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WORLD MARITIME UNIVERSITY
Malmö, Sweden

**BELOW THE RADAR:
AN ANALYSIS OF THE “SMALL BOAT
THREAT” TO MARITIME SECURITY**

by

JAMES CRAWFORD CRAWFORD
REPUBLIC OF CHILE

**A dissertation submitted to the World Maritime University in partial
fulfillment of the requirements for the award of the degree of**

MASTER OF SCIENCE
in
MARITIME AFFAIRS
(MARITIME LAW AND POLICY)

2008

**BELOW THE RADAR:
AN ANALYSIS OF THE “SMALL BOAT THREAT” TO MARITIME SECURITY**

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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ABSTRACT

Title of Dissertation: **Below the radar: an analysis of the “ small boat threat ” to maritime security**

Degree: **MSc**

Recently the development of terrorist actions have not been directed only against land objectives as was the bloody attack against different targets on September 11, 2001 in United States; but also in recent years, a number of terrorist actions have been directed against maritime targets, as the *USS Cole* (October 2000), the *MV Limburg* (October 2002), *Superferry 14* (February 2004) and the *MV Invincible* (May 2008); maritime terrorist actions have resulted in at least 61 people injured and over 571 people dead, since 1961.

According to some statistics it can be seen that 49 % of the attacks against maritime targets have been carried out through the use of small boats during last eight years, due to its easy deployment, low maintenance and operational costs and high success record; terrorists actions have implied millions of dollars in ship repairs and billions of dollars in the application of security measures. It must be highlighted and considered that according to intelligence reports, there are several terrorist organizations with maritime capability around the world, and the interest recognized by al-Qaeda in not only destroying shipping; but also in using vessels to close maritime lanes and to conduct sea borne mass casualty attacks.

The “small boat threat” against shipping is a real one and must be addressed and eliminated as soon as possible; unless these criminal situations are attacked by a united front, the small boats will continue operating below the radar threatening international shipping.

KEY WORDS: MARITIME SECURITY, PIRACY, MARITIME TERRORISM,
SMALL BOAT, THREAT

**BELOW THE RADAR:
AN ANALYSIS OF THE “SMALL BOAT THREAT” TO MARITIME SECURITY**

*“... And the sea that quietly washes
your shores, promises you future
splendor...”.*

Republic of Chile’s national anthem.

1. INTRODUCTION

1.1 Background

From its beginnings, maritime shipping has been considered as an adventure, because of the large number of stories about treasures and marine monsters and also because of the huge number of conditions and threats that surround the practice of transporting goods at sea. These threats not only consider meteorological variables, but also the presence of pirates for many years and lately the development of terrorist attacks against ships and port facilities.

Pirates have used small boats for a long time to threaten maritime shipping in different parts of the world, leaving after its wake, fear, death, destruction and billions of dollars of losses every year. The use of small boats and years of training have proved the effectiveness to develop criminal actions against ships, which have converted maritime piracy into a nightmare with immense destructive capabilities. It must be highlighted that piratical attacks are responsible for the loss of thousands or millions of dollars, affecting maritime shipping annual global losses of about 16 billion dollars.

Further, recently the development of terrorist actions have not been directed only against land objectives as was the bloody attack against different targets the September 11, 2001 in United States; but also in recent years, a number of terrorist actions have been directed against maritime targets, as the *USS Cole* (October 2000), the *MV Limburg* (October 2002), *Superferry 14* (February 2004) and the *MV Invincible* (May 2008); maritime terrorist actions have caused at least 61 people being injured and over 571 people being killed, since 1961. According to some statistics it can be seen that 49 % of the attacks against maritime targets have been carried out through the use of small boats during last eight years, due to its easy deployment, low maintenance and operational costs and high success record; terrorists actions have implied millions of dollars in ship repairs and billions of dollars in the application of security measures. It must be highlighted and considered that according to intelligence reports, there are several terrorist organizations with maritime capability around the world, and the interest recognized by Al Qaeda in not only destroying shipping; but also in using vessels to close maritime lanes and to conduct sea borne mass casualty attacks.

1.2 Objectives of the Study

The objective of this study is to analyze the use of small boats by pirates and terrorists as a threat to maritime shipping and maritime security, which has demonstrated to be an efficient weapon in different parts of the world. In this way, the present dissertation will consider as a small boat all the varieties of possible floating vehicles less than 300 Gross Register Tonnage (GRT).

In order to develop the objective, the present analysis will consider a brief analysis of several factors related to the small boat threat, such as economic factors, international maritime security legal framework, international institutions related to maritime security, and the driving forces of piracy / terrorism. The present dissertation is divided into six chapters:

- Chapter One offers an introduction to the topic and establishes the objectives of the present study.
- Chapter Two offers a general view of maritime shipping, in order to acquire the real importance of this activity for the world's economy, and the most important aspects conditioned by this global activity.
- Chapter Three will introduce general information about the legal framework of international maritime security and some of the most important international organizations in charge of developing this matter.
- Chapter Four will focus on piracy and maritime terrorism, as the two most important criminal activities which carry out actions through the use of small boats against maritime shipping security. In this chapter, the International Maritime Bureau's (IMB) piracy definition will be adapted in order to analyze the use of small boats by pirates and terrorists, against maritime shipping security. The adaption of the International Maritime Bureau's piracy definition responds to an operational and practical need more than a linguistic or conceptual approach in relation to the topic. The writer considers that the IMB's piracy definition is wider than the conceptualization adopted under the 1982 United Nations Convention on the Law Of the Sea (UNCLOS), which restricts its focus only to attacks that take place on the high seas (which is not accurate for the development of a practical and operative analysis, because the majority of piratical incidents occur in territorial or coastal waters). This chapter will offer general information about piracy and terrorism, identifying hot spots, information about common targets and consequences of both to maritime shipping.
- Chapter Five will analyze in depth the small boat threat, considering its historical development, the nature of the threat and vulnerabilities that these boats represent to maritime shipping today. Also this chapter will analyze if the small boats are a real threat to maritime shipping, and will explain among other aspects, how these attacks are carried out.

- Finally, Chapter Six will offer some conclusions and will establish some recommendations in order to diminish the threat that small boats present to maritime security.

2. MARITIME SHIPPING

2.1 Introduction

International maritime shipping is responsible for the transportation of 90% of world trade on board around 50,000 merchant ships, registered in more than 150 nations, and operated by over a million seafarers of virtually every nationality (UNCTAD, 2007). This trade is under constant growth, expansion and adaptation and it has undergone different conditions according to new requirements; according to last statistics and trends, it is possible to infer that maritime trade will continue with its expansion in spite of the terrorist attack against World Trade Center in the United States, which meant huge changes for globalization. “The interactivity and connectivity of the global market was altered and a new reality introduced. Moreover, the security crackdown that followed has affected every facet of the global economy” (Torell & Fiorillo, 2006). Basically globalization means that nations and companies around the world are interconnected and depend on the other and some scholars¹ have identified that the three most important factors that affect the growth of maritime trade are: first, expansion of this market, second, the reduction of freight costs, and finally, more benefits for final consumers around the world.; and these factors are important components within the maritime globalization phenomenon (Friedman 2005). Globalization² in maritime shipping can be seen everywhere, because “... trade in maritime services is one of the most liberalized industries...” (Kumar & Hoffman, 2002) through initiatives such as flag registration, ship’s registries, insurance and class inspections.

