

Archived Content

Information identified as archived on the Web is for reference, research or record-keeping purposes. It has not been altered or updated after the date of archiving. Web pages that are archived on the Web are not subject to the Government of Canada Web Standards.

As per the [Communications Policy of the Government of Canada](#), you can request alternate formats on the "[Contact Us](#)" page.

Information archivée dans le Web

Information archivée dans le Web à des fins de consultation, de recherche ou de tenue de documents. Cette dernière n'a aucunement été modifiée ni mise à jour depuis sa date de mise en archive. Les pages archivées dans le Web ne sont pas assujetties aux normes qui s'appliquent aux sites Web du gouvernement du Canada.

Conformément à la [Politique de communication du gouvernement du Canada](#), vous pouvez demander de recevoir cette information dans tout autre format de rechange à la page « [Contactez-nous](#) ».

CANADIAN FORCES COLLEGE / COLLÈGE DES FORCES CANADIENNES
JCSP 33 / PCEMI 33

Master of Defence Studies (MDS)

Canada's Principal Economic Hub Ports in the Maritime Security Domain

By LCol R.H. O'Neil

This paper was written by a student attending the Canadian Forces College in fulfilment of one of the requirements of the Course of Studies. The paper is a scholastic document, and thus contains facts and opinions, which the author alone considered appropriate and correct for the subject. It does not necessarily reflect the policy or the opinion of any agency, including the Government of Canada and the Canadian Department of National Defence. This paper may not be released, quoted or copied, except with the express permission of the Canadian Department of National Defence.

La présente étude a été rédigée par un stagiaire du Collège des Forces canadiennes pour satisfaire à l'une des exigences du cours. L'étude est un document qui se rapporte au cours et contient donc des faits et des opinions que seul l'auteur considère appropriés et convenables au sujet. Elle ne reflète pas nécessairement la politique ou l'opinion d'un organisme quelconque, y compris le gouvernement du Canada et le ministère de la Défense nationale du Canada. Il est défendu de diffuser, de citer ou de reproduire cette étude sans la permission expresse du ministère de la Défense nationale.

TABLE OF CONTENTS

ABSTRACT	iv
INTRODUCTION	1
CHAPTER 1 – SIGNIFICANCE OF THE GLOBAL MARITIME ECONOMY	9
Enabling the Global Economy	9
Port Security and the Intermodal Transportation Revolution	15
Reliance on Hub Ports	20
CHAPTER 2 – THE MARITIME SECURITY ENVIRONMENT	26
Transnational Threats and Maritime Security.....	26
Countering the Threat - Maritime Security Requirements	38
Port Security Measures and Maritime Security Planning.....	44
CHAPTER 3 –CANADIAN MARITIME SECURITY STRATEGY	50
International Maritime Security Requirements and Bilateral Agreements.....	50
The Evolution of Canadian Maritime Security.....	57
Roles of Government Departments and Agencies in Maritime Security.....	62
Shortfalls and Gaps in Port Security.....	67
Closing The Gaps – A Strategy For Improving Port Security	72
CONCLUSION.....	76
Bibliography	84

List of Figures

Figure 1 - Developing a Recognized Maritime Picture 42

Figure 2 - Layered Approach to Maritime Security..... 46

List of Tables

Table 1 - Core Tenants of the National Maritime Security Plan 4

Table 2 - Canadian Container Traffic Growth 14

Table 3 - Five Dimensions of a Terrorist Attack 34

Table 4 - Recommendations to Improving Security of the Principal Hub Ports 82

ABSTRACT

Canada's continued economic prosperity relies on three principal hub ports, Halifax, Vancouver and Montreal. These three primary hub ports provide the Canadian economy a gateway to the transoceanic super highway that is the key to continued access to the global economy. The events of September 11th 2001 shook Canadians into the grim reality that Canada's vital seaports are not all that secure and that economic well-being could be severely disrupted by a similar terrorist attack on a principal hub port. By utilizing a vessel, a container or directly attacking a key Canadian seaport a terrorist organization can simultaneously achieve mass casualties and interrupt the Canadian supply chain that is extremely reliant on access to global markets and foreign trade.

This paper highlights Canada's role in an ever-expanding global economy and emphasizes the importance of securing the principal hub ports that are so vital to Canadian economic and social interests by providing gateways to international trade. The threats to national security posed by transnational crime as well as the current security measures in place to protect against the likely threats are also considered. At issue is the ad-hoc, loosely based government approach to implementing and coordinating national maritime security efforts. The existing gaps and the underlying causes of the gaps in port security will be identified and discussed. Enhancing port security requires securing coastal water ways as well as internal water ways, therefore recommendations for improving port security are presented within the overarching domain of maritime security.

INTRODUCTION

“This, with the vast increase in rapidity of communication, has multiplied and strengthened the bonds knitting the interests of nations to one another, till the whole now forms an articulated system, not only of prodigious size and activity, but of an excessive sensitiveness, unequalled in former ages.”

---- Alfred Thayer Mahan----

Consistent with Alfred Thayer Mahan’s definition of sea power as well as later statements of modern historians building on his work, Canada is a modern Sea Power of significance.¹ According to Mahan there are six distinct characteristics establishing the conditions affecting the sea power of nations: geographic position, physical conformation (national resources and climate), extent of territory, population, character of the people, and character of the government. Mahan’s criteria have been reviewed and updated by modern naval historians to include economic strength, technological prowess, socio-political culture, and dependence on maritime trade and sea resources.² If a modern sea power is defined as a combination of a nation states capacity for international maritime commerce and utilization of ocean resources including maritime shipping, seaport operations, fisheries, oil and natural resources, the conclusion is clear that as a nation reliant on the sea for economic prosperity, Canada fits the criteria that defines a modern

¹ Sam J Tangredi, “Globalization and Sea Power: Overview and Context,” *Globalization and Maritime Power (Dec 2002)* [publication on-line]; available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02; Internet; accessed 18 January 2007.

² *Ibid.*

sea power.³ From Mahan's time to the present day, the ocean has facilitated the rapid advance of technology, the speed of communications and the rate of growth of the global economy.⁴ Therefore a nation reliant on the sea to advance the economic prosperity inherent in its natural resources and the impacts of globalization has a requirement to protect and secure its maritime domain. The world economy is increasingly dependent on the continuous free flow of goods and services via maritime shipping. The Canadian economy is no exception. Global economies reliant on the fast, predictable movement of goods are vulnerable to interruption or disruption along the sea-lanes of communication and in the hub ports of maritime nations.

During the Cold War, threats to the maritime security domain were centered on Soviet intimidation to the freedom of navigation through sea-lanes and chokepoints. At the height of tensions forward deployed Soviet bombers and nuclear submarines represented a menace to the global common and exposed the vulnerability of the world's reliance on the key sea-lanes and shipping routes. With the fall of the Berlin wall and the inevitable end of the Cold War came a change in the threat to the global common. The threat evolved to one of transnational crime including piracy, collisions, regional instability and terrorism.⁵

Following the terrorist attacks of September 11th 2001, the maritime security community began to focus more prominently on the impact such an attack represented to domestic safety and the global economy. The deadly assault on the world trade centre

³ According to "*Leadmark: The Navy's Strategy For 2020*" Sea power is determined not only by the weapons and armed forces with which it can affect events at sea but also by its merchant marine, its fishing and oceanographic fleets, and its maritime outlook and tradition.

⁴ Tangredi, *Globalization and Sea Power: Overview and Context, in Globalization and Maritime Power*.

⁵ *Ibid.*

highlighted concerns that terrorists could utilize a vessel, a container or other means to attack a hub port in order to further their cause. A bomb in a container or weapon of mass destruction (WMD) brought into a port facility has the potential to damage a great deal of infrastructure, critically injure a large number of people, severely disrupt the global supply chain and generally shock the population, thereby shaking public confidence in domestic security.⁶

Although terrorism may represent the most dangerous threat to maritime security it is not the only danger or necessarily the most common risk to maritime security. Weapons, drugs and humans represent valuable illegal commodities being internationally exchanged and transported across the global common. The prevalent smuggling of weapons, drugs, and humans in combination with acts of increased piracy over the seas and through the world's ports represent a substantial threat to global security, regional stability and domestic safety. Unfortunately there are significant restraints to implementing domestic maritime security measures. The most notable of which are establishing a security environment that is effective, affordable and most importantly facilitates the accelerated flow of goods through the sea-lanes and hub-ports.

At 243,772 kilometers Canada has the longest virtually undefended coastline in the world.⁷ In *Securing an Open Society: Canada's National Security Policy* the

⁶ Mary R. Brooks and Kenneth J. Button. "Maritime Container Security: A Cargo Interest Perspective" *Paper to Lloyd's Register's International Workshop on Risk Management in Port Operations and Logistics and Supply Chain Security*, (29 Sep 2006) [paper on-line]; <http://www.cts.cv.ic.ac.uk/documents/portec/flyer.pdf>; Internet; accessed, 12 Dec 2006.

⁷ Rear Admiral (Retired), David Morse. "Are We Prepared?, Personal, Legal, Procurement and Industry Perspectives: Discussant's Remarks – Session 5," *A Maritime Security Conference hosted by the Centre for Foreign Policy Studies*. Dalhousie University, (15-17 June 2006) [paper on-line]. <http://www.cfps.dal.ca>; Internet; accessed, 12 December 2006.

government outlined an implementation strategy to deal specifically with the issue of our undefended coastline by enhancing domestic maritime security through a six-point plan.

The core tenants and lead agencies responsible for executing this plan are highlighted below in Table 1.

Table 1 - Core Tenants of the National Maritime Security Plan

<u>Tenant</u>	<u>Responsible Agency/Agencies</u>
Strengthening responsibility for the various portfolios responsible for securing Canadian waters. Increasing on-water patrols and maritime surveillance. Implement new communications technologies for the Maritime Operations Centres (MSOCs). Strengthen security at ports and other facilities	Whole of Government
Lead in matters of safety, security as well as policy co-ordination and regulation. Responsible for enforcement and policy.	Transport Canada Public Safety and Emergency Protection Canada (PSEPC) – Public Safety Canada
Lead minister for co-ordination of on water response. Establish MSOCs in Halifax and Vancouver, which will include the CBSA, Transport Canada, the RCMP and the CCG.	Minister of National Defence (MND)
Participate in the MSOC	Canada Border Services Agency (CBSA)
Participate in the MSOC Establish Maritime Emergency Response Teams	RCMP
Work more closely with the U.S. Coast Guard (USCG).	Canadian Coast Guard (CCG)

Source: Privy Council Office, “Securing an Open Society: Canada’s National Security Policy,” 38-39.

To date the government approach to implementing the plan is best described by very loose informal relationships spanning across a number of government agencies and departments to form working groups. No single agency or government department has been delegated the authority or responsibility necessary to ensure maritime security strategy has an identifiable end-state that we are advancing with purpose to implement.

Answering the question of leadership and determining organizational responsibility and accountability in the event of a maritime security crisis is challenging. Command and control relationships are difficult to discern, unity of command and purpose is lacking and it is a perplexing task to identify the office of primary interest as it pertains to Canadian ports and maritime security. Each government department is operating with a separate mandate, a different regulatory framework and under a dissimilar legislative body.⁸ Amid each of the government agencies involved in maritime security it is disconcerting that none hold domestic maritime security as its primary mandate. The unfocused leadership results in a number of inefficiencies in the form of overlaps and oversights in the maritime security effort. Domestic maritime security might be better addressed by a single agency with the authority and resource requirements to implement the policies described in the government's National Security Policy of 2004.

Securing an Open Society readily acknowledges, "Canada relies on its transportation network of roads, railways, pipelines, shipping ... and must do its part to

⁸ House of Commons, Standing Committee on National Security and Defence, *Report of the Standing Committee on National Security and Defence*, "Canada's Coastlines: The Longest Under-Defended Borders in the World," Seventeenth Report – Volume 1, (October 2003)[report on-line] available from <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/rep-e/repvol1part2-e>; Internet; accessed 21 Dec 2006.

secure the international transportation system....”⁹ These are statements worth examining and further inquiring as to whether Canadian ports are highly secure, or is the nation underachieving in the maritime security domain? Providing just enough security to meet international requirements and meet American demands for defence of North America does not necessarily result in the world’s most secure ports. There are tremendous risks to national security interests and Canadians in maintaining loose command and control relationships and an ad-hoc approach to maritime security. In a country reliant on the sea for the economic prosperity that it enables, it is vitally important that Canada protect its seaports and sea-lanes from transnational crime.

Rather than relying on working groups and voluntary co-operation among government agencies, effective maritime security would be better accomplished with a clearly defined strategy and a single leadership structure with unity of purpose capable of delineating responsibility for meeting national maritime security objectives. The nation has a requirement to secure its ports in order to protect national security interests, sustain the economy and meet its obligations to trading partners.¹⁰

The foundation of this paper is to demonstrate that substantial gaps in current security measures at principal Canadian seaports provide an accessible gateway for organized crime and represent a potential target of opportunity for a devastating terrorist act. Gaps in security at our ports and in the maritime domain render Canadians vulnerable to the effects of crime or worse a terrorist attack, a situation that must be corrected in order to protect national security, economic and social interests. Once the

⁹ Privy Council Office, *Securing an Open Society: Canada’s National Security Policy...*, 35.

¹⁰ Cdr Richard L. Perks. “Port Security in the Canadian Maritime Strategy Context” (Toronto: Canadian Forces College Command and Staff Course Paper, 29 April 2005), 12.

considerable threats posed to Canadian hub ports have been identified the document will outline the areas of vulnerability and gaps in security and provide recommendations on improving port security in Canada.

By initially establishing the significance of Canada's role in the global maritime economy in terms of its reliance on the shipping industry and the significance of the hub ports linking Canada to the global distribution system will lead to an appreciation of the requirement to ensure that Canadian ports and Canada's maritime domain are adequately protected. In order to sufficiently understand maritime security requirements it is vitally important to acknowledge the potential threats to our maritime domain and how best to identify and assess vulnerabilities. After the possible threats and the likelihood of occurrence have been categorized and defined it is then essential to assess counter measures and security initiatives to address the various threats and areas where ports are susceptible to security breaches.

National maritime security strategy will be presented in terms of international governance and agreements instituted post September 11th 2001 implemented to address the threats and areas of vulnerability. The obligation to contribute to the defence of North America through bilateral trade agreements will also be discussed. The paper will also endeavour to conduct a holistic look at the Canadian approach to maritime security by identifying the significant gaps that exist in departmental and inter-agency responsibilities for maritime and port security. Finally, recommendations will be made to improve on port security by integrating capabilities to reduce the significant gaps between government departments and agencies responsible for implementing, executing

and enforcing maritime security while simultaneously addressing the balance that is required between security and the free flow of goods.

CHAPTER 1 – SIGNIFICANCE OF THE GLOBAL MARITIME ECONOMY

Enabling the Global Economy

“[Globalization is] the inexorable integration of markets, nation-states, and technologies to a degree never witnessed before - in a way that is enabling individuals, corporations and nation-states to reach around the world farther, faster, deeper and cheaper than ever before.”¹¹

Many definitions of globalization exist, but all point to globalization as the increasing integration of international markets and financial transactions between nations, corporations and individuals, enabled through advancing technologies.¹² Now, more than at any time previous, nations, corporations and individuals are pursuing a piece of the available material wealth and a share of the proverbial American dream. Globalization represents a tremendous opportunity for expanding free market nations. Information technologies, global corporations, international trade and the ability to trade and travel freely around the world, have created a rapidly expanding global market place. The notable increasing convergence of financial markets and economies is heavily reliant on

¹¹ Tangredi, *Globalization and Sea Power: Overview and Context*, in *Globalization and Maritime Power*.

