thesis also examined the nature of the threat associated with maritime shipping containers. These containers were developed to enhance global commerce by providing speed, ease of movement and limited security from theft of the products in transit. But as of September 11, 2001 and the increased threats of use of WMD, these maritime shipping containers are perceived as a possible "delivery system" of WMD. If undetected, a container carrying a WMD could explode at the port facility, in transit across the country, or most likely at the final destination where the customer first opens the container. This exposure to WMD via the maritime shipping container could cause a large loss of life and economic disruption. On 9/11 when the aviation system was shut down, this country felt the financial impact on its economy. If one of these containers should explode, all maritime commerce would shut down and it would have devastating effects on our economy. The threat is very real and immediate action to avoid a terrorist's attempt to bring global trade to a standstill is warranted.

The thesis then explored the relationship between government and the private sector in formulating and enforcing security policy affecting maritime shipping containers. The current relationship is growing through new public-private partnerships, but primarily with government financial backing. The new Department of Homeland Security (DHS) will continue to develop measures intended to provide security for the U.S., relying upon the cooperative efforts of the maritime industry. Project Operation Safe Commerce is underway, seeking better security measures for the maritime industry and the maritime shipping container. OSC is an innovative public-private partnership dedicated to enhancing security throughout international and domestic supply chains while facilitating the efficient cross-border movement of legitimate commerce.

The question of authority to make and enforce security policy affecting maritime shipping containers used in military cargo shipments (DTS, MTMC, MSC, and Contractors) was also addressed. Management of the maritime shipping container for

DoD shipments is the sole responsibility of the Military Traffic Management Command (MTMC). Currently, MTMC's practices and procedures are a combination of DoD requirements and what the commercial maritime industry can provide. Prior to 9/11, DoD practices lacked "central authority" to oversee, coordinate and conduct "force protection measures" when military cargo was moved from domestic installations through U.S. seaports. Today, MTMC's application of information technology and cargo tracking systems has strengthened its position on safeguarding DoD shipments. But, DoD still turns over control of its equipment to commercial operators, in some cases to "foreign-owned ships crewed by non-U.S. citizens." [Friedman] This practice will need to change and the new Department of Homeland Security is reviewing this current issue of tighter constraints on DoD shipments.

Another important issue is the nature of major stakeholders and their roles, and what new policies must be integrated for continued economic growth, global trade, and commerce. The major stakeholders are federal agencies (i.e., U.S. Coast Guard, U.S. Customs Service, MARAD, TSA), state and local authorities, and private businesses. For new policy development, the American Association of Port Authorities (AAPA) is a key player. New policies that will foster continued economic growth, with the possible constraints of added security measures, are currently being developed. The bottom line is to seek the best balance of both better security throughout the industry while attempting to minimize the negative impacts on trade.

Finally, the thesis examines how and to what extent the DTS will be affected by emerging policies in the wake of September 11, 2001. Currently the DTS has led the way in adapting to new industry requirements (i.e., better documentation, shipment tracking, 21st century information technology). If the industry does not adopt sufficient standards that meet DoD requirements, then DoD may need to seek organic methods of providing cargo movements. The new Department of Homeland Security has this issue as a high priority concern, and will seek the best solution.

C. RECOMMENDATIONS

Due to the military's dependency on the commercial maritime industry and its assets, both for peacetime and wartime resupply operations, it is highly recommended

that DoD conduct a study on the commercial maritime industry. Recent events like 9/11 and the West Coast Lockout (2002) placed hurdles and roadblocks on the industry, resulting in an unstable operating environment. The commercial maritime industry is in flux, especially during hard economic times; this does not bode well for the DoD and their dependence on the industry. Awareness of industry patterns and lessons learned will enable DoD to gain insight for future plans and operations, allow for research and development (R&D), and forecast for budget limitations. Through the forecasting of the impact of events, DoD will be able to recognize possible equipment shortfalls and will be in position to take responsive action. A study designed to determine the impact on military use of containers for contingency resupply and the operation of its peacetime container resupply system would provide the military with the answers it needs in order to plan for the future.

Additionally, the government should assist in the current public-private partnerships by the application of funding support. The maritime industry is a low profit industry with marginal funds to support new federal security requirements. Substantial government funding will provide for mass commercial production of new equipment, better technologies, and continued research. This funding of mass production will bring down per unit costs and assure quick deployment of needed resources. Financial backing is particularly needed in the area of “container profiling software.” This software will not only bring together data banks from commercial resources, but also data profiles from the INS, U.S. Customs Service and U.S. Coast Guard. It will access and cross reference commercial and government data on shippers, origin-destination pairs, commodity descriptions and other data. In doing so, it will identify shipments with suspicious characteristics and create automated exception alerts for those containers.

Also, there is a big concern over the number of containers being inspected. Prior to 9/11, only 2 percent of shipping containers entering the United States were inspected. To increase inspections would impede the flow of commerce, thus resulting in bottlenecks and higher costs to the customer. Today, that percentage of container inspections is slowly increasing, by targeting more high-risk containers than before. One way to avoid delays in the supply chain would be to install crane-mounted radiation detectors. Current industry practices require cranes to load and unload maritime shipping

containers from the ships. Therefore, subjecting containers to inspection during the routine process of loading and off-loading containers is perhaps the only stage in the supply chain where some form of 100 percent inspection can take place without unduly disrupting international trade. Such detectors could be installed, at some cost, in all domestic ports and in foreign ports as well.

D. SUGGESTED AREAS FOR FURTHER RESEARCH

This thesis only touches on the current developments addressing the security of maritime shipping containers; continued insight, innovation, and research for newer and better methods of providing security are needed. It will take a couple of years for the new Department of Homeland Security to become effective in providing security to U.S. citizens and their homeland. This new department will undergo some learning curves and face many hurdles along the way. It is a “hotbed” for further research and policy development affecting shipping container security. Also of interest will be the evolution of the relationship between this department (the government) and the maritime industry.

Another area for further research is the impact of tighter security requirements and their impact on global trade. Prior to 9/11, security of the maritime industry was taking a back seat to an expansion of trade. An example of this is the recent completion of the Alameda Corridor in southern California (April 2002). This railroad express-linkage of only twenty miles enables immediate and quick commerce flow from the ports of Long Beach and Los Angeles out of the congested area, and onto intermodal transports destined for locations across the country. Security was not a concern at the outset of this project, and today this corridor could be a target for WMD. As mentioned in my recommendations concerning crane-mounted radiation detectors, this application needs to be installed at the beginning of this corridor for another layer of security protection.

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