“Without the maritime trade, the fall of barriers related to international commerce would be insurmountable, and the history of the world would have been vastly different” (Komadina, Čišić, Hlača, 2006). Nowadays, a new way of commerce is

¹ See Komadina, Cisić & Hlača in “Globalization in maritime transport industry”

² According to the International Labour Organization, globalization, is defined as: “a process of growing interdependence between all people of this planet”; in this way it is possible to establish that the maritime trade since its beginnings, has promoted and fomented social and cultural interchange and the development of domestic economies, with the application of new commercial procedures and with the expansion of transnational networks; in this way maritime trade developed and will continue developing and improving more interconnected world systems in which interdependent networks and domestic legislations will surmount traditional boundaries.

under development known as the e-commerce, where the on line bill of lading could be assumed as symbols of world globalization, but the most important factor in this development has been the increasing size and speed of ships and the shrinking cost of commercial transport.

Other factors linked to the technological improvement of ships are the introduction of the use of containers and the unitization of different cargoes which have revolutionized the transport of general cargo by sea (Talley, 2000) playing an important role in the development of international supply chains since the 1960s because they reduced, among other factors, shipment times, insurance and other costs by minimizing handling work during transit periods. It is difficult to determine the value of volume of world maritime trade in currency terms, but it is possible to say that merchant ships contribute about US\$ 380 billion in freight rates within the global economy, equivalent to about 5 percent of total world trade (UNCTAD 2007). In 2005, the maritime industry shipping gave over 27 thousand billion tonnes - miles of total trade.³

2.2 Analysis of current maritime trade

2.2.1 Development of World Economy and Seaborne Trade

During 2006, the world economy continued growing strongly, mainly due to the expansion of some developing countries such as China and India. During this period, because of a deeper economic integration and globalization practices, the volume of the world's merchandise trade increased by 8.0 per cent, which means more than double of the growth of the world economy (UNCTAD 2007). During 2006, China's growth reached a 10.7 per cent and 9.2 per cent in India. Recently, especially from year it is possible to identify a deceleration of the industrial production of OECD countries and a steady growth of seaborne shipment and merchandise exports. Thanks to these two new prosper economies and other countries' economies (Brazil, Russia Federation, among others), it is possible to determine that production of

³ Shipping trade estimates are often calculated in tonne-miles - a measurement of tonnes carried, multiplied by the distance traveled.

these developing countries are influencing and driving the world economic activity, and not only the industrial production in developed countries.

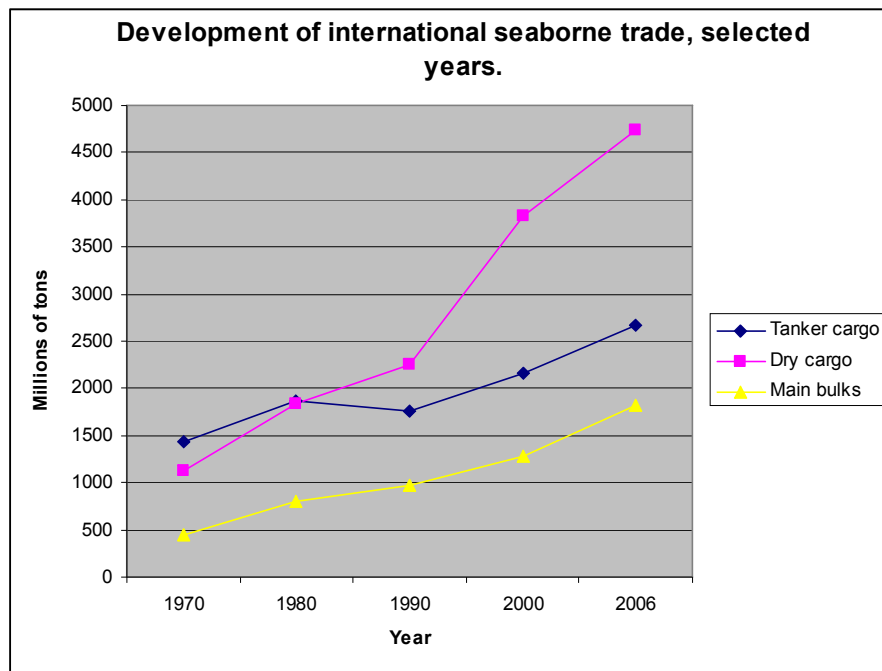


Figure 1: Development of international seaborne trade, selected years.
Source: UNCTAD review of maritime transport 2007

2.2.2 Development of the world fleet

At the beginning of 2007, the world's merchant shipping reached 1.04 billion deadweight tons, which is equivalent to an 8.6 per cent increase⁴, in comparison with the previous year. The tonnage of oil tankers and dry bulk carriers represents 72.0 per cent of the total 2006 tonnage record, which seemed an improvement like an average of 7, 15 %⁵ and the fleet oriented to general cargo, registered 4.9 percent in relation to 2006. Related to the construction of new ships, at the end of

⁴ Surpassing the 7.2 % of growth of previous year

⁵ According to UNCTAD, review of maritime transport 2007. The tonnage of oil tankers in 2006 registered 8,1 % of growth and for dry bulk carriers was 6,2 % of growth.

2006, 6,908 vessels were ordered equivalent to 302.3 millions of dead weight tonnage⁶.

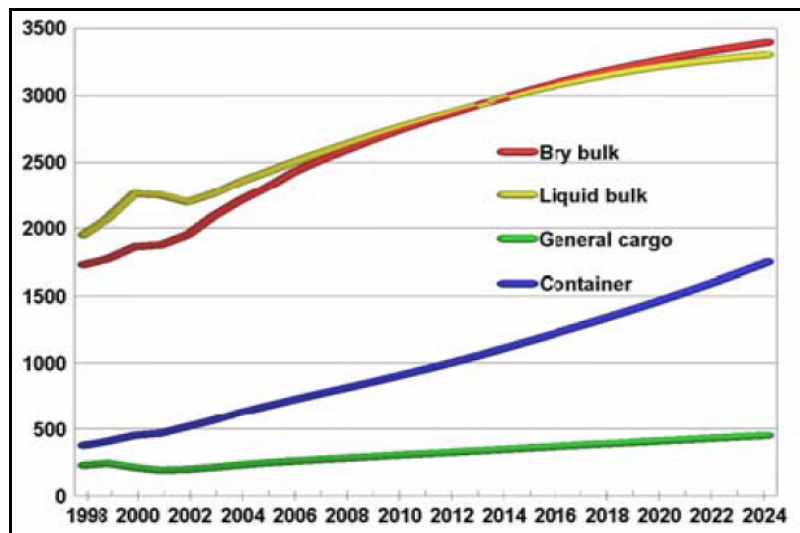


Figure 2: World trade by loading category 1998 -2024.
Source: ISL based on Global Insight; World trade services.