¹² Four similar definitions of globalization including Mahan’s early 20th century definition quoted in the introduction can be found in Sam J. Tangredi’s “Globalization and Sea Power: Overview and Context. According to the international monetary fund “globalization is a historical process, the result of human innovation and technological progress. It refers to the increasing integration of economies around the world...”

three critical pillars; human migration, rapid movement of capital and most importantly international trade.¹³

International trade has been growing and expanding in magnitude and importance for hundreds of years. Quite possibly centuries old, globalization has unfolded as civilization has evolved from small societies of hunter/gatherers to industrialized nation states. International market expansion became significant in the 19th century when Europe's imperial powers began trading with their colonies including North America. More recently, following the end of World War II, barriers to international trade have continued to fall. Advances in technology and institutions such as the World Trade Organization (WTO) working in parallel have combined to reduce restrictive tariffs and enhance world trade. In the 40 years following WW II, East Asia has transformed from one of the poorest regions in the world to one of the richest.¹⁴

Throughout history it has been the ability to freely navigate the oceans and seas that has played the most significant role in facilitating industrial growth, economic development and international trade. With humble origins along land-based trade routes, it was the ability to travel across oceans and the subsequent development of sea-lanes for the purpose of moving commodities that initiated rapid global expansion. Due to the increasing reliance of nation-states, corporations and individuals on international markets, the world's oceans and sea-lanes have become critical to sustaining the

¹³ International Monetary Fund, "Globalization: Threat or Opportunity," <http://www.imf.org/external/np/exr/ib/2000/041200.htm>; Internet; accessed 8 March 2007.

¹⁴ According to the International Monetary Fund, "Globalization: Threat or Opportunity." During the period 1971 to 1999 in Asia's new industrial economies, external trade as a percentage of world trade grew from 3.5 % to almost 10%.

economic development, expansion and wealth being generated in today's global economy.

Safe passage over relatively fixed trade routes, are vitally important to sustaining the brisk pace of global expansion. Without free access to the sea there is limited access to the international marketplace. Nations and nation-states' foreign interests are increasingly integrated and inter-related and therefore reliant on foreign trade and access to the global market place. Despite the continued advances in the various other modes of transportation, ocean transit continues to be an extremely cost effective means of international trade.¹⁵ Seventy percent of the world is covered by ocean and ninety percent of international trade measured by weight and volume travels by water. This equates to approximately 2 billion tons of cargo, a figure that is expected to double in the next twenty years.¹⁶ Ensuring free passage through the sea-lanes of communication and vulnerable chokepoints including hub ports is a critical enabler to accessing a world market place, increasingly sensitive to the slightest disruptions to foreign trade.

Certainly not everybody or every nation supports globalization. Many regard it with hostility and fear, arguing that globalization represents inequities and inequalities for the poor living in impoverished nations. Nations going through economic crisis in the 1990s; Mexico, Russia, Brazil and Thailand to name a few suggest that their financial

¹⁵ The transoceanic rate to ship a 20 ft sea container (65,000 lbs or 30,000 KG) is approximately \$1900 for the basic rate and ranges up to \$3800 for door-to-door service. Source: www.maerskline.com; Internet; accessed 28 March 2007. Shipping via Air Canada Cargo within Canada ranges from \$.89/KG to \$3.27/KG based on a 500 KG minimum. Source: www.aircanadacargo.ca; Internet; accessed 14 April 2007.

¹⁶ Donna J. Nincic, "Sea Lane Security and U.S. Maritime Trade: Chokepoints as Scarce Resources," in *Globalization and Maritime Power* (Dec 2002) [publication on-line]; available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02; Internet; accessed 18 January 2007.

crisis were a direct and inevitable result of globalization.¹⁷ There are also organizations in affluent industrialized nations who view foreign trade as a threat to employment and living standards.¹⁸ The basis of their fears is that low wage economies will displace them from their jobs in high wage economies, thus decreasing the demand for less skilled workers in high wage economies.¹⁹ Combined, disgruntled nations and labour groups represent a potential risk to the global economy. These nations and/or interest groups, who feel excluded from the benefits being derived from globalization, often offer safe havens and provide ideal recruiting opportunities for global criminal organizations and terrorist groups looking to further their ambitions by disrupting a global economy that for years has operated on conventional trade patterns.

Fixed trade routes offering predictable movement patterns render the maritime trade susceptible to transnational crime including piracy and direct attack. A combination of factors including prevailing winds, ocean currents and weather patterns determine the safest and most efficient trade routes. Therefore, trade routes have remained fixed for years, if not centuries.²⁰ Disruptions to the freedom of movement of cargo through sea-lanes of communication and ports represent serious cause for concern. Insignificant activities in remote parts of the world, which once went unnoticed, much more frequently have an impact on markets world-wide.²¹ Increasingly, localized events in key locations can disrupt both manufacturing and retail activities thousands of miles

¹⁷ International Monetary Fund, *Globalization: Threat or Opportunity*.

¹⁸ *Ibid.*

¹⁹ International Monetary Fund, *Globalization: Threat or Opportunity*.

²⁰ Nincic, *Sea Lane Security and U.S. Maritime Trade: Chokepoints as Scarce Resources, in Globalization and Maritime Power*.

²¹ *Ibid.*

removed from the crisis. Global markets are extremely sensitive to the slightest alteration of predictable delivery schedules. Disruption of trade patterns may have far-reaching impacts in terms of inventory holdings, delivery schedules and trade value.

Concentration of trade, global manufacturing, fixed routes and reliance on supply chain management as opposed to holding costly inventories render the market place extremely vulnerable to any significant interruption over the sea-lanes of communication or at the hub ports along the supply chain.

The common thread shared by global maritime nations is their reliance on access to the high seas and their vulnerability to impediments to access. According to P.T. Kearney, Canada ranks among the most globalized nations in the world.²² In 2001 the number of 20 ft equivalent container units flowing through the principal Canadian container ports is estimated at 1.3 million. This number grew to 2.6 million in 2003 and reached 4 million containers flowing through the facilities at Halifax, Montreal and Vancouver in 2006. As illustrated in Table 1 container traffic continues to increase and is expected to double again by 2015.²³

²² A.T. Kearney. "Globalization Index," *Foreign Policy Magazine*, [journal on-line]; available from <http://www.atkearney.com/main.taf>; Internet; accessed 8 March 2007.

²³ Maritime Security and Defence Seminar. *The Canadian Navy and the New Security Agenda: Proceedings of the Maritime Security and Defence Seminar* (Toronto, ON, 2004), 68-69.

Table 2 - Canadian Container Traffic Growth

<u>Year</u>	<u>20 Ft Equivalent Units</u> <u>(TEU)</u>	<u>Cargo Value</u>
2001	1.3 million	\$110 Billion
2003	2.6 million	\$150 Billion
2006	4 million ²⁴	\$185 Billion (estimated)
2015	8 million (projected)	\$ 350 Billion (projected)

The statistics presented identify the growing importance of non-U.S. oceanic trade to the Canadian economy. The 393 million tons of cargo including container shipments that passed through Canadian ports in 2003 represent seven percent of all the cargo shipped in the world.²⁵ Canada as an international maritime trading partner is reliant on the sea, sea portals and major port cities offering transportation gateways to provide connectivity and onward movement of goods and services to support continued economic prosperity. As the figures indicate, our prosperity as a nation is closely linked to the ability to ship and receive goods to and from our trading partners.

²⁴ House of Commons, Standing Committee on National Security and Defence, *An Update of Security Problems in Search of Solutions: Seaports*, (March 2007)[report on-line] available from <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/rep-e/repvol1part2-e>; Internet; accessed 23 March 2007.

²⁵ The Canadian Navy and the New Security Agenda, *Proceedings of the Maritime Security and Defence Seminar...*, 69.

Port Security and the Intermodal Transportation Revolution

Throughout history the sea has been the great global common facilitating international trade. However, it is the 20 ft container moving across the world's oceans that has revolutionized the global intermodal transportation system. The 20 ft container offers an international system of rapid transit connecting international markets in locations that were previously unimagined. The container industry has grown substantially from its early origins, which consisted of an initial voyage of 58 trailers removed from truck chassis to an intermodal container system accommodating vessels carrying thousands of 20 ft containers.

The container revolution that Malcolm McLean envisioned in 1956 has grown to the point that the bulk of world trade is transported around the world on container vessels.²⁶ As early as 1966 container shipping constituted 60 % of the world's trade in terms of value and in 2003, 303 million sea containers were used to move goods around the world. In Canada 97% of non-continental foreign trade now involves ocean transit.²⁷ Container shipping in Canada has grown by almost 400 % since 2001, increasing from 1.3 million containers shipped in 2001 to 4 million containers moving through the primary container ports of Halifax, Montreal and Vancouver in 2006.²⁸

²⁶ Brian J. Cudahy, "The Container Revolution Malcolm McLean's 1956 Innovation Goes Global," *TR News*, September-October 2006, 5-9.

²⁷ The Canadian Navy and the New Security Agenda, *Proceedings of the Maritime Security and Defence Seminar...*, 68.

²⁸ House of Commons, *An Update of Security Problems in Search of Solutions: Seaports*.

The intermodal global transportations system has become the key to fast, efficient international trading. Sea containers traveling over ocean routes and sea-lanes connected by port facilities to road networks and double stacked rail lines bring suppliers, manufacturers, retailers and customers together from anywhere in the world.²⁹ The unfortunate disadvantage to the containerized supply chain is its susceptibility to disruption. A significant event interrupting services at a key hub port facility such as Halifax, Montreal or Vancouver could severely impact the economy by halting the efficient throughput of goods. The container supply chain represents a low risk accessible target for criminals and terrorist organizations. Approximately 95 % of the containers moving around the world move through international ports unchecked.³⁰ Of the 4 million containers flowing through Canadian ports approximately 92 % go unchecked (approximately 320,000 are checked).³¹ Ocean terminal and marine security until very recently has not attracted much media attention and does not appear to be a concern for the average Canadian citizen.³²

The attacks of September 11th 2001 brought heightened awareness to the idea that terrorists could severely disrupt the global supply chain by utilizing a sea container to

²⁹ Michael D. Greenberg, Peter Chalk [et al], *Maritime Terrorism: Risk and Liability*, Report prepared for the Rand Centre for Terrorism and Risk Management Policy (Arlington: U.S.A. Rand Corporation, 2006), 111.

³⁰ According to Michael D. Greenberg, Peter Chalk [et al], *Maritime Terrorism: Risk and Liability*, “between 2 and 5 percent of containers are currently checked at ports around the world, even at facilities equipped with the most advanced x-ray or gamma ray technology.

³¹ According to the Senate Committee on National Security and Defence, March 2007, CBSA is able to screen through VACIS (Vehicle Identification and Cargo Screening) about 7.5% of containers at Canadian ports. There are currently only 15 VACIS systems employed in Canada to screen containers and cargo.

³² Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64.

attack the critical infrastructure and facilities at a major shipping centre.³³ Container security is a complex issue involving both the private and public sectors. Security standards are being determined to a large extent by large multinational firms, wielding enormous economic power. At the very least the multinationals are defining the security requirements being met by their suppliers.³⁴ The attitude and approach toward maritime security advocated by an economically powerful and influential private sector will persuade decision makers in setting security standards and implementation policies.

With an extraordinary number of containers transiting in and out of the country unchecked the suggestion that a sea container might be used as a weapons platform or to conceal an improvised explosive device is a plausible scenario. Sophisticated criminal syndicates including the Hell's Angels are known to be using the ports of Montreal and Vancouver, providing recent evidence to the reality that the sea container is a highly effective means of concealing and transporting illicit cargo.³⁵

Maintaining visibility and control over the contents of a sea container while in transit is challenging if not impossible. A container arriving or departing a Canadian port very rarely will have come direct from its point of origin. It is often the case that a container will have been handled and exchanged numerous times between many transportation agents before arriving at an ocean terminal.³⁶ Quite possibly an even more

³³ Brooks and Button. *Maritime Container Security: A Cargo Interest Perspective*.

³⁴ *Ibid.*

³⁵ The RCMP advised The Standing Senate Committee on National Security and Defence in January 2007 that Indo-Canadian, Asian and traditional crime groups, including the Hells Angels are very active in the port of Vancouver.

³⁶ According to the Standing Senate Committee On National Security and Defence March 2007, a container may be handled up to 17 times between point of origin and destination.

perplexing concern is maintaining visibility on a container originating in a foreign country. Canadian officials have no jurisdiction over foreign containers until they enter a Canadian port and alarmingly “ghost containers” continue to be a common occurrence.³⁷ Not long after 9/11 Italian authorities for example found an Egyptian man carrying a valid Canadian passport living in a container. In his possession were a number of items that led to his arrest on suspicion that he was a terrorist.³⁸

In the instances where container handling is minimized, the matter of the integrity of the contents continues to remain a concern. The standard container seal being used today is easy to break and easy to replicate leaving no guarantee that a container has remained sealed throughout its journey. Electronic seals may provide greater security, but are much more costly, have not been proven exceptionally reliable and can also be bypassed. For these reasons industries much more concerned with protection from theft than national security implications have been reluctant to adopt electronic seals.³⁹

Security measures being applied to containers moving through the ports must also account for the fast and cost effective flow of cargo through the port facilities. Security initiatives that impede rather than enhance the inter-modal shipping process will not be supported by the manufacturing giants, multinational retailers or terminal operators, all of

³⁷ Ghost Containers are containers arriving on vessels without documentation or identification confirming ownership, point of origin or destination. According to the Standing Senate Committee On National Security and Defence March 2007, “...on any given container ship there will be half a dozen of these containers on any given ship, half of which are carrying goods.”

³⁸ Amid Farid Rizk a naturalized Canadian citizen found living in a container by Italian authorities had in his possession a lap top, cell phone, airline tickets, false security passes for Canadian, Thai and Egyptian airports, maps and an aircraft technician’s certificate.

³⁹ Brooks and Button. *Maritime Container Security: A Cargo Interest Perspective*.

who rely on the highly efficient predictable movement of containers to maintain profitability.

Further complicating the issue of securing the global supply chain is the determination of funding for security requirements. The equitable division of funding to secure Canadian ports is a complex issue. Globalized private markets are creating public risk exposure and a fine line exists between what the government is willing to fund, what the private sector is willing to fund and what security measures need to be implemented.⁴⁰ Mandated security legislation is expected to come with a resource envelope to defray some of the implementation costs, however private enterprise reaping the benefits of the global supply chain also bear responsibility to share in the costs of securing hub ports and maritime gateways.⁴¹ Determining the optimal level of security and what the various layers of government, multinational firms and the numerous stakeholders in the shipping industry are willing to pay for is a difficult task. In 2002, however, the International Maritime Organization (IMO) provided recommendations to standardize international maritime security. To improve maritime security the IMO introduced the International Ship and Port Facility Security (ISPS) Code, implemented to improve the safety of vessels and their crews as well as enhance port security.

Although the ISPS Code considers container security as an overall process requirement, the security of the global supply chain is only as strong as the weakest link in the chain. ISPS compliance is enforced nationally and is therefore only effective if

⁴⁰ Henry H. Willis, David S. Ortiz, *Evaluating the Security of the Global Containerized Supply Chain*, Report prepared for the Rand Centre for Terrorism and Risk Management Policy (Arlington: U.S.A Rand Corporation, 2006), 15.