The average age of the world fleet registered in 2006 decreased to 12.0 years, and 56.8 of the world fleet is more than 19 years old. Making an analysis of younger ships it is possible to establish that container ships were the youngest with an average of 9.1 years; tanker ships age were 10 years; and the oldest were the general cargo vessels with an average of 17.4 years.

2.2.3 Port and multimodal transport developments

During 2006 the world container port efficiency increased with 13.4 %, reaching the mobilization of 440 million TEUs. Developing countries registered the handling of 265.4 million TEUs⁷. Considering the top 20 world container ports their throughput was almost 51 % of the world total trade, equivalent to 208.7 million TEUs. One of the most important factors that allow the throughput of this maritime cargo is the

⁶ According to UNCTAD, review of maritime transport 2007. Ordered constructions in dead weight tonnage was: oil tankers 118 million, dry bulk carriers: 79 million, general cargo vessel: 8 million, container ships: 51.7 millions, other kinds of vessels: 45.6 millions.
⁷ This is equivalent to 65 % of the world total, during year 2006.

improvement in vessel capacity, which has been steady since 1980, because of intense competition and economies of vessel size⁸. This tendency to improve the ship's size re emerged in the mid 1990s, when several ship owners sacrificed flexibility to cargo capacity, according to Panama Canal size.

The historical tendency for ship size to increase re-emerged in the mid 1990s, when several owners chose to order vessels that were too large to transit the Panama Canal, thus sacrificing operational flexibility⁹.

The significant development in ports transformation has been a very important factor associated with the transportation and distribution of cargo process¹⁰ limiting the number of ports of call, which have permitted reduced ship turn-round time considering the appliance of a new port concentration concept.

2.2.4 Sea lane security and international trade: chokepoints

During the Cold War (1970s - 1980s), there was concern related to the security of the world's sea lanes of communication (SLOCs) and some chokepoints, which were considered by Americans, vulnerable to the Soviet menace. Nowadays, concerns related to sea lanes and chokepoints security have diminished since the end of the Cold War from a traditional military perspective, but has re born as an asymmetrical threat through the actions of pirates and terrorists, in order to reduce their utility. The sea lanes of communication and chokepoints are vital to the normal development of the globalized maritime enterprises and world economy today (Sakhuja, 2005). Maritime transport still remains as the cheapest way to transport bulk goods. But only 22 chokepoints¹¹ are considered as the most important routes, because of their economic significance.

8 Or known as Economic of Scale, in which "...the capital cost per container slot falls as vessel size increases, while the ratio of crew to carrying capacity and the consumption of fuel per unit of cargo carried also decline as vessel size increases" (Komadina, Čišić, Hlača 2006).

9 Hyundai, Maersk, NYK, P & O Nedlloyd among other enterprises ordered "Post Panamax" tonnage during last years of 1990s; eg. P & O Nedlloyd, introduced four 6700 TEU vessels, during that period. (Containerisation International Yearbook, 1999).

10 One of the most important factors was the introduction of containerization concept, since 1970s.

11 Eastern Mediterranean and Persian Gulf: Bosphorus, Dardanelles, Suez Canal, Strait of Hormuz and Bab-el Mandeb. Eastern Pacific: Malacca strait, Sunda Strait, Lombok Strait, Luzon Strait, Singapore Strait, Makassar Strait. Europe: Great Belt, Kiel Canal,

2.3 Conclusions

Maritime shipping is vital for the world economy and welfare, transporting 90% of the world trade around the globe and it has been estimated that this growth will continue in the future, mainly due to the expansion of some developing economies. At the beginning of last year, the world's merchant shipping registered again an increase of about 8.6% in comparison with 2006, with the tonnage of oil tankers and dry bulk carriers at about 72% of the tonnage record; the tonnage of general cargo ships also registered an increase of about 4.9%.

According to information previously cited in the chapter, it is possible to conclude that as an average, the world fleet is young with 12 years, the youngest being container ships (9.1 years) and tanker ships (10 years) and the oldest general cargo ships with 17.4 years.

It must be highlighted that during the 1990s, shipyards began to produce bigger and more powerful ships, equipped with the latest technological advances in order to proportionate comfort and safety to crews and respond to the world demand for goods. Nowadays, due to these technical devices and some new manning standards that have been applied by different merchant companies, the number of crew on board every ship was drastically reduced¹². Due to improvements in multimodal structures and transport systems, and sophisticated propulsion and aids to navigation systems, today ships do not require it such large crews as before.

Finally, it must be noticed that the development of the modern international maritime shipping has been supported by the following four elements: application of

Dover strait and the Strait of Gibraltar. Africa: Mozambique Channel. Americas: Panama Canal, Cabot Strait, Florida Straits, Yucatan Channel, Windward Passage and Mona Passage.

12 With the application of the previous policies applied by different companies, nowadays around 50,000 merchant ships are operated by only by over a million of seafarers. This personnel's reduction on board ships allowed to maritime companies to reduce huge amount of money because payment of salaries, but at the same time, erased the threat linked to the human element in relation to fatigue, overwork, lack of proper look out and safety on board. A study carried out by the United Kingdom Marine Accident Investigation Branch, over 66 collisions, near collisions, groundings and contacts, established that minimal manning " leads to crew's fatigue ... and inability to fulfill duties ...". This minimal manning also affects ship's safety against external eventual threats as piracy or terrorists attacks.

containers within the maritime shipping system, deregulation of transportation markets, and use of information technology applied to port processes and improvements in ship's fuel efficiency (UNCTAD, 2007).

3 INTERNATIONAL MARITIME SECURITY - LEGAL FRAMEWORK AND INTERNATIONAL ORGANIZATIONS' MARITIME SECURITY EFFORTS

“... Terrorism is a direct attack on human rights and the rule of law. If we destroy human rights and rule of law in the response to terrorism, they have won...”.

Kofi Annan, 2005.

3.1 Introduction

Piracy law framework is mainly governed by international maritime law, but terrorism is governed by domestic laws, due to a lack of a broad accepted definition. However, since the development and acceptance of these different international and domestic laws, a huge number of situations have affected both activities, transforming these laws in devoid regulations of effectiveness (Zou, 2005)¹³.

The recognition of piracy as a threat to world maritime shipping, and the consequent adoption of a general definition, has been an important step within global counter piracy actions. This process initiated by Cicero whom defined piracy as “*hostis humani generis*”, or enemies of humanity, allowed pirates' prosecution wherever and whenever they were, applying the concept of “universal jurisdiction” (Jarvis, 2005). This Roman concept was adopted many years later by the United Nations

¹³ At first sight, the relation between terrorism and piracy seems very narrow; piracy has prospered in great scale, from the beginning of maritime shipping; also, its meaning has varied from the definition developed by Marcus Tullius Cicero, more than 2000 years ago. In spite of the fall and later disappearance of the Roman Empire, the definition and classification of piracy stayed in the time; from 912 pirates along the coasts of Western Europe, to Francis Drake and Walter Raleigh, a number of actions were developed and sponsored by different governments to “...harass the enemy, deplete its resources, terrify its citizens, frustrate its government, and remain above the fray...”¹³, until the establishment of George I of England's Draconian laws.