⁴¹ Willis, Ortiz, *Evaluating the Security of the Global Containerized Supply Chain...*, 15.

national governments impose compliance on their shipping lines, terminal operators and port facilities. The standard of the ISPS Code enforcement varies from nation to nation and it is therefore dangerous to assume ISPS Code compliance by itself will reduce maritime vulnerability by identifying and locating high-risk container shipments before they reach a domestic hub port.

As much as this section has focused on the role of the sea container in the global supply chain, it is not only containerized cargo that has revolutionized ocean-transportation. Massive supertankers move petroleum products; liquid gasses and infinite varieties of break bulk commodities in order to take advantage of the economies of scale being realized in the shipping industry. At the same time the auto giants are moving cars and trucks to markets around the world on specially designed roll on – roll off vessels. Similar to the inter-modal container industry bulk cargo movement also relies on specific routes, predictable schedules and a number of vital hub ports to connect them with the global economy. In Canada the three principal container ports of Halifax, Montreal and Vancouver are vital hubs to enabling participation in the global trading system.

Reliance on Hub Ports

In 2004, 20 of the world's more than 16000 ports operating in 191 countries were processing 167 million containers.⁴² This represents slightly more than half of the 303 million containers shipped internationally. The Canadian hub ports of Halifax, Montreal

⁴² The claim to the World's busiest port is contested and differs slightly by the criteria applied, container unit or gross tonnage. Regardless of the measurement criteria and position on the list, from year to year the list of the world's 20 busiest ports remains very consistent.

and Vancouver process 4 million containers annually for transshipment. Hub ports are vital components of the global supply chain, representing the primary location where cargo makes the switch between ocean and land transportation. Primary hub ports connect the sea modes of transportation to rail lines and road networks further enabling the continued growth of the inter-modal supply chain process.⁴³ To an ever increasing degree the shipping industry is relying on a hub and spoke system that allows vessels to operate on a 24 hour turn-around time, continuously sailing in and out of predetermined, origin and destination ports, on fixed schedules over pre-determined transit routes.⁴⁴

Reliable transit routes, profit margins and the advantages to be achieved by realizing economies of scale are driving the shipping industry to build vastly larger ships to sail over specific, mainline trade routes. Container vessels capable of carrying up to 6,000 twenty-foot equivalent unit containers (TEU) were initially introduced in the mid to late 1990s. Once an anomaly, these vessels regularly transit the mainline trade routes and 8,000 – 10,000 TEU container ships are being produced and are now sailing on selected routes.⁴⁵ The resulting effect of these “mega ships” is the emergence of the “mega port”, a year round deep-water facility capable of accommodating the “mega ships” and super tankers. However, the number of available ports with the required draft,

⁴³ A container arriving from Halifax via Rotterdam for example can be moved directly by rail to points in the U.S such as Detroit or Chicago. This feat is accomplished by a double-stacked rail tunnel that has been established under the St Clair River from Sarnia, Ontario into Port Huron, Michigan.

⁴⁴ Daniel Y. Coulter, “Globalization of Maritime Commerce: The Rise of Hub Ports,” in *Globalization and Maritime Power* (2002) [publication on-line]; available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02; Internet; accessed 18 January 2007.

⁴⁵ Coulter, *Globalization of Maritime Commerce: The Rise of Hub Ports*, in *Globalization and Maritime Power*.

cranes and equipment necessary to load and off-load the massive container ships and tankers is inversely related to vessel capacities.⁴⁶

World sea-borne trade is becoming increasingly confined to a limited number of carriers operating on fewer routes through a decreasing number of hub ports. On the Eastern seaboard of North America there are only three ports capable of handling the 6,000 TEU vessels: Halifax, Nova Scotia, Hampton Roads (Norfolk), Virginia, and Charleston, South Carolina. In the age of super ship development, this number will be potentially reduced to one, with Halifax initially left as the lone Atlantic port in North America capable of supporting the next generation of vessels.⁴⁷

As the primary location where containers make the switch between ocean and land transportation, representing a critical node in the global supply chain, hub ports are the link in the chain where goods concentrate for onward movement through a just in time supply chain management system for further processing and assembly or straight to retail outlets. In order for an economy reliant on defined predictable delivery schedules to function effectively, hub ports cannot be allowed to become choke points in the system. Hub ports must be secured while simultaneously facilitating the efficient free flow of goods to their subsequent destinations.

Containers and cargo are more readily accessible and vulnerable when they are grounded and unattended in a container terminal awaiting onward movement than when

⁴⁶ At 397 meters in length the Emma Maersk is considered the largest container vessel in the world. According to Maersk Lines she is capable of carrying up to 11,000 TEU (20' equivalent units). The Emma Maersk's draft is listed at 15.5 meters. The port of Halifax is just capable at 16 meters of handling this vessel however the busiest hub port on the Eastern seaboard, Port Elizabeth N.J. with berth depths listed at 50' (15 meters) would not without dredging be able accommodate vessels the size of the Emma Maersk.

⁴⁷ Coulter, *Globalization of Maritime Commerce: The Rise of Hub Ports*, in *Globalization and Maritime Power*.

they have set sail aboard a ship. Hence moving containers quickly out of port facilities can potentially reduce risk by reducing accessibility. This is an uncommon instance when the government's desire for improved container security and industry's desire for rapid container processing share a general interest. A common desire for rapid transit of containers may present an opportunity to further harmonize security requirements between security planners and industry. It is rarely the case where increased speed and efficiency at the ports are synchronized with security demands. Generally the fear is that increased security will translate into a slower, less efficient global supply chain. In order to protect the economy from disruption, the challenge is to maintain the rapid interchange at the ports while simultaneously improving security measures. The solution to providing rapid, yet secure transit of containers lies in the efficient employment of available container scanning and detection technologies.

In a global supply chain relying on fast vessel turnaround times and smooth transitions out of the ports, the hub port represents a critical vulnerability. Inventory management processes designed for just in time delivery are increasingly exposed to the risk of disruption at a hub port. With no end in sight to the size of vessels being designed the ability to adjust to disruptions and catastrophic events in a port becomes more limited. The mega ships can only be accommodated at a select few ports and it is therefore no longer possible to simply divert the vessel to another port. Short, two or three day delays in delivery may now be substantially magnified in terms of the second and third order impacts interruptions to port operations have on assembly plants and retail outlets.

Disruption to the hub ports of Halifax, Montreal or Vancouver in the short term equates to inventory management challenges and immediate economic impacts, yet

potentially more damaging to the Canadian economy would be the loss of business to ports such as NY/NJ or Long Beach CA. More importantly in the long term an attack on one of our major port facilities may translate into a lack of confidence in Canada's ability to secure our ports and do our part in securing North America. Loss of confidence by the Canadian public can be managed; however loss of confidence by a U.S. administration could potentially evolve into tighter more stringent controls on cargo flowing through Canada to the U.S. An important factor to consider given that about thirty percent of the containers flowing through the principal Canadian ports make their way to the U.S.⁴⁸ Bilateral trade depends on the gateway to the U.S. None more important than the industrial corridor accessed between the Windsor-Detroit borders where it is estimated that \$2 billion worth of goods per day move between the two countries. Two days following September 11th 2001 the line of trucks attempting to cross the Ambassador Bridge into the U.S. from Windsor stretched out to 36 kilometres.⁴⁹

Canada is a microcosm in a world economy that relies on the sea as the great global common to provide a super highway that rapidly connects international markets through hub ports representing the gateway to accessing international trade. An efficient and profitable global economy relies on the world's oceans to shorten distances, save time and connect business interests that span the entire globe. The global economy continues to grow and expand due in large part to the emergence of the sea-container and the worldwide growth of the intermodal transportation system as a highly efficient and cost effective means to transport cargo.

⁴⁸ House of Commons, *An Update of Security Problems in Search of Solutions: Seaports*.

⁴⁹ O'Malley, Martin, "Canada and the U.S. after 9/11." *CBC News Online*, (12 February 2003) [journal on-line]; available from <http://www.cbc.ca/canadaus/omalley1.html>; Internet: accessed 29 March 2007.

While intermodal transportation provides the means to support an expanding global economy, if not rigorously secured, it also provides a conduit for the expansion of transnational crime. Terrorists, drug cartels and other organized crime groups look for opportunities to exploit gaps and breach security measures. These organizations have had success and will continue in their efforts to exploit gaps in maritime security.

CHAPTER 2 – THE MARITIME SECURITY ENVIRONMENT

Transnational Threats and Maritime Security

“Know the enemy and know yourself; in a hundred battles you will never be in peril.”

----Sun Tzu, *The Art of War*----

“Globalization has accelerated changes in the ways and means of conflict and may not yet instill enough fear and disruption to generate new ends for war itself.”⁵⁰ The interdependence of political and economic systems aided by global technology is creating a convergence toward western culture. This shift is perplexing and a source of embarrassment to Islamic fundamentalists and others opposed to the globalization of western culture and ideals. Globalization is also generating an age of winners and losers, those who are benefiting and those that globalization has completely bypassed. The inequalities recognized by those cultures not prospering from the effects of globalization create a potential for conflict.⁵¹

⁵⁰ Frank J. Hoffman and Sam J. Tangredi, “Characteristics and Requirements of the Evolving Security Environment,” in *Globalization and Maritime Power* (2002) [publication online]; available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02, Internet; accessed 18 January 2007.

⁵¹ Hoffman and Tangredi, *Characteristics and Requirements of the Evolving Security Environment*.

The nature of globalization and the resulting technical diffusion permits highly diverse transnational criminal networks to conveniently expand their sphere of influence.⁵² Political military and economic power and influence is more readily available to small countries, ethnic groups and even individuals.⁵³ Organized crime and international terrorism have expanded their horizons. Terrorists are branching into smuggling and trafficking to fund their activities while crime groups are branching out and diversifying their enterprises.⁵⁴ International crime is able to expand and interconnect with global under-world markets using ocean transportation routes in the same manner that international corporations make use of the efficiency of sea-borne trading. The transoceanic shipping industry that so magnificently facilitates global trading, ironically also provides the potential for the expansion of transnational threats such as organized crime, international terrorism and piracy.⁵⁵ The maritime transportation system and global supply chain are readily accessible to terrorists and criminal elements that utilize the global intermodal transportation system to further their respective causes and support future activities.

Piracy in ports and on the open seas, trafficking and smuggling are the foundation of transnational criminal activity. Drugs, weapons and people are being moved in

⁵² Hoffman and Tangredi, *Characteristics and Requirements of the Evolving Security Environment*

⁵³ *Ibid.*

⁵⁴ Kimberley L. Thachuk "Transnational Threats and Maritime Responses," in *Globalization and Maritime Power*, (2002) [publication on-line]; available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02; Internet; accessed 18 January 2007.

⁵⁵ *Ibid.*

containerized cargo through what are touted to be secure ports. The same technologies that are enabling international markets to flourish are supporting the growing international black markets. High-speed communications, satellite links, access to rapid transit and the ability to travel freely assist multinational criminals and terrorists to sustain and develop intricate networks.⁵⁶ Often associated with organized crime, drug trafficking is estimated to be the second most profitable industry in the world.⁵⁷ The economic benefits of the drug trade are also becoming increasingly attractive to terrorist organizations as a source of funding, power and influence. The profits of illicit trade are substantial enough to allow smugglers and traffickers to operate with freedom and impunity by undermining legitimate business and weakening struggling nation-states.⁵⁸

The under-world markets not only provide the finances required to fund terrorist activities, but also provide access to weapons and military equipment.⁵⁹ Profits in these markets are sufficiently enticing to afford powerful crime groups and terrorist organizations the ability to corrupt government officials and influence states (usually failing states) to directly or indirectly support their activities. The U.S. Department of State recognizes seven countries it describes as rogue states, Cuba, Iran, Iraq, Libya, North Korea, Sudan and Syria as sponsoring terrorism.⁶⁰ Interestingly these seven countries or rogue states all provide easy access to the sea and international shipping.

⁵⁶ Thachuk, *Transnational Threats and Maritime Responses in Globalization and Maritime Power*.

⁵⁷ *Ibid.*

⁵⁸ *Ibid.*

⁵⁹ *Ibid.*

⁶⁰ Randall G. Bowdish, "Global Terrorism, Strategy, and Naval Forces," in *Globalization and Maritime Power*, (2002) [publication on-line]; available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02; Internet; accessed 18 January 2007.

The global instability created by the transnational criminal markets represents a long-term challenge to effective maritime security measures.

In the not too distant past maritime security strategy was considered a policing issue, with efforts focused toward stopping the criminal element from using the ports as havens for weapons and drug smuggling. With the growth of international crime and the emergence of terrorism as another sophisticated element confronting maritime security, the problem is now recognized as a potential threat to national security. The U.S. Department of State identifies 28 groups as foreign terrorist organizations currently threatening global security. The potential threat can be best defined as premeditated politically motivated attacks carried out against unsuspecting non-combatant targets.⁶¹

Randall G. Bowdish in *Global Terrorism Strategy and Naval Forces* clearly articulates Al Qaeda strategy:

Through catastrophic and spectacular terrorist acts against American civilian and military targets, provoke quid pro quo reprisals, resulting in escalation to war, followed by U.S withdrawal from the region.⁶²

Unlike the conventional threat, the terrorist threat is asymmetric. This means the enemy is unstructured, operates with few if any definable or predictable patterns, and does not require precise timings or precision weapons. Asymmetric attacks are all about achieving the desired effect and minimizing collateral damage is not a restraint terrorists apply. The ability to maneuver freely in an asymmetric environment provides terrorist organizations with a time and space advantage. By and large, only a small number of people comprising an independent cell within the organization responsible to initiate an

⁶¹ Bowdish, *Global Terrorism: Strategy and Naval Forces in Globalization and Maritime Power*.

⁶² *Ibid.*

attack are aware of the timing and ways and means in which the next attack will be delivered. Interdicting a terrorist attack is difficult. There are very few predictable patterns. Unlike organized crime which requires repetitive procedures and methods, terrorists require a procedure and window of opportunity that will work once to provide the sought after devastation and impact.

With the end of the Cold War and the collapse of communist states, cash strapped nations are unloading their excess weapons onto the black market. Profitable and accessible, terrorists and criminal elements represent both buyers and sellers in this market. Seemingly unlimited quantities of small arms, machine guns, rocket launchers, grenade launchers, explosives and ammunition are all readily available. Yet more disconcerting than the supply of military equipment is the possibility that a transnational criminal organization will acquire the materials and technology necessary to build a nuclear weapon. As of 2002, there had been 14 documented seizures equaling 15.3 kg of weapons-grade uranium and 368.8 grams of plutonium. Not enough for a nuclear weapon but enough to indicate that there is a market for these materials. The material is available and it is difficult to detect if hidden in a container.⁶³

An increasingly common occurrence on the high seas, piracy is another advantageous means by which transnational criminals are furthering their aims. Piracy is advantageous in that many acts are never reported, the cargo can be sold to finance other activities and ships can be easily re-named, re-flagged and re-registered. For a number of reasons many acts of piracy go unreported, despite the reluctance to report piracy in the

⁶³ Thachuk, *Transnational Threats and Maritime Responses, in Globalization and Maritime Power*.

year 2000, 469 pirate attacks were in fact reported.⁶⁴ Most attacks target known valuable cargo aboard container vessels, but pirate interdictions may also involve hijacking the entire vessel. Hijacked vessels are commonly repainted, provided with falsified registrations and sold.⁶⁵ There exists a fair degree of certainty that these vessels are finding their way to terrorist organizations and are being re-registered under flags of convenience as legitimate vessels.⁶⁶ The vessels are then being used as practice platforms to learn how to navigate and sail the high seas for further hijackings, as a means of trafficking and transporting contraband, and potentially for use in a future attack on another vessel, port or chokepoint. It is estimated that there are at least 15 vessels linked to Al Qaeda and the U.S Merchant Marine academies have arrested students on suspicion of having ties to terrorist groups.⁶⁷

Assessing Maritime Risks and Vulnerabilities

Canada has an extensive coastal perimeter with three key hub ports providing access to global trading along the Atlantic and Pacific oceans, into the St Lawrence and along the Great Lakes. On any given day there are roughly 1700 vessels in Canadian territorial waters most of them foreign owned and many operating under flags of

⁶⁴ Thachuk, *Transnational Threats and Maritime Responses, in Globalization and Maritime Power*.