Along the history, it is possible to see that Elizabeth's objectives have oriented terrorist actions during many years, as well as in piracy. Some nations as Iraq, Yemen, Libya, Iran, and Afghanistan, have protected and sponsored terrorist organizations, assuming identical historical aims [as previous mentioned] against their enemies (Burgess, 2005).

Convention on the Law of the Sea (UNCLOS)¹⁴, which obtained consensus worldwide. It must be highlighted that the definition of piracy remains unchanged from the earlier 1958 Geneva Convention on the High Seas. But this broad acceptance of the piracy definition is totally different to the definition of terrorism. Today, the international law framework lacks a broad accepted definition for terrorism as a crime. According to UN Secretary General Kofi Annan, this lack has hampered "...the moral authority of the United Nations and its strength in condemning" and take more actions. According to Burgess (2005) the attempts to provide a definition have failed because terrorists are not classified as ordinary criminals nor like agents recognized by states, not existing any international law related to them. This lack of classification provides an exit to some States to accept and protect this kind of criminals, under the classification of "freedom fighters ", giving them a "strange hybrid status "(Burgess, 2005).

In spite the existence of a large number of conventions related to: financing terrorist organizations, hijacking, etc., what the international legal framework needs today is a clear definition of terrorism (Ruby, 2002). This definition should be incorporated to these different conventions and applied to the international and domestic laws, in order to establish a clear standard to criminalize terrorist acts and also membership in terrorist organizations¹⁵.

As can be seen, piracy and terrorism are not only concepts; both are real practices under constant development and changes, occurring in the world's oceans that require quick international and domestic responses, in order to allow the execution of correct legal actions by domestic and international organizations. These problems related to definitions and the actions already adopted by some international maritime security organizations will be analyzed in the present chapter.

14 UNCLOS Convention 1982

15 According to Valdivieso (2007) in 1988, Schmid and Jogman found about 109 different definitions for terrorism.

3.2.1 Piracy definition

Maritime piracy is a criminal action widely defined by a large number of entities, which adopt little differences, according to the aim of each organization. The word pirate is a derivation from the Greek "peirates", which was linked to an adventurer who developed attacks against ships. The most common aspect related to any definition of piracy is the association with the sea (Johnson & Pladett, 2003). In that way, piracy is equivalent to a banditry action or robbery with the only one difference that it occurs on water. In practice, piracy and banditry are similar, because both criminals use violence or the threat of violence in remote areas outside or far of an effective control by the government.

The United Nations Convention on the Law of the Sea deals with piratical situations from its article 100 to article 111, establishing a clear definition for piracy, guidelines to cooperate in its repression, seizure of a pirate ship, right of visit and right of hot pursuit, among other important aspects. According to Article 101, briefly, piracy is "... any illegal act of violence or detention, or any act of depredation, committed for private ends by the crew or the passengers of a private ship or a private aircraft, on the high seas, against another ship or aircraft, or against persons or property on board such ship or aircraft..."¹⁶.

From the previous definition it could be established that a piracy act requires at least five main components:

- a) must be an illegal act of violence
- b) committed for private ends
- c) on the high seas
- d) by a private or public ship
- e) against another ship or aircraft

¹⁶ "Piracy consists of any of the following acts:

(a) any illegal acts of violence or detention, or any act of depredation, committed for private ends by the crew or the passengers of a private ship or a private aircraft, and directed:

(i) on the high seas, against another ship or aircraft, or against persons or property on board such ship or aircraft;

(ii) against a ship, aircraft, persons or property in a place outside the jurisdiction of any State;

(b) any act of voluntary participation in the operation of a ship or of an aircraft with knowledge of facts making it a pirate ship or aircraft;

(c) any act inciting or of intentionally facilitating an act described in sub-paragraph (a) or (b)."

Considering the five previous components it is possible to establish clearly that other kinds of illegal acts at sea, not covered by these conditions are not a piracy acts; this condition was adopted by the IMO through the MSC's resolution A.922 (22) article 2.2., in which, this organization assumed UNCLOS' piracy definition and also established a new concept, the "armed robbery"¹⁷, in order to differentiate certain acts similar to piratical acts. According to Umezawa (2003), the comparison between both concepts can be represented as follows:

	Illegal acts of	Committed by	Directed against	Scope of application
Piracy (UNCLOS art. 101)	<ul style="list-style-type: none"> - violence - detention - depredation - inciting or of intentionally facilitating such an act 	<ul style="list-style-type: none"> - crew or passengers of a private ship or aircraft 	<ul style="list-style-type: none"> - ship or aircraft - persons or property on board such a ship or an aircraft 	<ul style="list-style-type: none"> - high seas - a place outside the jurisdiction of any State
Armed robbery against ship (IMO's Code of practice)	<ul style="list-style-type: none"> - violence - detention - depredation - threat thereof - acts other than an act of piracy 	(not defined)	<ul style="list-style-type: none"> - persons or property on board a ship 	<ul style="list-style-type: none"> - within the State's jurisdiction over such offences

Source: Umezawa 2003

Figure 3: Comparison of definitions between piracy and armed robbery against ship under UNCLOS and IMO's code.

According to the IMO acts similar to piracy but that occur in non international waters are covered by the "armed robbery" definition. It must be highlighted that this definition is not fully applied by some organizations related to maritime shipping. The ICC Commercial Crime Services (CCS), developed a broader definition of piracy as "... an act of boarding any vessel with the intention to commit theft or any other crime and with the intent or capability to use force in the furtherance of that act". Following the previous concept, the CCS generates reports that include piracy and armed robbery under the classification of piracy attacks¹⁸.

17 International Maritime Organization's (IMO), Code of practice for the investigation of the crimes of piracy and armed robbery against ships, adopted on 29 November 2001. Annex. Article 2.2.: "Armed robbery against ships means any unlawful act of violence or detention or any act of depredation, or thereof, other than act of piracy, directed against a ship or against persons or property on board such a ship, within a State's jurisdiction over such offences".

18 For example the CCS reported the following situation as piracy; position 25.05.2008: 2235 LT: 13:13N-050:49E: Gulf of Aden. Pirates hijacked a general cargo ship 80 nm off the coast of Somalia. Nine crewmembers are held hostage onboard. At present the vessel is 2.5 nm from the coast.

According to Dillon (2005), current definitions of piracy are inadequate as a tool for policymakers and need to change. Following this trend has argued that the piracy definition is too narrow restricting it only to acts committed by a private ship against another ship for private ends, excluding other “non-private acts” that could constitute piracy (Sakhuja, 2000); in this way, terrorist acts at sea for political ends are excluded from this definition¹⁹.

3.2.2 Terrorism definition

More than 2,000 years ago piracy was defined by Marcus Tullius Cicero, as *hostis humani generis*, "enemies of the human race", allowing from that day the international hunting and prosecution of these kinds of criminals. But this situation is totally different to terrorism. The international law framework lacks a broad accepted definition for terrorism as a crime. According to UN Secretary General Kofi Annan, this lack has hampered “...the moral authority of the United Nations and its strength in condemning” and take more actions. According to Burgess (2005), the attempts to provide a definition have failed because terrorists are not classified as ordinary criminals nor as agents recognized by states, as there is no existing international law related to them. This condition provides an exit to some States to accept and protect these kinds of criminals, under the classification of “freedom fighters”, giving them a “strange hybrid status”.

In spite the existence of a large number of conventions related to: financing terrorist organizations, hijacking, etc., what the international legal framework needs today is a clear definition of terrorism (Burgess, 2005). This definition should be incorporated to these different conventions and applied to the international and domestic laws, in order to establish a clear standard to criminalize terrorist acts and also membership

¹⁹ For example, the Achille Lauro incident was carried out by passengers in the seized ship and they were motivated by political ideas and not by private ends. In this way as was mentioned by Michael (2007) no terrorist or pirate act motivated by political ideas can be described as piratical action and can not be prosecuted under UNCLOS Convention. The importance of this situation beyond than a grammatical problem constitutes a threat to maritime shipping's security, because the aforementioned conditions don't characterize the situation as crime, which does not allow the prosecution to all the states.

in terrorist organizations. According to Valdivieso (2007) in 1988, the scholars Schmid and Jogman found about 109 different definitions for terrorism²⁰.

It could be argued that the current definitions of terrorism are based on three basic criteria accepted by a large number of nations and scholars²¹: first, terrorism must have a political motivation, because this kind of actions try to guide or influence governmental policies; second, the violence carried out by terrorists is directed at non combatants, which means that terrorist actions are not against military services or military members; and third, terrorist actions are carried out by sub national groups or clandestine organizations, despite the damage that this kind of actions could cause to non combatants (Ruby, 2002). According to the previous criteria Lorenz (2007) define maritime terrorism as "... the use or threat of violence against a ship (civilian as well as military), its passengers or sailors, cargo, a port facility, or if the purpose is solely a platform for political ends..." also the definition can include the "...use of the maritime transportation system to smuggle terrorists or terrorist materials into the targeted country...".

3.3 Legal framework of international maritime security

In recent years, the legal framework of the international maritime security has carried out a huge number of initiatives, agreements and regulations; but it must be considered that these legal bodies are based on the following three documents: First, the United Nations Convention on the Law of the Sea; second, the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation; and finally the Safety of Life at Sea Convention, with the ISPS Code ²² (Mejia & Mukherjee 2006).

20 Due to the previous complex social-political situation around terrorism, may be the simplest definition of terrorism was developed by H.H. Cooper, after years of analysis and studies, who argued that Terrorism is "...the intentional generation of massive fear by human beings for the purpose of securing or maintaining control over other human beings".

21 According to Kaplan (1981) another two important criteria must be considered in relation to the psychological aspect of terrorists' actions; first, this kind of actions are oriented to create an extremely fearful state of mind; and second, this state of mind, is not directed to the victims, it is oriented to the audience who may no have relationship to the victims.

22 The United Nations Convention on the Law of the Sea Articles 100-108, 110; the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation; and finally the Safety of Life at Sea Convention, chapters V, XI-1, XI-2.

3.3.1 Law of the Sea Convention

The United Nations Convention on the Law of the Sea (UNCLOS), also known as the Law of the Sea Convention or the Law of the Sea, is an international agreement resulting from the third United Nations Conference on the Law of the Sea (UNCLOS III). The Law of the Sea Convention was developed in order to give a solution to ocean space problems considering all the aspects involved as a whole, in order to maintain peace, justice and progress for all peoples of the world (UNCLOS Convention 1982, preamble).

This Convention gives rules about all aspects of ocean space, such as delimitation of maritime boundaries, environmental control and scientific marine research projects, commercial and economic activities, procedures to settlement of disputes relating to ocean matters and responsibilities and rights of nations in the use of oceans of the world.²³

Finally it must be highlighted that the UNCLOS Convention has established a comprehensive maritime jurisdictional framework defining different characteristics and jurisdictions that have facilitated the appliance of different IMO regulations.

3.3.2 SUA Convention

In response to the *Achille Lauro* hijacking, and due to the growing international concern about unlawful acts against the safety of ships and the security of their passengers and crews in the 1980s, Austria, Egypt and Italy governments made a proposal in November 1986 to IMO in order to prepare a convention regarding unlawful acts against the safety of maritime navigation. As a response to that proposal, IMO issued the Maritime Safety Committee circular (MSC/Circ.) 443 on measures to prevent unlawful acts against passengers and crews on board ships²⁴. The Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation and the SUA protocol, related with the safety of Fixed Platforms Located

²³ International Maritime Organization web page, extracted from

http://www.imo.org/dynamic/mainframe.asp?topic_id=1514&doc_id=7602

²⁴ International Maritime Organization, http://www.imo.org/Conventions/mainframe.asp?topic_id=259&doc_id=686

on the Continental Shelf was adopted in Rome in 1988. This Convention is applied to ships in navigation or scheduled to navigate through, on high seas or the lateral limits of its territorial sea with adjacent States.

At the end of 2005 IMO's Legal Committee adopted the Protocol of 2005 to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime navigation and the Protocol of 2005 for the Suppression of Unlawful Acts Against the safety of Fixed Platforms Located on the Continental Shelf after having studied SUA 1988. This protocol expanded the scope of offences considered within the Convention and established provisions that "... specified the conditions under which the forces of a state party may board a ship flying the flag of another state party when there are reasonable grounds to suspect that the ship or a person on board is committing, has committed, or will commit an unlawful act according to the Convention..." (Mejia & Mukherjee, 2006). In this way SUA 2005, represents an important achievement to combat maritime terrorism.

3.3.3 SOLAS Convention (ISPS Code)

The Safety of Life at Sea Convention known as SOLAS is the most important international treaty regarding the protection of life at sea on board commercial ships. This Convention was developed in 1914 in response to the *RMS Titanic* disaster. After its creation SOLAS has been under constant revisions and upgrades, registering new versions in 1929, 1948, 1960, and 1974.

As a consequence of the terrorist attacks on 11 September 2001, the International Maritime Organization (IMO) began to develop security measures applicable to ships and port facilities; in this way, IMO introduced some amendments to SOLAS Convention known as the ISPS Code, adding the Chapter XI-2, which considers mandatory and recommendatory actions in order to enhance maritime safety and security on board ships and in port facilities.

The ISPS Code is oriented to: passenger ships, cargo ships (including high-speed vessels) of 500 GT or more; and port facilities that handle the above ships in international movements.

3.4 International organizations

Undoubtedly a large number of organizations are involved in the development of the international maritime security framework, but two of the most active are the International Maritime Organization and North Atlantic Treaty Organization

3.4.1 International Maritime Organization

The International Maritime Organization began implementing an anti piracy project in 1998, which consisted of two phases. The first stage considered the development of workshops and seminars in high risk piracy areas, by IMO personnel and local authorities. The second stage considered application of evaluations and assessment missions to different areas, in order to verify the efficiency of actions adopted. Also, IMO is pushing the development of local initiatives as the Regional Cooperation Agreement on Combating Piracy and Armed Robbery (RECAAP) Information Sharing Centre, in order to enhance multi lateral cooperation among sixteen Asian regional countries²⁵. Another effort that IMO is doing against piracy is the development of sub-regional meetings, such as the one held in Yemen²⁶, Jakarta and Indonesia in 2005 and Oman, Caribbean, South Asia, Asia Pacific and West and Central Africa during 2006.