⁶⁵ *Ibid.*

⁶⁶ Vessels are hijacked for the contents of the cargo and often for the vessel itself. As many hijackings go unreported, the cargo is sold and the vessel is repainted, registered with false documents under a foreign flag of convenience. Flags of convenience in this context infer minimal security checks.

⁶⁷ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention....*, 55-64.

convenience or by NVOCCs (Non Vessel Operating Commercial Carriers).⁶⁸ The cargo being carried on these vessels equates to billions of dollars in trade moving through the ports. Of the 4 million containers handled in Canadian ports it is estimated that 3.7 million or 92% of these containers move through ports and waterways unchecked. Protecting Canadian ports and coastal waters is an important piece to providing relevant national security.⁶⁹

Prior to September 11th 2001 maritime security threats were lightly regarded and not given a great deal of consideration as a national domestic security issue. These threats are no longer considered unlikely or merely local concerns, but are recognized as potential threats to national security. In general, maritime threats can be categorized as direct and/or indirect. The direct threat is the danger and resulting impacts inherent in a terrorist attack. Indirect threats posed by extremely powerful organized crime syndicates contribute to undermining long-term social, political and economic impacts as a result of wealth and power being generated by the illicit trade flowing through the ports.

It is the potential devastating effects of a terrorist attack on a port that occupies security planners with “what if scenarios” more so than the criminal activities. Recently publicized maritime attacks include the attack on the USS Cole in 2000, an attack on the French Oil Tanker Limberg in 2002, with noteworthy attacks being conducted against

⁶⁸ Avis, *Surveillance and Canadian Maritime Domestic Security in Canadian Navy Strategic Issues*.

⁶⁹ According to Standing Senate Committee on National Security and Defence report: *An Update of Security Problems in Search of Solutions: Seaports*, 7.5 % of containers are screened.

cruise liners such as the Achille Lauro and passenger ferries.⁷⁰ A wide range of scenarios could potentially play out in Canadian waters or alongside a pier. Possibilities include:

- a. Detonating a sea container with either a conventional explosive device or some form of nuclear or biological WMD.
- b. Using a large commercial vessel to collide with a super tanker Liquified Natural Gas carrier to cause massive environmental damage.
- c. Hijacking a Super Tanker for profit or massive destruction purposes.
- d. Sinking a large commercial vessel to block a chokepoint or disrupt a port.
- e. Attacking a port facility overland.⁷¹

The complexity lies in determining which of the scenarios is most likely to be attempted and subsequently implementing security measures that have a high probability of pre-empting the attack. Customs officials and all levels of law enforcement are generally well versed in the ways and means of intervening to arrest illicit cargo. However, these agencies are faced with a much greater challenge in trying to interdict and restrain terrorist activities that are not adhering to any discernible patterns. The likelihood of terrorist attacks can be categorized along five common dimensions (illustrated in Table 3) that answer the questions as to who the perpetrators are likely to be, what their objective is, possible locations, potential targets and tactics.⁷²

⁷⁰ CSIS, *The International Terrorist Threat to Maritime Transportation*, CSIS Study #2003-4/02.

⁷¹ John F Frittelli, *Port and Maritime Security: Background and Issues for Congress*. CRS Report for Congress (Washington: Congressional Research Service, The Library of Congress, Updated May 27, 2005), 5.

⁷² Paul, W. Parformak, and John Frittelli, *Maritime Security: Potential Terrorist Attacks and Protection Priorities*. CR S Report for Congress (Washington: Congressional Research Service, The Library of Congress, 9 January 2007).

Table 3 - Five Dimensions of a Terrorist Attack

<u>Characteristics</u>	<u>Spectrum of Considerations</u>
Perpetrator	<ol style="list-style-type: none"> 1. Highly organized and well funded 2. Ad-hoc, reactionary movement 3. Disgruntled union workers
Objective	<ol style="list-style-type: none"> 1. Devastation of Infrastructure 2. Loss of Life, 3. Economic disruption or benefit 4. Environmental catastrophe
Location	Major city centre ports
Target	Attractive Maritime Targets include: <ol style="list-style-type: none"> 1. Port infrastructure and facilities 1. Cargo vessels/Cruise ships/Tankers 2. Straits 3. Bridges 5. Storage facilities
Tactics	Desired ends, ways and means will dictate tactics which may include: <ol style="list-style-type: none"> 1. Piracy 2. Hijacking 3. Containerized explosive device 4. Fast boat borne explosive device 5. Intentional collision of ships

Source: Parformak and Frittelli, “Maritime Security: Potential Terrorist Attacks and Protection Priorities.”

The most important step in determining and assessing the potential threat is identifying the parties most likely to initiate an attack. If the critical information surrounding the identity of a potential attacker or organization can be accurately portrayed the remaining information related to the ends, ways and means, will naturally fallout. For example transnational criminal organizations may pose a threat to national security through the use of the maritime domain. Organized crime however, relies on

access to ports to smuggle goods through and therefore are less likely to cause damage and disrupt cargo flow than a terrorist group would be.

The necessary questions to be answered are whether or not the threat is state sponsored, well organized, and do they enjoy the financial means and resources necessary to carry out a successful maritime attack? A criminal element or terrorist entity may be capable of acquiring the ingredients to build a WMD, but do they possess the wherewithal and technical savvy to assemble and detonate the weapon at the desired time and place or do they have the technology to remotely detonate a sea container carrying a conventional bomb? These are the types of scenarios presenting the greatest challenges to security planners when trying to decide where to focus their efforts and limited security resources.

The underlying objective of the terrorist is to make global headlines to further their cause. Therefore objectives may range depending on the means available from inflicting mass casualties to disrupting the economy or damaging the environment.⁷³ Better still, if one or more can be achieved in the same attack. The attack on the Oil tanker Limberg amazingly enough resulted in just a single death, but the economic and environmental impacts were felt in Yemen. The ports lost substantial business, insurance rates rose dramatically and an enormous amount of petroleum was spilled into the Gulf.⁷⁴ If the likely objective is mass casualties then security planners must necessarily consider options to protect the cruise ship industry, ferry systems and port facilities located in the vicinity of heavily populated metropolitan centres such as Montreal, Vancouver and

⁷³ Bowdish, *Global Terrorism, Strategy, and Naval Forces in Globalization and Maritime Power*.

⁷⁴ *Ibid.*

arguably Halifax. Ports in these centres are not just used commercially but are used for recreational activities and recreational boaters expect public access.⁷⁵

A large-scale terrorist attack, taking place in one of the major Canadian hub ports has the potential to disrupt North American trade, severely impact the Canadian economy and potentially injure a significant number of people. Located in the heart of the city the port of Montreal is Canada's primary gateway from North Europe serving Ontario, Quebec and the Midwestern U.S. A most important inland transfer point, the port processed 1.29 million containers in 2006, half of which were destined for or inbound from points in the Midwestern U.S. This represents 18,000 jobs and \$2 billion in revenue generation.⁷⁶ Processing approximately 3,000 containers a day, a lengthy interruption at the port will cause diversions impacting the just in time delivery schedules of both the manufacturing and retail sectors in Canada and the U.S.

Similar to Montreal the port facilities in Halifax and Vancouver also offer the terrorist an attractive list of options to inflict maximum damage and gain notoriety. In either location the terrorist can target the population, the port facility, cruise lines, ferry operations, commercial shipping or attack a navy vessel. A successful attempt at any of these venues would certainly disrupt operations and severely shake public confidence and potentially send the U.S. congress into more debates about the security of Canadian exports flowing into the U.S.

⁷⁵ CFN Consultants. "Port Security Requirements: Industrial Opportunities for Small and Medium Enterprises," Report Prepared for Western Economic Diversification Canada, Sponsored By Industry Canada. <http://www.cfnconsultants.com>; Internet; accessed 30 March 2007.

⁷⁶ Port of Montreal, http://www.port-montreal.com/site/1_0/1_6_4.jsp?lang=en; Internet; accessed 30 March 2007.

Pinpointing the most likely tactics to be employed in a maritime scenario is not an exact science. The terrorist has a menu of options from which to choose in order to achieve his objectives. Again the tactics chosen will be related to strength, financial support and weaponry including explosives and other resources accessible to the organization. A bomb or improvised explosive device in a sea container is a distinct possibility. Thousands of containers move through Canadian ports on ships, trucks and rail cars every day. Shipping routes and schedules are highly predictable and accurate enough that a bomb could be pre-timed in a container and be set to go off on arrival at destination or it could be remotely detonated by an operative awaiting arrival.

Viewed as less likely than a “bomb in a box” scenario but well within the realm of the possible is a hijacked vessel being destroyed in a channel or while tied up alongside a pier in order to stop port operations and disrupt global trade.⁷⁷ Al Qaeda operatives proved themselves capable of commandeering aircraft, so it is not a huge leap of faith to believe they are able to hijack and pilot a commercial vessel. As previously identified it is estimated that Al Qaeda are operating 15-20 commercial vessels and are suspected of training their personnel in Merchant Marine Academies.⁷⁸ In an industry where NVOCCs and flags of convenience are the norm and anonymity is protected, it is prudent to consider the possibility of a commercial carrier attacking a Canadian port. Other potential methods of attack include releasing a bio-hazard, Fast Inshore Attack Craft (FIAC) targeting slow moving craft in the channels and choke points, under water swimmers, under water mines and small underwater craft.

⁷⁷ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64.

⁷⁸ Frittelli, *Port and Maritime Security: Background and Issues for Congress...*, 7.

Once potential threat scenarios can be defined and awareness developed as to the potential danger presented to the maritime domain it is imperative to conclude what is probable in terms of an attack and where to focus security efforts, resources and how best to prioritize them. Most likely threats and most dangerous threats necessitate analysis and consideration. Counter terrorism resources can be focused to oppose the most credible scenarios with the highest probability of occurrence, worst possible scenarios and situations presenting the greatest danger and risk, or toward both. Consequently, an accurate and detailed security assessment is required in order to prioritize maritime security efforts. This is happening at a snails pace and clearly the government allocated funding is not adequate to secure Canada's maritime domain.⁷⁹ Improving maritime security demands that we adopt a security plan advocating preparation, heightened readiness, defence before an attack and an ability to deal with the effects of an attack.

Countering the Threat - Maritime Security Requirements

Asymmetric warfare is about managing the timelines. In the same manner that a great football team is able to manage time in a game, the terrorist is able to manage time and set the tempo of events. The terrorist owns the timeline and sets the timetable for the next attack. Very small, select groups, who need to know within the organization, understand the timelines, decisive planning details, and significant information. Operating in small cells offers the elements of protection, flexibility and surprise, as only

⁷⁹ House of Commons, *An Update of Security Problems in Search of Solutions: Seaports*.

a very select few know the details of the next strike. Their advantage is that they are matching up against a security environment that has been bred and trained to react to events and patterns that appear over a protracted timeframe not necessarily to pre-empt them.⁸⁰

The inability to wrest control of the timeline away from the terrorist essentially puts national security planners in a perennial defensive posture in an attempt to prevent an attack from occurring in the maritime domain.⁸¹ The means to pre-empting a terrorist act is by disrupting his timelines and forestalling the ability to strike at the time and place of their choice. Information technology, an advantage to the terrorist, can be turned into a disadvantage and used against him/her. Superior access to surveillance resources and information technologies can be used to locate the terrorist, establish identities, infiltrate plans, and eliminate access to a potential target.

Prevention implies pre-emption and the two terms are interlocked when the subject is national security and the terrorist threat. Prevention can only take place when thorough, detailed planning and preparation has been undertaken to ensure an acceptable state of readiness measures have been implemented. Preparation in the maritime domain infers a state of determined readiness that can be reached and adjusted as necessary, defence measures are in place in order to deter or detect and attack and should an attack occur, emergency response mechanisms are prepared to provide immediate response.⁸²

⁸⁰ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64.

⁸¹ Ibid.

⁸² Brooks and Button, *Maritime Container Security: A Cargo Interest Perspective*.

The unpredictable nature of the terrorist threat has forced a revolution in the national security culture from one of reactionary emergency response to a posture of pre-emptive action. First responders, security and defence agencies are relatively comfortable providing emergency response. Now, the situation has dramatically changed, the passive approach no longer meets the requirement, planning and preparing for a possible catastrophic event requires contingency planning and active deterrence. It is imperative to plan, prepare and exercise interdiction measures and responses to potential crisis before they occur.⁸³

Planning and preparing for prevention and interdiction was not the normal practice before September 11th 2001 occurred. Maritime security and port security in particular was viewed as a local, or regional issue that did not require federal intervention or attention. The paradigm shifted with the events of September 11th 2001. Providing port security in the manner in which it had always been conducted presented unacceptable vulnerabilities. Maritime security is no longer viewed by the federal government as a local or a regional issue. The national security implications of an attack on a Canadian port have been recognized and progress is being made to improve maritime security.

As circumstances change, security strategies must evolve and adapt to the new environment.⁸⁴ One of the daunting challenges to furthering maritime security measures is creating an atmosphere of co-operation between several entities with security responsibilities. The numerous departments and agencies involved in maritime security

⁸³ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64.

⁸⁴ Hoffman and Tangredi, *Characteristics and Requirements of the Evolving Security Environment*.

strategy and application make up three layers of involvement that must be coordinated. The layers commonly fall out as local, regional and federal governments. Within each of these layers exists, police forces and emergency response organizations and at the federal level there are no less than seven government departments and agencies holding a stake in maritime security.⁸⁵ This number of players renders even the simplest of things such as information sharing to develop a recognized maritime picture difficult if not impossible.

Maritime security requires the fusion of military, political, economic and information requirements throughout the responsible agencies and departments.⁸⁶ If the organizations can be brought together and efforts synchronized in an atmosphere of co-operation there are efficiencies to be achieved to close some of the gaps and eliminate the overlaps and duplication of effort. A harmonized effort in the area of information gathering as depicted in Figure 1 represents a logical starting point. A focused surveillance effort is the key to information gathering. Prioritizing vessels and areas of interest, coordinating efforts and pooling surveillance assets to gather, collate and analyze available information represents a tremendous step in developing a common recognized maritime picture.

⁸⁵ Seven of the government departments and agencies directly involved in maritime security are: Transport Canada, PSC, DFO, MND, RCMP, CCG, CBSA

⁸⁶ Hoffman and Tangredi, *Characteristics and Requirements of the Evolving Security Environment*.



Figure 1 - Developing a Recognized Maritime Picture

Source: Chief of the Maritime Staff, *Leadmark: The Navy's Strategy for 2020*, 129.

Canada, not unlike most other countries including the U.S., is constrained by available resources and funding limitations to meet the assigned commitments. The problem is grossly magnified in a country trying to secure the world's largest ocean perimeter. To overcome this hurdle Captain (Navy) Peter Avis convincingly advocates that four ordering principles are required as a start point in developing maritime security. Avis' ordering principles for maritime security strategy described in Table 3 are the determination of: time, severity, complexity and attachability.

Table 3 – Ordering Principles of Maritime Security Strategy

Ordering Principle	Terrorist Advantage
Time	Terrorists operate on a short time line exploiting windows of opportunity. The timeline is designed for immediate impact and allows for great flexibility and surprise. Flexibility is inherent in the ability to adjust the timeline to meet the target when it presents itself and surprise is the advantage of asymmetric attacks.
Severity	Is dictated by the objective and aims to be achieved, emphasizing that the objective always includes global media attention. The desired end state is usually loss of life and spectacular destruction.
Complexity	The terrorist threat has created great complexities in the maritime security domain. Harmonizing various levels of governments and agencies to synchronize efforts is a complex and challenging problem.
Attachability	Terrorists have the ability to blend into the community. Globalization allows him or her to meld into any community they desire to melt into free to go about preparations for the next operation. Benign everyday practices are found in the shipping industry that is relatively easy for terrorists to exploit.

Source: Avis and Grant, “Canadian Maritime Security and the Culture of Prevention,” 55-64.

Securing such a vast ocean perimeter and extensive internal waterway system in a resource constrained environment necessitates prioritization and innovative ideas like those identified by experts such as Captain Avis.⁸⁷ The modern maritime security

⁸⁷ Captain (N) Peter Avis is a Naval Officer in the Canadian Forces. He is a graduate of the Norman Patterson School of International Affairs, Carleton University, Ottawa and has served as Director, Maritime Policy, Operations and Readiness. Captain (N) Avis has written a number

environment demands adoptive strategic integration, inter-departmental structures and established hierarchies in order that the nation is postured to prevent or deter an attack, defend Canadian waterways and ports and respond to an assault should the need arise. Upgrading Canada's maritime security requires a sound strategy and implementation process that accounts for the magnitude of what needs to be achieved and the limited wherewithal available to achieve it with.

Port Security Measures and Maritime Security Planning

Threats to ports and the maritime domain are derived from three sources; the sea, shore, or air. Threats from the sea can come from the ship itself, the cargo the ship is carrying or the crew. Land threats or shore-based threats for the most part originate from the general public, passengers, dockworkers, equipment and cargo. From the air the threat can come from many sources, small aircraft, unmanned aerial vehicles, balloons, etc.⁸⁸

Therefore Maritime security strategy to be successful should be implemented as a comprehensive process reaching from the point of origin to arrival in a Canadian port.⁸⁹ Securing the ports and the maritime domain is a matter of keeping the threat out of territorial sea-lanes and identifying and detecting risk before it arrives in Canadian waters

of articles on the subject of maritime security and testified before the Standing Senate Committee on National Security and Defence concerning maritime security.

⁸⁸ CFN Consultants, *Port Security Requirements: Industrial Opportunities for Small and Medium Enterprises*.

⁸⁹ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64..

and subsequently reaches a Canadian port. This “defence in depth” or layered approach includes securing domestic ports, monitoring coastal waters and ocean approaches and coordinating activities with ports of origin.⁹⁰ Two of the key aspects to achieving port security are a reliable intelligence network and the ability to gather and fuse data by providing surveillance as far out from the domestic port as possible.⁹¹ Monitoring the vast security zones that require awareness in order to secure our ports, coastal waterways, and arctic region requires a coordinated, integrated and co-operative approach to ensure early detection and the best use of available resources. To fully secure our ports and maritime gateways includes tracking movement on three oceans, through the Great Lakes and the St Lawrence Seaway. Accomplishing this within available resources necessitates an innovative intelligence gathering and surveillance process be adopted.

Despite the magnitude of the challenge there exists a pressing requirement to provide a common, recognized picture of the maritime domain. A wide array of sensors and information gathering tools can and are being employed and/or developed to improve the recognized maritime picture.⁹² Through the effective sharing of information it is possible to provide the necessary safeguards and preventive measures to control unwanted access to our waterways. Achieving a national recognized maritime picture however, requires a collaborative, overlapping layered approach to surveillance and the

⁹⁰ CFN Consultants, *Port Security Requirements: Industrial Opportunities for Small and Medium Enterprises*.

⁹¹ CFN Consultants, *Port Security Requirements: Industrial Opportunities for Small and Medium Enterprises*.

⁹² Examples of surveillance and tracking assets in use include Automated Information System (AIS), High Frequency Surface Wave Radar (HFSWR), Maritime Air Patrol (MAP) and line of sight surveillance such as cameras. Future options available include unmanned aerial vehicles (UAV) and unmanned underwater vehicles and surveillance robots.

sharing of data. A defence in depth maritime security plan is best represented as a series of concentric circles expanding outward as shown in Figure 2.⁹³ The concentric circles or layered approach is heavily reliant on information technology through surveillance of territorial waters and collaboration with foreign ports. The intent of this approach is to defend in depth using all available information to identify and mitigate threats before they arrive at a Canadian port.



Figure 2 - Layered Approach to Maritime Security

Certainly this plan represents a solid platform from which to base prevention and deterrence. Each circle has within it an associated security activity: safeguarding, reaction, domain awareness and collaboration. Safeguarding activities include personnel screening, container screening and physical security around the perimeter of the port. In the Coastal seaway and domain awareness bands; surveillance takes place utilizing

⁹³ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64.

aircraft, vessels, radar and satellite technology. The final band concentrates on information available from foreign ports concerning cargo shipments and vessels destined for points in Canada.⁹⁴ Vessel reporting times for example have been pushed from 24 hours to 96 hours for vessels entering international waters. 96 hours notice equates to approximately 1000 nautical miles which increases the time available to research foreign vessel and NVOCC ownership.

The primary function of a security plan in the modern environment is to hedge against surprise. The globalized asymmetric threat has made it increasingly difficult to anticipate future developments.⁹⁵ Security plans however must mitigate the surprise element and effectiveness can only be measured by the ability to implement and execute the plan in response to a crisis or in crisis prevention. Preparedness in this case is building inter-departmental cohesion and an atmosphere of co-operation facilitating prevention and crisis management. Crisis response requires unity of command to provide for rapid informed decision-making. Unity of command and unmistakably delineated command and control relationships between government departments are still not fully established. “Several government departments have had their mandates adjusted, but for different elements of the problem.”⁹⁶ Unambiguous command and control relationships are required to provide flexibility thereby speeding the decision to action cycle. Immediate decision-making is difficult in an environment where numerous government

⁹⁴ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64

⁹⁵ Hoffman and Tangredi, *Characteristics and Requirements of the Evolving Security Environment*.

⁹⁶ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64.

departments are represented by liaison officers lacking the authority to make a decision on behalf of their respective departments.

The plan of concentric circles as presented here is heavily reliant on gathering information, analyzing and collating that information, and distributing it to the right agencies. Information is best derived from surveillance activities and co-operative information sharing efforts with other maritime nations.⁹⁷ Surveillance tasks are achieved through maritime air patrols, vessels, radar systems and satellite technology to name a few. Unfortunately the availability of these assets are limited and their use is not exceptionally well coordinated, resulting in haphazard measures to fill the voids.

Currently, maritime security strategy lacks a unified unambiguous command and control structure capable of analyzing and fully sharing information, identifying and targeting high risk containers and vessels, and the ability to effectively prevent an attack. Technology enablers are readily available to assist with securing the maritime domain and are being employed and improved upon. But, to be effective these sensors cannot be developed and operate in isolation. Their employment has to be integrated and the information shared by all agencies with a responsibility for securing the maritime domain.

The expansion of transnational crime and the evolution of the asymmetric terrorist threat have changed the battle space in the maritime domain from relative predictability and certainty to one defined by uncertainty and unknown parameters. Organized crime groups and terrorist organizations have vastly different aims and pose very dissimilar threats to port security. The intricacies and differences of which need to be understood

⁹⁷ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64.

and countered by disrupting their activities and timelines. Managing the new battle space requires a culture of prevention vice a culture of reaction.⁹⁸

Disrupting timelines implies early detection and the ability to pre-empt an attack by taking advantage of superior information technology capabilities to gather, fuse and disseminate data. Access to advanced surveillance assets and technologies can be used to our advantage to thwart crime or a terrorist attack by locating and identifying the perpetrators and denying them access to their intended target. Port security strategy should be linked to an overall layered maritime security policy that is coordinating efforts across departments and agencies that will foster an attitude of cooperation. Interdepartmental resource coordination and information sharing will allow for a “defence in depth” to protect our ports and territorial waters.

⁹⁸ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64.

CHAPTER 3 – CANADIAN MARITIME SECURITY STRATEGY

International Maritime Security Requirements and Bilateral Agreements

“Once the extreme is no longer feared or aimed at, it becomes a matter of judgment what degree of effort should be made; and this can only be based on the phenomena of the real world...”

---- Carl Von Clausewitz----

There are two powerful external forces influencing Canadian maritime security strategy and port security. The first being the International Ship and Port Facilities (ISPS) Code and the second is Canadian reliance on trade relations with the U.S. Playing an active role in ISPS Code implementation and development and reliant on the sea for economic benefit Canada willingly complies with the ISPS Code. In the U.S. a prevailing sentiment demands assurances that their borders will not be breached by a “bomb in a box” or high risk cargo originating from a Canadian port. Consequently policy makers have very few alternatives but to comply with U.S. pressures to secure hub ports and related transportation networks by participating in joint inter-agency bilateral agreements.⁹⁹

The foundation of Canadian maritime security strategy is the International Ship and Port Facilities Code (ISPS), administered by Transport Canada under the auspices of Maritime Transportation Security Regulations, in the Marine Transportation Security

⁹⁹ The Canadian Navy and the New Security Agenda, *Proceedings of the Maritime Security and Defence Seminar...*, 120.

Act.¹⁰⁰ Following a week-long Diplomatic Conference held at the London headquarters of the International Maritime Organization (IMO) from December 9-13, 2002, a number of amendments to the 1974 Safety of Life at Sea Convention (SOLAS) were adopted.¹⁰¹ The most far-reaching of these amendments is the ISPS Code. The ISPS Code which went into effect on July 1, 2004 is a relatively new, comprehensive security regime that seeks to establish an international framework of co-operation between governments, government agencies and the shipping and port industries in order to detect and take preventive measures against security incidents affecting ships or the port facilities essential to maintaining international trade.¹⁰²

Consisting of two parts: Part A of the code demands mandatory compliance for the 148 contracting parties and part B provides guidance on implementing the mandatory measures for the safety and security of ships and port facilities outlined in Part A. The ISPS Code further provides for three security levels for ships and port facilities. Level 1 is normal, maintaining the minimum security measures to ensure safe operations, Level 2 is heightened, and is maintained for the period of time that a heightened security risk exists and Level 3 is categorized as exceptional, and is maintained for the duration of time required to meet or respond to an imminent threat.¹⁰³ The regulation also requires port facility security assessments be carried out, port facility plans be developed and

¹⁰⁰ CFN Consultants, *Port Security Requirements: Industrial Opportunities for Small and Medium Enterprises*.

¹⁰¹ The International Convention for the Safety of Life at Sea (SOLAS) is the most important treaty related to maritime safety and commercial vessels. SOLAS dates back to 1914 following the sinking of the Titanic.

¹⁰² Transport Canada, "Transport Canada's Commitment to Maritime Security," http://www.tc.gc.ca/marine_security/regulatory/isps/edu.htm ; Internet; accessed 7 March 2007.

¹⁰³ International Maritime Organization, "ISPS Code," http://www.imo.org/Newsroom/mainframe.asp?topic_id=897; Internet, accessed 21 March 2007.

adequate security measures and procedures be implemented in port facilities and waterways.¹⁰⁴ As of 1 July 2006 the ISPS Code further requires ships greater than 300 gross tons operating in international waters to be fitted with a security alert system known as the Automated Information System (AIS).¹⁰⁵

The ISPS Code is a mandatory requirement intended to provide a common maritime security standard for governments, ports, shipping companies and terminal operators to follow. The stated objectives of the ISPS Code are:

- a. To detect security threats and implement security measures.
- b. Establish roles and responsibilities concerning maritime security for governments, local administrations shipping and port industries.
- c. Collect and promulgate security related information.
- d. Provide a methodology for security assessments.¹⁰⁶

The International Maritime Organization (IMO) does not administer compliance with the ISPS Code; it is in fact enforced independently by each signatory to the 1974 SOLAS Convention and is therefore essentially a self-governed convention. In effect national interests will define maritime security requirements, potential risks and vulnerabilities and how each are nationally reconciled. There is no common standard to be achieved and there are no punitive measures or penalties administered for non-

¹⁰⁴ International Maritime Organization, "ISPS Code," http://www.imo.org/Newsroom/mainframe.asp?topic_id=897; Internet, accessed 21 March 2007.

¹⁰⁵ The AIS is a vessel identification system integrating a VHF transponder with a Global Positioning System (GPS). Ships and vessel traffic for identification of vessels initially employed the system at sea and as a collision avoidance mechanism. Approximately 40,000 ships are now operating with AIS.

¹⁰⁶ Transport Canada, *Transport Canada's Commitment to Maritime Security*.

compliance; therefore it is difficult to convincingly argue the ISPS code provides a comprehensive and effective security net to counter transnational crime and terrorism.¹⁰⁷

Canada's commitment to the ISPS Code compliance was ratified in May 2004 just prior to its implementation by Transport Canada in July 2004. Although the ISPS Code provides a good starting point for providing international maritime security, it does not guarantee the security of Canada or the security of North America. In order to improve the safety and security of North America and better defend the vast perimeter while recognizing the need for the continued free flow of containerized goods, a series of agreements directly related to securing the maritime trade that moves between Canada and the U.S. have been implemented.

In the U.S. the Department of Homeland Security approach is somewhat one of "Fortress America." All of North America must be secure if people anywhere in North America are to feel safe and secure. Hence, securing the perimeter of Canada is important both for national security interests and for economic interests. The economic well being of our ports depends on our ability to transship to the U.S. In order for Canada to retain its economic stature, the uninterrupted movement of goods across the Canada-U.S border must carry on. It is therefore essential to act with due diligence in providing visible progress toward upgrading port security measures and actively participating in bilateral security measures with U.S. homeland security agencies.¹⁰⁸

The Container Security Initiative (CSI) established in 2002 is an American program, led by the Bureau of Customs and Border Protection. The program was

¹⁰⁷ International Maritime Organization, *ISPS Code*.

¹⁰⁸ CFN Consultants, *Port Security Requirements*.

developed to increase security related to container cargo being shipped into the U.S. The aim of the CSI is to gain a time and space advantage by pushing any possible threat posed by a sea container away from American waters and ports by placing customs officials in foreign ports to inspect cargo and identify high-risk vessels and containers before they arrive in U.S. territorial waters. Under the CSI agreement the U.S Customs and Border protection agency employs agents in Halifax, Montreal and Vancouver while the Canada Border Services Agency (CBSA) reciprocates with customs agents in the U.S. ports of Seattle, Washington and Port Elizabeth, New Jersey administered by the New York/New Jersey Port Authority.¹⁰⁹ The location of the customs agents in Seattle and Port Elizabeth raises an interesting question as to why CBSA is employing agents in only two U.S. ports when just 20% our trade with the U.S moves over sea-lanes while 97% of our non-U.S. foreign trade is sea-borne. The majority of the non-U.S. trading can be narrowed down to 35 ports in North Europe and Asia respectively trading with Halifax, Montreal and Vancouver.¹¹⁰

Linked to the CSI is the Free and Secure Trade (FAST) program a joint initiative involving the CBSA and the U.S. Customs and Border Protection (CBP). The program is intended to move goods across the border quickly by verifying trade compliance before it reaches the border. Speed and efficiency of clearance does not necessarily increase risk,

¹⁰⁹ There are four key elements to the CSI, using intelligence and automated data to identify containers that pose a risk for terrorism, pre-screening those containers at the foreign port of departure, using advance technology (x-ray and gamma ray) to pre-screen targeted containers and improving container seals.