In addition, IMO has made considerable administrative efforts, developing instructions and guidance against piracy, such as the Maritime Safety Circular (MSC) 622 related to “recommendations to Governments for preventing and suppressing piracy and armed robbery against ships²⁷”, the MSC/Circ. 623 that establishes some “guidance to shipowners and ship operators, shipmasters and crews on preventing and suppressing acts of piracy and armed robbery against ships²⁸”, and the

25 People's Republic of Bangladesh, Brunei Darussalam, the Kingdom of Cambodia, the People's Republic of China, the Republic of India, the Republic of Indonesia, Japan, the Republic of Korea, the Lao People's Democratic Republic, Malaysia, the Union of Myanmar, the Republic of the Philippines, the Republic of Singapore, the Democratic Socialist Republic of Sri Lanka, the Kingdom of Thailand, and the Socialist Republic of Viet Nam.

26 for States in the Red Sea and Gulf of Aden

27 This circular suggests “... possible counter-measures that could be employed by Rescue Co-ordination Centres and security forces”. Also includes draft Regional agreement on co-operation in preventing and suppressing acts of piracy and armed robbery against ships.

28 contains comprehensive advice on measures that can be taken onboard to prevent attacks or, when they occur, to minimize the danger to the crew and ship.

MSC/Circ. 1073 that establishes some directives for maritime rescue Co-ordination Centers (MRCCs) on acts of violence against ships”, among others²⁹.

3.4.2 North Atlantic Treaty Organization

The North Atlantic Treaty Organization (NATO) is “... an alliance of 26 countries from North America and Europe committed to fulfilling the goals of the North Atlantic Treaty signed on 4 April 1949. The fundamental role of NATO is to safeguard the freedom and security of its member countries by political and military means...” (NATO 2008).

On September 12, 2001, NATO declared that the attack carried out against the World Trade Center and other targets in United States was an attack against all NATO’s country members³⁰. Due to this terrorist attack, NATO began a maritime security program named “Operation Active Endeavour” in order to preserve the peace and promote stability and security of all the members of the alliance and of the Mediterranean area. This operation considers four basic pillars: first, carry out surveillance and inspections of suspect vessels navigating international waters, in the Eastern Mediterranean; second, verify sea lane and harbor security conditions, through the use of mine hunter ships in the Mediterranean Sea; third, escort designated vessels in the Strait of Gibraltar’s navigation; and finally, developing the Mediterranean Dialogue program. All these actions are been applying against maritime terrorism as well against maritime piracy (Sanfelice 2003).

29 MSC/Circ.1072: Guidance on provision of ship security alert systems, MSC/Circ.1109/Rev.1: False security alerts and distress/security double alerts and MSC/Circ.1155 Guidance on the message priority and the testing of ship security alert systems, Resolution A.922(22): Code of practice for the investigation of the crimes of piracy and armed robbery against ships and Resolution A.923(22): Measures to prevent the registration of phantom ships.

30 This decision was taken according the terms of The North Atlantic Treaty (Washington D.C. - 4 April 1949) Article 5. “ The Parties agree that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all and consequently they agree that, if such an armed attack occurs, each of them, in exercise of the right of individual or collective self-defence recognised by Article 51 of the Charter of the United Nations, will assist the Party or Parties so attacked by taking forthwith, individually and in concert with the other Parties, such action as it deems necessary, including the use of armed force, to restore and maintain the security of the North Atlantic area”.

According to this new role assumed by different navies ³¹, NATO has improved merchant ships' night watch keeping capabilities, controlled immigration rate, illegal transshipments, weapons traffic and piratical attacks at its operational area; although some people think that this situation is a militarization of a civilian problem, Sanfelipe cite Pugh's words: "...When redeployed outside their area of jurisdiction, with the consent of the littoral states and as part of a complex reaction operation, maritime forces can act as a support of civilian (police) organizations for the international non-military security." (Pugh 1994).

Today, NATO carries out several initiatives in order to improve maritime security in its operational area such as security workshops, as well as special teams such as the NATO Response Force (NRF), which is a task-driven force, and the Maritime Interdiction Operations' Training Center, established in Athens, in order to give doctrinal and practical training support to NATO's forces from embargo operations to control of trades.

³¹ This is a new role, considering that the primary historical aim of navies around the world was "... To prevent, to dissuade and to deter..." (Mahan 1897).

4 PIRACY, TERRORISM AND THE SMALL BOAT THREAT

4.1 Introduction

Nations such as Australia where 99,9% of its exports are moved by sea have elevated their levels of alert, due to the scaling of terrorist actions against maritime objectives in different parts of the world; furthermore at the other hand, in spite of international efforts made against maritime piracy, its records still remains high and it seems that the final day for both activities is by the moment too far.

It must be highlighted that maritime piracy is not only responsible for the deaths of over 170 seafarers from 2000 it is also responsible for losses around U\$D1 billion to maritime industry (IMB, 2007). At the other hand, during last years, maritime security agencies have been considered the use of ships for terrorist nuclear, biological or chemicals attacks against maritime targets which could cost around U\$D1.3 trillion in lost trade alone (Buky, 2007).

It must be considered that in spite that under some circumstances piratical actions could be assumed as terrorist attacks or vice versa, both actions are different; but during last years have been sharing the use of small boats, as a common way to carry out their actions. According to latest statistics the small boats have proved be an efficient and low cost way to dramatically threat maritime security.

4.2 Piracy

Piracy is an organized crime and if it is not controlled appropriately can be immensely destructive (Murphy, 2007) because it not only means a threat to crews on board ships, it also means threat to world-wide economies and the marine environment, among others factors. It must be highlighted that each individual piratical attack can produce losses of thousands or millions of dollars, and annual global losses from maritime crime may be close to 16 billion dollars (Bulkeley, 2003).

Today, piratical attacks are more frequent, sophisticated and severe (Chew, 2005) in some parts of the world, including from the simple robbery of species pertaining to the ship or the crew, to the murder of the seafarers on board or the deflection of ships, under new identities. It is because of this development, that new counter-piracy actions are required for its suppression³² (Mo, 2002).

In order to analyze piracy according to the nature of the threat (O' Meara, 2007) in its widest aspect, the International Maritime Bureau's piracy definition will be adopted.

4.2.1 Piracy today

Pirate operations are defined and modified by a huge number of factors, such as local conditions, availability of targets, political domestic situation, and competence of the pirates involved (Johnson & Pladett, 2003). In this way, Piracy have probed during the years be a dynamic activity registering the following changes and tendencies during the past few years.

4.2.1.1 Number of piratical attacks world-wide

According to latest IMB statistics, the total number of piratical attacks reported around the world (this includes actual and attempted attacks) rose to 263 in comparison to 239 attacks reported during 2006, making an increase of about 10 %.