¹¹⁰ The Canadian Navy and the New Security Agenda, *Proceedings of the Maritime Security and Defence Seminar...*, 69.

quite the opposite. FAST utilizing the standards applied in C-TPAT should allow for greater certainty of the security of cargo being transhipped.¹¹¹

Assisting in the bilateral trade process and the efficient movement of cargo the RCMP contributes to maritime and border security enforcement with their Integrated Border Enforcement Teams (IBETs) working in co-operation with Canadian and American partners at all points of entry into Canada. On December 21, 2001 Canada and the U.S. signed the Smart Border Declaration, expanding the IBETs along the Canada-U.S. border.¹¹² The IBET is an inter-agency, multi-dimensional law enforcement initiative comprised of both Canadian and American partners designed to target cross border threats and criminal activity. This bilateral partnership enables the five core law enforcement partners involved in IBETS to share information and work together daily with other local, state and provincial enforcement agencies on issues relating to national security, organized crime and other criminal activity transiting Canada-U.S. borders.¹¹³ The IBET mandate is to enhance border integrity and security at Canada-U.S. borders by identifying, investigating and interdicting individuals, organized crime and transnational crime that poses a threat to national security interests through their activities. More specifically, IBET is an intelligence-led co-operative effort supporting national security investigations linked to the Canada-U.S. border and investigates cross-border illegal

¹¹¹ C-TPAT – Customs - Trade Partnership Against Terrorism is a voluntary supply chain security process developed by the U.S. CBP bent on improving commercial supply chain security.

¹¹² Expanding on a 1996 cross border, land and maritime agreement to address crossings between B.C and Washington, the Smart Border Declaration is a cooperative cross border effort between Canada and the U.S. to ensure: the secure movement of people, the secure flow of goods, investing in security improvements to air, sea, rail and gateway infrastructure, and collaborating on intelligence gathering and information sharing efforts.

¹¹³ The Core IBETs agencies are: The RCMP, Canada Customs and Border Services Agency, U.S. Customs and Border Protection, U.S. Bureau of Immigration and Customs Enforcement and the U.S. Coast Guard.

activities, between the ports and points of entry. IBET is a cooperative bilateral initiative by which intelligence is developed and shared with IBET partners in accordance with applicable laws, regulations and Agency/Departmental policies through appropriate protocols.¹¹⁴

At first glance one could assume the maritime security initiatives and bilateral agreements that Canada is now participating in are linked to a coherent maritime security policy. This is not necessarily a valid assumption. In the maritime security domain the centre of gravity for Canadian politicians is maintaining fast efficient movement of cargo from the primary Canadian hub ports into the U.S. To that end the maritime security initiatives that Canada is partaking in are not linked to maritime security policy or a national security strategy as much as they are tied to U.S. demands that Canada participate in their initiatives such as CSI and IBET which place American customs and law enforcement agents in Canadian ports and along the borders. Participation in these bilateral agreements and U.S. led initiatives keeps the borders open to the movement of trade and people. These maritime security initiatives are doing very little to secure Canadian ports and maritime gateways as the primary objective of these U.S. initiatives is to ensure the integrity of cargo and secure the transportation networks leading from Canada into the U.S.

¹¹⁴ RCMP, Marine and Ports Branch, http://www.rcmp-grc.gc.ca/security/ibets_e.htm; Internet, accessed 25 March 2007.

The Evolution of Canadian Maritime Security

The *Canada Marine Act* of 1998 awarded responsibility for port management and port security to local and regional authorities. The security at each port became a matter of negotiation between the assorted parties with a stake in port operations. As a result there are variances in how security is conducted at each of the major ports and within each of the marine terminal facilities managed by a specific Port Authority. By way of example the Vancouver Port Authority has security plans for 28 marine terminal facilities while the Halifax Port Authority is accountable for 14 marine terminal facilities.¹¹⁵ Land based activities around the ports; security, criminal activity and law enforcement is conducted by local agreement with municipal police agencies. Assistance with investigations is provided by the RCMP, monitoring compliance with the ISPS Code is the responsibility of Transport Canada, while security plan development and implementation procedures are left to the respective Port Authorities, and finally cargo screening and clearance as well as support to citizenship and immigration services are provided by the CBSA.

The de-centralized ad-hoc approach to maritime security, acceptable prior to the attack on the World Trade Centre, instantly became an unacceptable strategy to securing Canadian ports. The threat to national security, Canadian economic and social interests was all too readily apparent following those tragic events. Immediately following

¹¹⁵ CFN Consultants, *Port Security Requirements*.

September 11th 2001 maritime security measures began evolving toward a more centralized and integrated multi-agency process. In October 2001, responding to the immediate maritime security concerns, Transport Canada established the Interdepartmental Marine Security Working Group (IMSWG) and were provided with \$60 million to fund essential maritime security initiatives.¹¹⁶

The IMSWG remains in place as Transport Canada's primary instrument for coordinating marine security requirements. The working group is chaired by Transport Canada and is attended by no less than 17 federal departments and agencies holding a stake in marine security.¹¹⁷ The intended role of the IMSWG is to co-ordinate national responses to maritime security, analyze the maritime security system for gaps and vulnerabilities and develop mitigation strategies to address the shortfalls in security.¹¹⁸ Within the IMSWG remain a number of unresolved legislative, regulatory and jurisdictional issues handicapping the ability to share information and synchronize security efforts.¹¹⁹ As Senator Kenney's Standing Committee on National Security and Defence notes:

...IMSWG resembles the use of volunteer fire brigades. Volunteer fire brigades are made up of people who generally have other priorities in their lives- people who may or may not be available when the alarm goes off.¹²⁰

¹¹⁶ CFN Consultants, *Port Security Requirements*.

¹¹⁷ *Ibid.*

¹¹⁸ Transport Canada, *Transport Canada's Commitment to Maritime Security*.

¹¹⁹ Within the IMSWG a number of legal hurdles remain to ensure that departments and agencies are able to share and access information. At issue are security classifications and the different procedures and protocols for sharing classified information between departments and agencies. Each government department is operating under a separate mandate, regulatory framework and different legislative body.

¹²⁰ House of Commons, Standing Senate Committee on National Security and Defence, *Canada's Coastlines: The Longest Under-Defended Borders*.

At about the same time the IMSWG was established the Cabinet Committee on Public Security and Anti-terrorism (PSAT) was formed to review terrorist threats. As events unfolded PSAT would turn out to be the precursor to Public Safety and Emergency Preparedness Canada (PSEPC) established in December 2003, which has since become Public Safety Canada (PSC). The Public Safety department was formed to integrate national security activities including maritime security into a single organization. In Creating PSEPC the government envisioned the integration into a single organization the primary activities necessary to secure the safety of Canadians, to respond to national disasters, as well as national security emergencies.¹²¹ Responsibilities as they relate to maritime security include national security, emergency preparedness and crisis management, policing and border functions.¹²² It remains unclear in the evolution of the department and the development of national security requirements as to how it fits in with the other government departments responsible for maritime security. PSC is mandated to provide national security through a number of agencies that fall under their umbrella. Affiliated agencies contributing to maritime and port security include the RCMP, Canadian Security and Intelligence Services (CSIS) and CBSA.¹²³ Despite the creation of PSEPC/PSC, Transport Canada remains responsible to chair the IMSWG and for adherence to the ISPS Code.

¹²¹ CFN Consulting, *Port Security Requirements*....

¹²² Public Safety and Emergency Preparedness Canada, <http://publicsafety.gc.ca/index-en.asp>; Internet, accessed 24 March 2007.

¹²³ Under the Conservative government the name of the department changed from PSEPC to Public Safety Canada. Although the name changed the role and mandate remains the same.

Without direct control of vessels or a direct command relationship with agencies that do, Transport Canada cannot perform the water front tasks related to maritime security. Waterfront security requires the assistance of the Department of National Defence (DND) the Department of Fisheries and Oceans (DFO) and the RCMP. With at least four departments and other federal agencies involved in securing the maritime domain, the unanswered questions are two-fold. What department is the office of primary interest in the maritime security domain and which department is first among equals in assigning resources and harmonizing port security efforts?

In January 2003 the government of Canada allocated \$172.5 million over five years to enhance maritime security.¹²⁴ The funding was broadly earmarked to safeguard and protect maritime infrastructure, provide surveillance of Canadian waters and improve emergency response. The \$172.5 million was necessary to ensure Canadian ports would be ISPS Code compliant by the July 2004 deadline and therefore the funding was allocated primarily to surveillance and tracking, passenger screening (cruise ships and ferries), detection and radiation screening, RCMP Emergency Response Teams, RCMP investigators, restricted area worker screening and background checks.¹²⁵ Over and above the initial allocation of monies to meet ISPS Code regulations, PSEPC was provided with an additional \$690 million in April 2004. \$308 million of this money was directly apportioned to maritime security, \$165 million was allocated to the development of Maritime Operations Centres (MSOC)¹²⁶ in Halifax and Vancouver, \$38 million was

¹²⁴ Transport Canada, *Transport Canada's Commitment to Maritime Security*.

¹²⁵ Transport Canada, *Transport Canada's Commitment to Maritime Security*.

¹²⁶ MSOCs were recommended in 2003 to eliminate the duplication of effort between DND and the RCMP to building a recognized maritime picture. DND led, the primary purpose of the MSOC is to produce actionable intelligence concerning threats to national security originating

identified to build communications networks between the Navy, CCG and RCMP vessels and the remainder was set aside for port security enhancement.¹²⁷

At first glance there appears to be recognition of the port security shortfalls and a great deal of funding allocated toward improving port security. A careful analysis of the funding and how it has been utilized leads to a pattern of stopgap measures being employed.¹²⁸ Money is being allocated to individual ports and port authorities through an application process. Perimeter Fencing and surveillance cameras have been upgraded and installed all over the country. The funding however is not tied to a coherent national maritime security strategy and does not address resource requirements for the RCMP, CBSA the Navy or the CCG to perform their assigned maritime security tasks. Simply allocating funding not tied to strategy also fails to address or solve the lack of security in the St Lawrence Seaway or along the great lakes.

The maritime security strategy as it now exists lacks a centralized command and control structure capable of reacting to crisis, leading a response or bringing important issues to cabinet. It remains stove piped and compartmentalized and operates in a very haphazard manner.¹²⁹ The answer to bringing departments together and coordinating maritime security efforts to close the security gaps has been the IMSWG. Unfortunately the IMSWG does not operate at a terribly high bureaucratic level and lacks the power to implement and synchronize maritime security efforts and does not have the teeth to push

from transnational crime and to immediately promulgate the information to an agency of interest. Halifax and Vancouver both have interim operational capability of their respective MSOC and are projected to be fully operational by 2010.

¹²⁷ CFN Consulting, *Port Security Requirements*.

¹²⁸ Avis and Grant, *Canadian Maritime Security and the Culture of Prevention...*, 55-64.

¹²⁹ House of Commons, *Canada's Coastlines: The Longest Under-Defended Borders*.

issues to cabinet.¹³⁰ Thus the maritime security gaps exploitable between the stovepipes persist.

Roles of Government Departments and Agencies in Maritime Security

No single department or agency within Canada possesses the corporate knowledge or expertise to independently provide adequate security to Canadian ports and close the existing security gaps in the maritime domain. Each department or agency brings an area of expertise and capability necessary to securing Canadian ports and maritime gateways.¹³¹ To be effective the security efforts being provided by each of the departments must be synchronized in order to close the security gaps and reduce existing vulnerabilities.

To the extent that there is a structured maritime security plan in place in Canada, there is not a discernable or clearly identifiable lead agency responsible for further developing a national maritime security strategy and coordinating its implementation. The government departments playing a key role in maritime security include Public Safety Canada, Transport Canada, The Department of National Defence (DND), Department of Fisheries and Oceans (DFO) and the Canadian Coast Guard (as an agency within DFO), CBSA and the RCMP. There is some interoperability between agencies and departments but, for the most part each of these agencies are operating in parallel, with their efforts toward maritime security unavoidably stove piped to meet their

¹³⁰ House of Commons, *Canada's Coastlines: The Longest Under-Defended Borders*.

¹³¹ The Canadian Navy and the New Security Agenda..., 8.

respective assigned mandates and tasks. This section will outline the roles and responsibilities for security of the various government departments and agencies in the maritime domain, less Public Safety Canada, whose role was presented in the previous section.

Beyond enforcing the ISPS Code and chairing the IMSWG, Transport Canada has the lead role in coordinating departments and seeking approval for the expenditure of funds allocated to maritime security. Transport Canada also processes vessel arrival notices, (the 96-hour notifications of foreign vessel arrival) and they maintain a liaison relationship with their U.S. counterparts. The Department of Transport does not however possess a maritime capability, playing a very limited operational role in maritime security and in fact does not have maritime operations as one of its primary responsibilities.¹³²

The Canadian Forces, principally the Navy and the Air Force play an active part in maritime security, the CF mission being to defend Canada and contribute to international peace and security. The functions foremost to the CF are protecting Canada and Canadians, defending North America in co-operation with the U.S Department of Defence (DOD) and contributing to international peace and security. The Navy operates in a constabulary role only when tasked to do so. The RCMP, DFO or the CBSA for the most part carries out the constabulary or policing role. Chiefly a blue water fleet it is not a simple task for the Navy to adopt a constabulary role.¹³³ Their vessels are too big, too slow and too expensive to efficiently defend Canada's littoral waters in an interdiction

¹³² CFN Consultants, *Port Security Requirements*.

¹³³ CBSA performs the on land inspections and will inspect cargo aboard ships but required armed assistance when boarding and inspecting cargo aboard vessels.

role.¹³⁴ It would be a mistake to assume a ship and its crew of sailors can simply perform the dual functions of Naval war-fighting and policing. Training for Naval warfare operations is substantially different than training for law enforcement and policing. Sailors less military policemen/women are not trained for domestic law enforcement.

The Canadian Forces sees its contribution to domestic maritime security as one of surveillance vice interdiction.¹³⁵ There is nevertheless a propensity for the military in this case the Navy to volunteer or be volunteered for the lead role and train itself to provide domestic maritime security which implies the availability of dedicated personnel and equipment to meet constabulary or policing demands.¹³⁶ Should the Navy be volunteered for the maritime policing role there is a risk of diminishing operational capacity and capability to meet blue water commitments.

Up to this point the CF has been tasked with the lead on developing the two MSOCs on both the Atlantic and Pacific coasts as well as the operating and surveillance systems required to provide a recognized maritime picture and timely data fusion. Data fusion in the MSOC will be achieved through the use of the Marine Information

¹³⁴ House of Commons, *Canada's Coastlines: The Longest Under-Defended Borders*.

¹³⁵ Surveillance according to the Canadian Navy definition is the systematic surveillance of aerospace, subsurface areas, places persons or things, by visual, aural, electronic, photographic or other means in order to build up and maintain a comprehensive picture....

¹³⁶ Morse, *Are We Prepared? Personnel, Procurement and Industry Perspectives*.

management and Data Exchange (MIMDEX)¹³⁷ system and coastal surveillance will be enhanced through the use of High Frequency Surface Wave Radar (HFWSR).¹³⁸

The Department of Fisheries and Oceans is responsible for economic, environmental, ecological and scientific advances on the Oceans and inland waterways. DFO is also responsible for improving safety and reducing the severity of incidents such as collisions and groundings. Primarily the Canadian Coast Guard as a special agency of DFO performs these functions.¹³⁹ But the Departmental link and command and control of the Coast Guard is not a simple direct relationship between the Coast Guard and DFO. Maritime security procedures depend on the Canadian Coast Guard to satisfy and maintain regulatory requirements for both Transport Canada and the DFO.

Regional Maritime Information Centres (RMICs) manned and operated by the Coast Guard provide marine communication and vessel traffic services and long-range vessel tracking through the Automated Information System (AIS). In this role the Coast Guard are assisting Transport Canada to collect and promulgate the vessel information mandated under the ISPS Code. The Coast Guard as an agency of DFO provides aerial surveillance of coastal waters and fisheries, monitors fishing and environmental violations, monitors for pollution, provides a search and rescue capability, performs

¹³⁷ MIMDEX is an upgrade to the CANMARNET system. CANMARNET is an unclassified, DND managed web site where unclassified vessel information is posted from a recent point in time. MIMDEX will provide an automated, near real time recognized maritime picture to agencies such as the RCMP, CCG, CBSA and DFO. The system is expected to be fully operational in 2008.

¹³⁸ HFWSR is a Canadian innovation that has the potential to provide greater surveillance capability. It can detect low flying aircraft and targets out to approximately 200 nautical miles. Unaffected by weather, HFWSR allows for the continuous tracking of vessels in Canadian waters.

¹³⁹ CFN Consulting, *Port Security Requirements*....

northern ice breaking, charts navigable waters, confirms vessel safety and acts as the first responder to maritime disasters.

Security is a secondary duty to the Coast Guard and like the Navy they are not well suited for the maritime interdiction role. Navy vessels are armed and the U.S Coast Guard arms its vessels and personnel, the Canadian Coast Guard does not. Neither, Coast Guard vessels or personnel are armed, nor are the crews trained in police tactics, hence the Coast Guard is ill prepared to carry out a maritime constabulary role.¹⁴⁰ Similar to the Navy the Coast Guard fleet is not very compatible to the interdiction role. Being unarmed is one factor; the state of the fleet poses a second challenge. The Coast Guard fleet with 50 % of its 107 vessels beyond their half-life is in a poor state of repair and their vessels as well are too slow and under equipped to meet the capabilities required to play a relevant interdiction role. It is estimated that the Coast Guard requires \$350 million to bring them up to strength to perform their current roles.¹⁴¹ Security analysts agree the Coast Guard with their familiarity of Canadian coastal waters is the organization best suited to defend the littoral waters.¹⁴² For the Coast Guard to carry out the interdiction role would require the procurement of vessels with the capability of traveling 20-25 knots, operating in high sea states, staying out for extended periods and carry a maritime helicopter.¹⁴³

Tasked to support other government departments and agencies in maintaining border integrity the RCMP, in co-operation with other policing agencies, including

¹⁴⁰ House of Commons, *Canada's Coastlines: The Longest Under-Defended Borders*.

¹⁴¹ *Ibid.*

¹⁴² *Ibid.*

¹⁴³ *Ibid.*

international police forces, assist in securing North America. This indirect support to maritime security is accomplished by covering gaps between the official border crossing points manned by CBSA. Direct support to maritime security by the RCMP is provided by National Port Enforcement Teams. The RCMP employs just 24 full time officers operating in three teams of eight, one team each policing the ports of Halifax, Vancouver and Montreal.¹⁴⁴ On the Great Lakes and the St Lawrence Seaway the RCMP and Coast Guard are providing an interim integrated solution to provide patrolling and an armed response capability on the Great Lakes/St Lawrence system. In general the great lakes are undefended and insecure. The largest police force operating on the Great Lakes is the Metropolitan Toronto police force that operates mostly in the summer months, providing boater safety.

Shortfalls and Gaps in Port Security

Gaps and vulnerabilities exist in Canadian Ports, Canadian Littorals and in foreign ports where inbound ships, containers and cargo such as Liquefied Natural Gas (LNG) each represent a potential medium of risk to Canadian Ports. The layered approach presented in Chapter 2 provides a useful model for examining where the shortfalls and gaps in maritime security are most critical. Applying the layered defence in depth methodology will systematically demonstrate where the considerable gaps and shortfalls exist within current maritime security strategy.

¹⁴⁴ House of Commons, *An Update of Security Problems in Search of Solutions: Seaports*.

The three economically critical Canadian hub ports are staffed by a high percentage of workers with criminal records. 15% of the longshoremen and 36% of the checkers at the Port of Montreal have criminal records and in Halifax a background check of 500 longshoremen showed close to 40% have criminal records.¹⁴⁵ Throughout history seaports have been used by organized crime and drug cartels to principally smuggle drugs, but also weapons and more recently people for employment in the sex trade. Organized crime groups are alive and well and continue to operate in Canadian ports. As recently as January 2007 the RCMP advised the Standing Senate Committee on National Security and Defence that Indo-Canadian, Asian and traditional organized crime groups including the Hell's Angels are active in the Port of Vancouver and the RCMP do not have the resources to effectively manage the problem.¹⁴⁶

The admission by the RCMP that the magnitude of the crime problem in Vancouver is beyond their resources to control leaves one to ponder what else is moving through the ports undetected? Weapons grade plutonium and uranium are also difficult to detect. Port perimeters lack waterside fencing and a waterside police presence while security forces at seaports are understaffed and unprepared to deal with organized crime and terrorism.¹⁴⁷ Former criminals represent a high security risk and represent a target of opportunity for organized crime groups to access port facilities. According to former

¹⁴⁵ House of Commons, *An Update of Security Problems in Search of Solutions: Seaports*.

¹⁴⁶ *Ibid.*

¹⁴⁷ *Ibid.*

RCMP Commissioner Guiliano Zaccardelli referring to organized crime groups, "...They use the ports, they use the workers there or they use the facilities...."¹⁴⁸

Pushing the security analysis out from the ports; the littoral waters and the Great Lakes - St Lawrence Seaway system represent a further area of concern to maritime security strategy. The pertinent questions being: who is providing a policing role within 200 miles of our coasts, what organizations are responsible for security in the St Lawrence Seaway and along the Great Lakes and are the agencies assigned with these tasks fully equipped and properly trained to perform their assigned duties? The shortfalls in equipment and deficiencies in training for the policing role were identified for both the Navy and the Coast Guard. Clearly neither is equipped or fully trained to properly perform the function.

In order to completely protect the littoral waters the ongoing debate as to whether it should be the Navy or the Coast Guard has to be resolved. Determining which organization is best suited to deal with transnational threats is not an easy debate to resolve. If it is to be the Navy there will be an immediate requirement to balance their domestic security tasks against the expectations and requirements to meet their "blue water" commitments that may be acting as a deterrence in the next layer of security. Time and resources would indicate that a balance would have to be struck between training for traditional naval war fighting and performing counter drug and counter terrorist operations. If the Coast Guard were to be given the task a similar balance would have to be struck between the constabulary role and their current roles. Assigning the

¹⁴⁸ House of Commons, *An Update of Security Problems in Search of Solutions: Seaports*.

Coast Guard with the maritime policing role would also require a transition period to allow time for equipping and training for the policing role.

The Great Lakes and St Lawrence Seaway seemingly have been forgotten and are virtually undefended by Canadian security forces. There is no Federal agency or policing agency responsible for presence patrolling on the Great Lakes and St Lawrence Seaway. At the Port of Montreal the most important port along the St Lawrence there is no dedicated police presence.¹⁴⁹ Policing along the Great Lakes is weak and is being left to regional police forces who mostly perform boater safety functions, or to the Americans through the Great Lakes Interdiction project.¹⁵⁰

The next stratum in the security bubble where there are considerable opportunities for criminals and terrorists to exploit security breaches is at foreign ports. Canada has no presence in foreign ports and no intelligence gathering activities focusing on foreign ocean terminal operations. Neither, the Canadian Security and Intelligence Services (CSIS) or CBSA employs agents in foreign ports outside of North America.¹⁵¹ The U.S. approach through the CSI is to place customs agents in foreign ports to identify risks and potential threats before they get to the Continental U.S. by examining and screening cargo in the foreign ports. Canada has not yet adopted this or a similar methodology therefore the majority of cargo is arriving in our territorial waters and ports unchecked. The bulk of Cargo originates from the ports of Antwerp, Hong Kong and Hamburg and

¹⁴⁹ House of Commons, *An Update of Security Problems in Search of Solutions: Seaports*.

¹⁵⁰ *Ibid.*

¹⁵¹ *Ibid.*

relies on past shipping practices from these ports to ensure security, exactly the types of behaviour terrorists exploit.¹⁵²

It is exceedingly difficult to provide good port security in the nations economic hub ports when; there exists an exceptionally large number of personnel with criminal records working in the port facilities, neither the coast guard or the navy have been assigned the lead role in securing the coastal water ways, the RCMP are understaffed with just 24 officers assigned to the three hub ports and not specially trained to police the littorals and no organization has been tasked with responsibility for securing the Great Lakes.

¹⁵² House of Commons, *An Update of Security Problems in Search of Solutions: Seaports*.

Closing the Gaps – A Strategy For Improving Port Security

Vulnerabilities in maritime security persist in the hub ports of Halifax, Montreal and Vancouver, in the littorals and coastal waterways as well as in the Great Lakes and St Lawrence Seaway. Eliminating all areas of vulnerability in maritime security may not be achievable, nevertheless improving on existing port security measures is a necessity and will provide much greater security than what is currently being delivered. The end-state of a national maritime security strategy must be obliged to close existing gaps and eliminate susceptibility to potential attacks or criminal activity that threatens national security or Canadian economic interests.

A number of interim, ad-hoc measures were implemented post September 11th 2001. It is now long past the time to move toward implementing a long-term, nationally coordinated maritime security strategy. Improving port security in this country necessitates a national maritime security strategy directly linked to a national security policy that accounts for the security environment, understands the existing capabilities and limitations of each of the agencies and is looking to the future to determine required capabilities. Understanding the capabilities and limitations of the core agencies providing maritime security will allow planners to develop an integrated sustainable strategy that clearly establishes priorities and delineates tasks and responsibilities. Securing Canadian ports and the maritime transportation systems requires four distinct capabilities. The power to prevent or deter an attack, the means to interdict a planned

attack, the ability to provide immediate response to a successful attack, and the wherewithal to provide long-term assistance and rebuilding efforts.¹⁵³

Before enforcement, intelligence gathering and information sharing efforts can be harmonized; the core federal agencies responsible for maritime security must first be internally integrated.¹⁵⁴ Once this is achieved, federal port security efforts can then be linked into regional and municipal agencies with responsibilities to assist in providing port security. Achieving this is not easy and presents a complex and challenging problem. Overcoming the challenges to integrating the core federal agencies lies in developing a joint integrated multi-agency public (JIMP) culture. The emergence of a JIMP operating atmosphere implies the integration of regional and municipal authorities with federal authorities.

Developing an effective JIMP culture entails a command structure combining each of the core federal, regional and municipal agencies, with a stake in maritime security. This command structure requires an identified lead agency with an appointed commander or chief officer with the authority to make decisions and act on the situation confronting him or her with the information available at the time. Command in this sense means inter-operable communication networks. Each agency must possess the ability to communicate both vertically and horizontally in order for the decision makers to be confident that they are acting on all available information.

Establishing a common recognized maritime picture necessitates the integration of all of the sensors and sense capabilities being employed throughout the maritime

¹⁵³ Brooks and Button, *Maritime Container Security: A Cargo Interest Perspective*.

¹⁵⁴ The efforts of the Navy, CCG, RCMP and potentially CBSA need to be fully integrated in the maritime security domain.

domain. Synchronizing intelligence-gathering efforts requires the information to flow into a centralized collection point where the data can be analyzed, fused and shared between agencies. Figure 3 depicts the integration of surveillance assets and sensors in an integrated port security model.

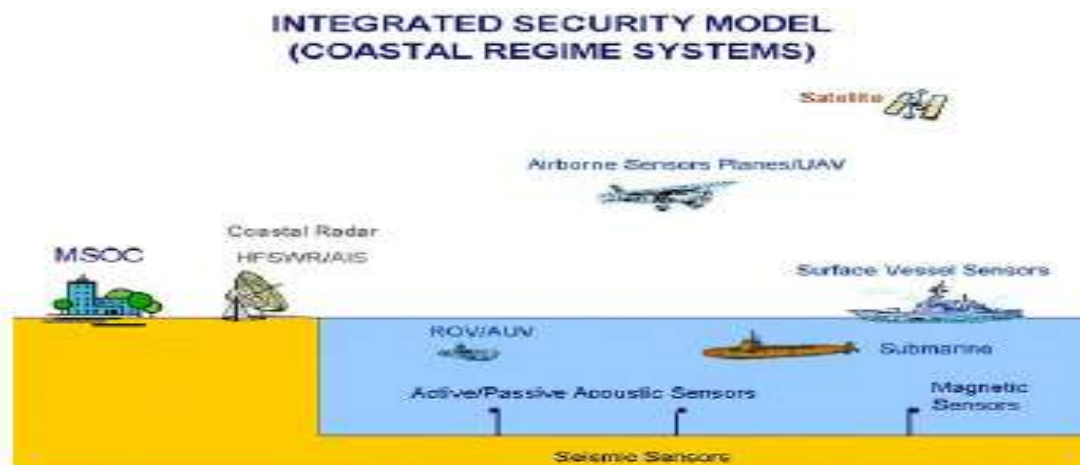


Figure 3 - Integrated Port Security Model

Source: CFN Consulting, *Port Security Requirements*.

The emergence of the Maritime Security Operation Centres (MSOCs) in Halifax and Vancouver are an excellent JIMP model to continue to build upon. The MSOCs are at interim operational capability and are synchronizing maritime security efforts at the regional level with a feed into a national response centre. Inter-operability challenges remain, information systems designed to provide a common recognized maritime picture have not been fully developed and jurisdictional information sharing issues have not been overcome. It is important to note that a similar security operation centre does not exist to deter, detect or respond to a crisis in Montreal or anywhere along the Great Lakes/St Lawrence Seaway system.

An overarching all encompassing National Maritime Security strategy that links the implementation process back to strategy is required to ensure that security efforts are synchronized and integrated to close the security gaps. There is no doubt layering security from 35 commonly used ports of origin to the three prominent destination ports in Canada and coordinating the efforts of multiple layers of government is an intricate problem. A predicament that also requires consideration be given to potential air, sub surface and surface threats. Despite the significant challenges Canada cannot afford to fail at port security and securing the gateways that lead into U.S. cities as well as Canadian metropolitan areas. Harmonizing efforts and fully integrating capabilities requires a national maritime security strategy directly linked to national security policy objectives.