During 1995, 188 piratical actions were reported increasing steadily (except during 1998) to 2000 when 469 actions were registered. From 2000 to 2003, the number of pirate actions continued with an average of 404 actions during this period. Fortunately, due to huge efforts of the international maritime community the number of piracy actions has started to decrease, with 263 actions³³ in 2007.

³² This phrase comes from the Division of Ocean Affairs and the Law of the Sea (DOALOS), in the document entitled "Piracy and armed robbery", available at <http://www.un.org/Depts/los/index.htm>.

³³ ICC-IMB Piracy and armed robbery against ships report. Annual report 2007.

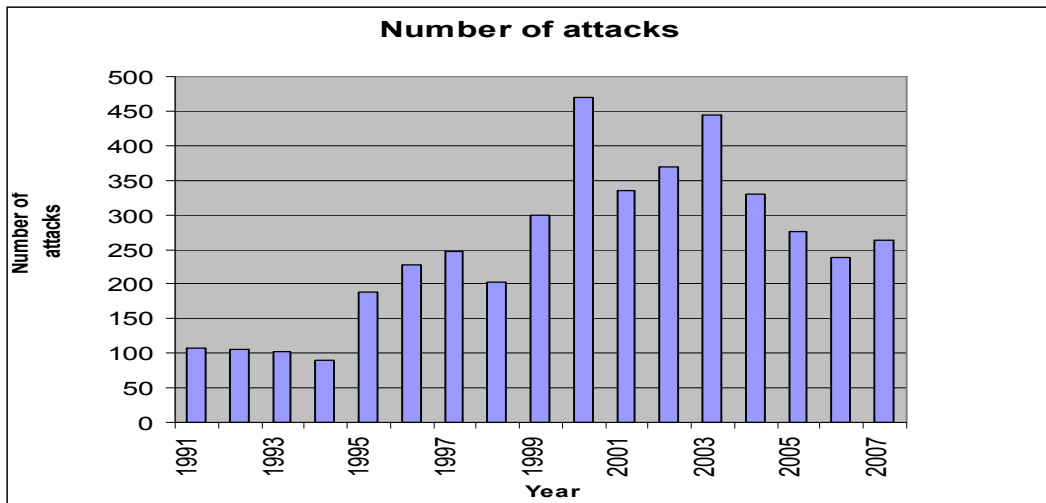


Figure 4: Number of piratical attacks against maritime shipping from 1991-2007.
Source: ICC IMB 2002/2007 Annual piracy report

From Figure 4, it is possible to see that from 2003, despite the number of piratical activities reported during 2007 there is a constant tendency to the diminution of this kind of actions in the world. But it must be highlighted that these numbers only reflect a general trend because around 50 % of piratical activities are not reported (Chalk, 2008)³⁴.

4.2.1.2 Hot spots

During the 1990's³⁵ when somebody spoke about piracy, an immediately link with the Malacca Strait and South East Asia's countries was created in the hearing; but this situation has undergone drastic changes, recently. According to ICC-IMB

³⁴ The reason behind these unreported numbers of attacks is, according to IMB's officers in Kuala Lumpur, the delay that means to a ship initiate an investigation and the costs that this process implies for shipping companies, which can be around € 10.000 per day (Johnson & Pladett 2003). This kind of situations can be worse in those countries in which the authorities are known by their lack of efficiency and professionalism, which can get to retain a ship in port, awaiting the finishing of the investigation per weeks and even months (Chalk 2008). But must be consider that the report of a piratical assault to IMO and IMB authorities implies later benefits to masters and shipping companies, through the development of warnings about risky areas or to distribute information about stolen cargo and vessels.

³⁵ During 1990s this activity reached high levels due to the following three main conditions: first, the end of the cold war, which decreased the presence of US and Soviet ships in several areas of the world. Second, the handover of Hong Kong to the Republic of China by the United Kingdom, which meant the absence of the British Royal Navy in the area. And finally, the recent Southeast Asian economy crisis that affected the budget of several nations and which helped the decrease the presence of naval ships in that part of the world.

statistics, in South East - Far - East Asia countries³⁶, the number of piracy actions have been decreasing steadily from 2003. On an average, these Asian countries and areas registered in 2003 / 189 actions; in 2005 they registered 122 actions and in 2007 they registered only 80 actions. The most important results within these countries are the results obtained by Indonesia, The Malacca Straights, and Vietnam, from 2003. Indonesia decreased from 121 actions in 2003 to 43 actions in 2007; the Malacca Straights registered 28 actions in 2003 and only 7 actions in 2007; finally, Vietnam registered 15 actions in 2003 and 7 during 2007.

An important aspect that must be noted is that during past years the distribution of piratical actions has suffered drastic changes due to the following three reasons: first, continued preventive measures adopted by ships' crew during the transit in hot spot areas; second, continued patrols by multi national task forces and navies; and third, actions adopted by several agencies and States around the world (IMB, 2007).

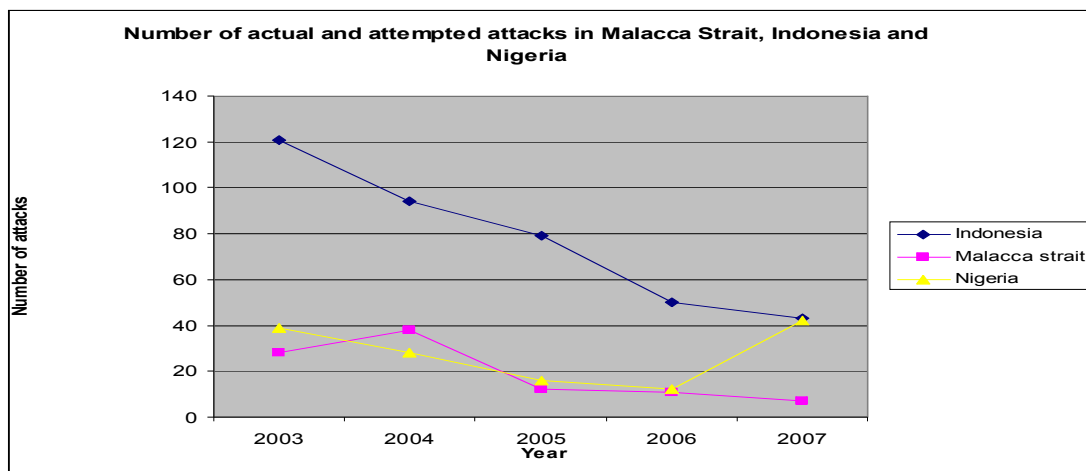


Figure 5: Number of actual and attempted attacks in Malacca Strait, Indonesia and Nigeria from 2003-2007.
 Source: ICC IMB 2002/2007 Annual piracy report

36 South East Asia countries and points: Indonesia, Malacca straight, Malaysia, Myanmar, Philippines, Singapore straits, Gulf of Thailand. Far Asia: China, Hong Kong, Macau. East Asia: Papua New Guinea, Solomon islands, South China sea, Taiwan and Vietnam.