CONCLUSION

Canada by definition is a sea power in a world economy that relies on the sea as the great global common to provide a series of shipping lanes that rapidly connects international markets through hub ports and intricate transportation networks representing the gateways to international trade. An efficient and profitable Canadian economy relies on the world's oceans to shorten distances, save time and join business interests that span the entire globe. In this regard Canada is heavily reliant on the sea to unite the country with its global trading partners. 97% of non-U.S. trade moves over transoceanic routes to the global market place. This represents the equivalent of 4 million 20 ft container units or more than 300 million tons of cargo moving primarily through the three principal Canadian hub ports of Halifax, Montreal and Vancouver and this figure is expected to double again by 2015.¹⁵⁵

The global economy continues to grow and quickly expand due to Malcolm McLean's impatience with the inefficiencies of bulk shipping and his vision which led to the emergence of the sea-container and the worldwide growth of the intermodal transportation system as a highly efficient and cost effective means to transport cargo throughout the world. While intermodal transportation provides the means to support an expanding global economy, if not rigorously secured and protected, it also provides a conduit for the expansion of transnational crime. Terrorists, drug cartels and other organized crime groups look for opportunities to exploit gaps and breach security measures. The advantages of fast efficient transportation provided by transoceanic

¹⁵⁵ *The Canadian Navy and the New Security Agenda: Proceeding of the Maritime Security and Defence Seminar...*, 69.

shipping are just as readily available to transnational criminals as they are to legitimate business interests. The efficiency of the shipping industry provides terrorists and criminal organizations with the ability to move illicit cargo freely throughout the world and offers them targets of opportunity for a devastating attack. Al-Qaeda and other organizations have experienced some successes in breaching maritime approaches and will likely continue their efforts to exploit gaps in national security measures including those found at the principal economic seaports.

When the U.S. was attacked for the first time since Pearl Harbour on September 11th 2001, it became abundantly clear that terrorists will exploit security gaps and take advantage of an opportunity to inflict mass casualties, destroy infrastructure and generally attempt to shock nations or the world to further their cause. Yet, prior to September 11th 2001 terrorist organizations including Al Qaeda had confirmed their will to use the sea to advance their aims. The suspected Al Qaeda attack on the U.S.S. Cole while it was refueling in the Yemeni Port of Aden occurred in 2000 and post 9/11 a similar sea-borne attack was also initiated in the Yemeni region using a small vessel packed with explosives. This assault occurred on the French Oil Tanker Limberg, which was carrying 56,000 tons of crude oil. The well established intent to use the sea as a medium to further their aims should awaken security planners to the requirement to advance more deliberately toward securing the economically vital Canadian hub ports and maritime gateways.

The terrorist attacks of September 11th 2001 also awoke Canadians and the Canadian administration to the requirement to review national security strategy and policies and to take strides toward improving Canadian maritime security posture.

However, since the initial response and the publishing of a National Security Policy, progress toward securing Canadian ports, coastal and inland waterways has been advanced in an improvised ad-hoc fashion. Implementation has not been well coordinated, predominantly because it has been approached in a loose, haphazard manner. As terrorists look for gaps and vulnerabilities in domestic security measures, moving slowly and improvising to close the gaps in maritime security represents a considerable risk to both national security and economic interests.

Terrorists rely on time and space to achieve their advantage. It is solely the terrorist who decides the time and the place of an attack. A very small cell within the organization understands the timeline and details of a forthcoming attack. In order to level the playing field and pre-empt future attacks security efforts must be aimed at disrupting timelines before events are put in motion. Interrupting the terrorist's timeline and unsettling planned attacks requires changing the security paradigm from one of reaction and response to one of prevention and intervention. This can be achieved by layering the approach to maritime security and providing "defence in depth" by establishing security layers beginning at the domestic Canadian ports, moving out through the territorial and international waters and finally finishing at the common foreign port of origin. This strategy however, requires unified leadership, detailed planning and resource coordination between government departments and agencies from federal down to municipal governments.

The government has chosen to advance port security and maritime security efforts through the ISPS Code and a series of bilateral agreements with the U.S. primarily to assure the American administration that as a nation Canada is doing its part in

contributing to the security of North America and the global economy. Unfortunately to enforce maritime security and the bilateral agreements, the government has penny packaged maritime security responsibilities out to a number of different departments and agencies, none of which have maritime security as their primary function. In order to close the gaps and reduce vulnerabilities in the maritime domain a single government department must be identified as the lead agency responsible for implementing maritime security strategy and subsequently held accountable for sustaining a viable plan. The current maritime security strategy is not providing the level of security that it should. It is readily apparent that Canada's ports and maritime gateways are accessible to organized crime and vulnerable to a terrorist attack.

Undoubtedly there are significant gaps in securing Canadian hub ports and maritime gateways and internal waterways. In an area where security cannot afford to fail, the hub ports are employing a large percentage of personnel with criminal records, where workers only require security screening if they have access to, or work in specified high-risk areas. Security plans are delegated to the local port authority and further devolved to the port facility to prepare and implement. Answering the question as to who is securing the littorals and coastal waterways is interesting and has no simple answer. The two organizations generally recognized to be performing the task; the Navy and the Coast Guard are poorly equipped and inadequately trained for the constabulary role and neither regards it as their primary role. The same situation exists on the Great Lakes. Within the Great Lakes neither is performing the policing role and in fact the largest constabulary force patrolling the Great Lakes is the Metro Toronto Police Force and its

efforts are confined solely to Lake Ontario. Hence, security in the internal waterways of the Great Lakes is relatively non-existent.

Coordinating efforts and utilizing superior information technologies to provide early warning and reduce vulnerabilities by identifying threats before they arrive can help overcome the current security posture. Early detection is the key to forestalling terrorist attacks. However, information technologies do not provide an advantage if they are operating in isolation, providing information through a stovepipe to a limited number of organizations concerned with maritime security. Organizations such as the Navy, the Air Force, the Coast Guard, and the RCMP to name a few who possess adequate if not exceptional maritime surveillance capabilities must synchronize and harmonize the employment of those assets to develop a common recognized maritime picture similar to what was depicted in Figure 1. Once the recognized maritime picture is developed the data must then be centralized where it can be readily shared among the agencies responsible for port and maritime security.

Information sharing cannot take place solely between federal departments and federal agencies. The recognized maritime picture must also be shared with local and regional stakeholders. A Joint Integrated Multi-Agency Public (JIMP) approach to maritime security will provide a layered defence in depth approach to defending hub ports and maritime gateways. To accomplish this, first requires a national maritime security strategy that is linked to an implementation process tied to national security policy. Next it requires identifying a government department and appointing that department as first among equals, providing them with the resources and authority to implement maritime security policies, plans and procedures and holding them

accountable for successes and/or failures. This strategy implies removing the ad-hoc working group mentality in order to prioritize and coordinate maritime security efforts. Protecting the national security, economic and social interests of Canadians demands that the primary hub ports are protected and the existing gaps in maritime security are eliminated.

There are no simple solutions to securing the maritime gateways and improving port security in Canada, but measures to improve port security and close the gaps that Senator Kennedy's Standing Committee on National Security and Defence so readily identified must be implemented. The current maritime security posture would be greatly improved upon by: implementing and prioritizing a National Maritime Security Strategy linked to a national security policy, establishing unity of command, developing a presence in foreign ports to routinely collect information and gather intelligence at points of origin, harmonizing and synchronizing intelligence gathering and data fusion efforts to provide a common, shared recognized maritime picture, making a determination on how the constabulary role is going to be accomplished and assign policing as a primary task, and improving upon the JIMP concept being employed in the MSOCs to bring them up to full operational capability. A summary of recommendations are provided in Table 4.

Table 4 - Recommendations to Improving Security of the Principal Hub Ports

Port Security Enablers	Description
Prioritizing National Maritime Security Strategy.	Implement a prioritized national maritime security strategy tied to a national security policy that links implementation to a clearly defined maritime security plan, rather than focusing on maritime security measures tied to bilateral agreements advantageous primarily to the U.S.
Establishing Leadership and a single Command and Control Structure.	Establish a command and control structure with clearly delineated leadership residing in a single department or agency. The ad-hoc working group established under the IMSWG does not possess the power or authority to adequately address maritime security challenges and harmonize security efforts between departments.
Providing defence in Depth.	Layering maritime security efforts to push the threat out as far as possible. Building defence in depth begins with gathering intelligence at the point of origin or in Foreign Ports to provide early warning.
Integrating surveillance and intelligence gathering efforts.	Fuse the data and ensure it is available to all stakeholders in maritime security. This implies sharing data across federal departments and pushing it down to relevant regional and municipal agencies.
Assign the constabulary role.	Determining who is performing the constabulary role and securing the littorals, and the Great Lakes. Decide on who is best suited (Coast Guard, Navy or RCMP), assign the task, equip, man and train them for the role.
Advance the JIMP (Joint, Integrated, Multi-Agency, Public) concept.	Further develop the JIMP concept being implemented in the MSOCs. This initiative has to be brought up to full operational capability and established in Montreal to secure the gateway to Midwest trading.

The recommendations provided represent a synopsis of how the existing gaps in maritime security might be substantially reduced to protect national security and economic interests from organized crime and terrorist activities occurring in Canadian ports and maritime gateways. Significantly tightening current security measures will diminish existing vulnerabilities and reduce the potential for a devastating terrorist attack to occur in a Canadian hub port or in our critical maritime gateways. Closing the security gaps that exist in Canada's maritime gateways and vital hub ports is crucial to protecting national security, economic and social interests that are increasingly reliant on access to transoceanic shipping to keep Canada connected to the expanding global market place.

Bibliography

- Avis, Captain (N) Peter, "Surveillance and Canadian Maritime Domestic Security." http://www.navy.forces.gc.ca/cms_strat-issues_e.asp?id=287; Internet; accessed 21 Dec 2006.
- Avis, Captain (N) Peter, Grant Iain. "Canadian Maritime Security and the Culture of Prevention." *Canadian Military Journal*, (Winter 2004-2005) 55-64.
- Bowdish, Randall G, "Global Terrorism, Strategy, and Naval Forces," in *Globalization and Maritime Power* (2002) Publication on-line; available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02; Internet; accessed 18 January 2007.
- Brooks, Mary R. and Button, Kenneth J. "Maritime Container Security: A Cargo Interest Perspective." Paper to Lloyd's Register's International Workshop on Risk Management in Port Operations and Logistics and Supply Chain Security, 29 Sep 2006. Publication on-line; available from <http://www.cts.cv.ic.ac.uk/documents/portec/flyer.pdf>; Internet; accessed 12 December 2006.
- Canada. Chief of the Maritime Staff, *Leadmark: The Navy's Strategy for 2020*. Ottawa: Directorate of Maritime Strategy, 2001.
- Canada. Report of the Standing Committee on National Security and Defence, October 2003, *Canada's Coastlines: The Longest Under-Defended Borders in the World*, Seventeenth Report – Volume 1, <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/rep-e/repvol1part2-e>; Internet; accessed 21 Dec 2006.
- Canada. Report of the Standing Senate Committee on National Security and Defence, March 2007, *An Update of Security Problems in Search of Solutions: Seaports*: <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/rep-e/repvol1part2-e>; Internet; accessed 23 March 2007.
- Canada. Privy Council Office, *Securing an Open Society: Canada's National Security Policy*. Ottawa: Privy Council Office, 2004.
- Canada. Public Safety and Emergency Preparedness Canada, <http://publicsafety.gc.ca/index-en.asp>; Internet, accessed 24 March 2007.
- Canada. Royal Canadian Mounted Police, Marine and Ports Branch, *Safe Homes/Safe Communities*: http://www.rcmp-grc.gc.ca/fiol/marine_ports_e.htm; Internet; accessed 14 Dec 2006.

- Canada. Transport Canada, *Transport Canada's Commitment to Maritime Security*, http://www.tc.gc.ca/marine_security/regulatory/isps/edu.htm; Internet; accessed 7 March 2007.
- CFN Consultants. "Port Security Requirements: Industrial Opportunities for Small and Medium Enterprises." Report Prepared for Western Economic Diversification Canada, Sponsored By Industry Canada. <http://www.cfnconsultants.com>; Internet; accessed 30 March 2007.
- Coulter, Daniel Y., "Globalization of Maritime Commerce: The Rise of Hub Ports," in *Globalization and Maritime Power*. ed. Sam J. Tangredi, (Washington, D.C: Institute for National Security Studies, National Defence University, 2002) available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02; Internet; accessed 18 January 2007.
- Cudahy Brian J., "The Container Revolution Malcolm McLean's 1956 Innovation Goes Global," *TR News*, September-October 2006, 5-9.
- Farion, Tiffany. "Lost at Sea: Port Security and Canada," Annual Graduate Symposium, RMC, October 29-30, 2004.
- Frittelli, John F. *Port and Maritime Security: Background and Issues for Congress*. CRS Report for Congress. Washington: Congressional Research Service, The Library of Congress, Updated May 27, 2005.
- Garnett, Gary L. "The Coastal Regime and Marine Security Operations Centres." *Canadian Naval Review*, Volume 1 (Fall 2005): 27-29.
- Greenberg, Michael D, Chalk, Peter [et al], *Maritime Terrorism: Risk and Liability*, Report prepared for the Rand Centre for Terrorism and Risk Management Policy (Arlington: U.S.A Rand Corporation, 2006).
- Hoffman, Frank J. and Sam J. Tangredi, "Characteristics and Requirements of the Evolving Security Environment," in *Globalization and Maritime Power*, ed. Sam J. Tangredi, (Washington, D.C: Institute for National Security Studies, National Defence University, 2002) available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02, Internet; accessed 18 January 2007.
- International Monetary Fund. "Globalization: Threat or Opportunity?" <http://www.imf.org/external/np/exr/ib/2000/041200.htm>; Internet; accessed 8 March 2007.

- International Maritime Organization,
http://www.imo.org/Newsroom/mainframe.asp?topic_id=897; Internet, accessed 21 March 2007.
- Kearney A.T. Foreign Policy Magazine, "Globalization Index."
<http://www.atkearney.com/main.taf>; Internet accessed 8 March 2007.
- Maritime Security and Defence Seminar. *The Canadian Navy and the New Security Agenda: Proceeding of the Maritime Security and Defence Seminar*, edited by Ann L.Griffiths, Toronto, 2004.
- Morse, David, Rear –Admiral (Ret'd). Are We Prepared? Personal, Legal, Procurement and Industry Perspectives Discussant's Remarks – Session 5, *A Maritime Security Conference hosted by the Centre for Foreign Policy Studies*. Dalhousie University, 15-17 June 2006. <http://www.cfps.dal.ca>; Internet accessed 12 December 2006.
- Nincic, Donna J., "Sea Lane Security and U.S. Maritime Trade: Chokepoints as Scarce Resources," in *Globalization and Maritime Power*, ed. Sam J. Tangredi, (Washington, D.C: Institute for National Security Studies, National Defence University, 2002) available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02; Internet; accessed 18 January 2007.
- O'Malley, Martin, CBC News Online, "Canada and the U.S. after 9/11." 12 February 2003, www.cbc.ca/canadaus/omalley1.html; Internet: accessed 29 March 2007.
- Parformak, Paul, W, and Frittelli, John, *Maritime Security: Potential Terrorist Attacks and Protection Priorities*," Congressional Research Service Report prepared for Congress, 9 January 2007.
- Perks, Richard, L. "Port Security in the Canadian Maritime Strategy Context." Toronto: Canadian Forces Command and Staff Course MDS Paper, 29 April 2005.
- Port of Montreal, http://www.port-montreal.com/site/1_0/1_6_4.jsp?lang=en; Internet; accessed 30 March 2007.
- RCMP, Marine and Ports Branch, http://www.rcmp-grc.gc.ca/security/ibets_e.htm; Internet, accessed 25 March 2007.
- Thachuk, Kimberley L. "Transnational Threats and Maritime Responses," in *Globalization and Maritime Power*, ed. Sam J. Tangredi, (Washington, D.C: Institute for National Security Studies, National Defence University, 2002) Publication on-line; available from http://www.ndu.edu/inss/books/Books_2002/Globalization_and_Maritime_Power_Dec_02; Internet; accessed 18 January 2007.

Willis, Henry H., Ortiz, David S, *Evaluating the Security of the Global Containerized Supply Chain*, Report prepared for the Rand Centre for Terrorism and Risk Management Policy Arlington: U.S.A Rand Corporation, 2006.