It must be highlighted that the African continent³⁷ is registering an increase in piracy activities. It is not possible to establish a clear trend in this area because African countries registered a peak during 2003 with 93 actions, but the next three years they diminished to an average of 71 actions; lamentably, these countries registered an increase of piracy actions again during 2007, with 120 actions. Africa's trend of piracy is being mainly defined by Nigeria, Somalia, Tanzania and the Gulf of Aden and the Red Sea.

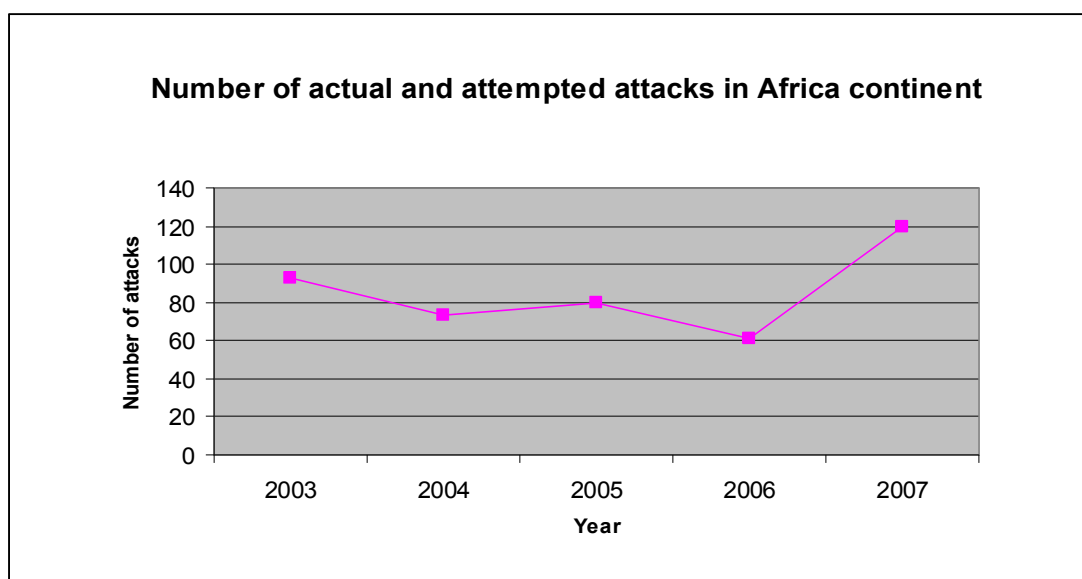


Figure 6: Number of actual and attempted attacks in Africa continent, from 2003-2007.
Source: ICC IMB 2002/2007 Annual piracy report

4.2.1.3 Level of violence

In spite of the trend to a decrease in the number of piratical actions world wide and number of crew/passengers killed during past years (as can be seen in Figure 7), the level of violence applied during these assaults is still alarming.

³⁷ Angola, Benin, Cameroon, Democratic Congo Republic, Egypt, Eritrea, Ghana, Guinea, Ivory Coast, Kenya, Liberia, Madagascar, Mauritania, Morocco, Mozambique, Nigeria, Gulf of Aden/ Red Sea, Senegal, Sierra Leone, Somalia, South Africa, Tanzania, Togo.

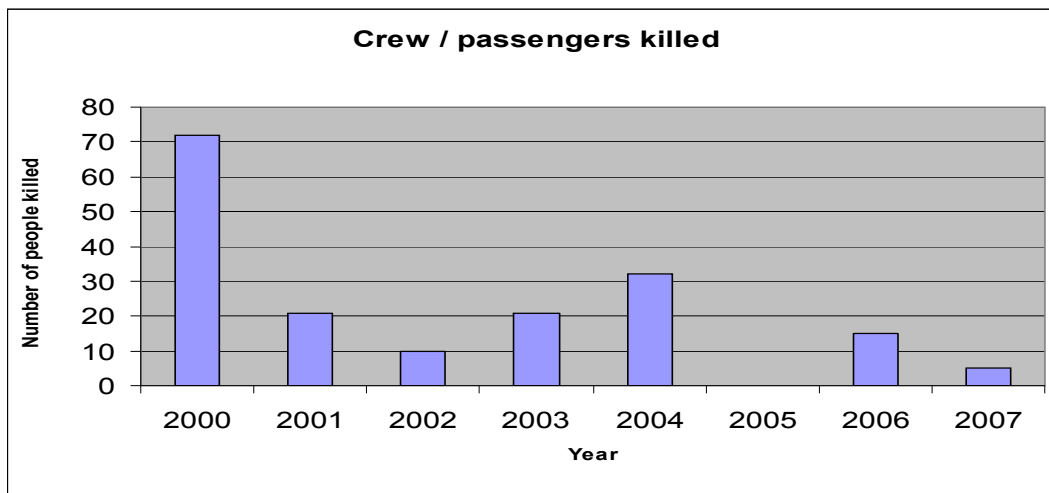


Figure 7: Number of crew and passengers killed between 2000 - 2007.
Source: ICC IMB 2002/2007 Annual piracy report

According to ICC data provided³⁸ it is possible to see that in a general view, the type of violence shows an unclear trend to diminish (detailed information in Annex II); during 2003, 644 actions were reported with different levels of violence; the next year (during 2004) actions were as low as 401, that means a decrease of 38% in relation to 2003. But during 2005, 509 actions with different degrees of violence were reported, that means a decrease of 21% in relation to 2003. According to statistics, during 2006, only 317 types of violence were registered which showed a low close to 51% in comparison to 2003, in order to increase again during year 2007, when 433 types of violence were reported (a drop of 33% in comparison to 2003)³⁹.

³⁸ ICC-IMB piracy and armed robbery against ships report- Annual report 2007, table 8, page 12.

³⁹ Analyzing the details related to the types of violence to crews, it is important to remark that the following types of violence: “crew threatened”, “crew assaulted”, “crew injured”, “crew killed” and “missing crew” demonstrate a tendency to diminish during last years in comparison to levels registered in the year 2003. At this point it is important to consider that another two types of violence: “taken hostage” and “kidnap/ransom” are two conditions where crew and passengers’ lives are in risk and could be part of “crew killed” or “injured” data. The previous idea is endorsed by the recent pirates’ action reported by France’s government against the Ponant which was seized by Somalian pirates in the Gulf of Aden, with a crew of thirty men and women. After launched a piracy alert plan, France mobilized all resources available in the area, in order to rescue Ponant’s crew alive. A ransom set at around 2 million (USD) was paid and was handed over to the pirates, whom released the crew. Soon after the ransom money was handed over, French special forces captured the pirates while they fled into the Somali desert..

4.2.1.4 Types of ships commonly attacked

According to ICC, it is possible to see that a clear defined general trend does not exist in relation to the types of vessels attacked by pirates during the past few years. By individual type of ship, it is possible to see that the number of attacks against bulk carriers has diminished in comparison to the highest numbers of vessel types attacked, from 114 attacks in 2003 to 32 attacks during 2007. Furthermore, it can be seen that the attacks against general cargo ships have decreased from 73 attacks in 2003 to 36 attacks during 2007. It must be highlighted that the number of attacks against tankers ships with chemicals on board has kept an average of 47 attacks during past five years; as well as container ships registering the same average during the same period.

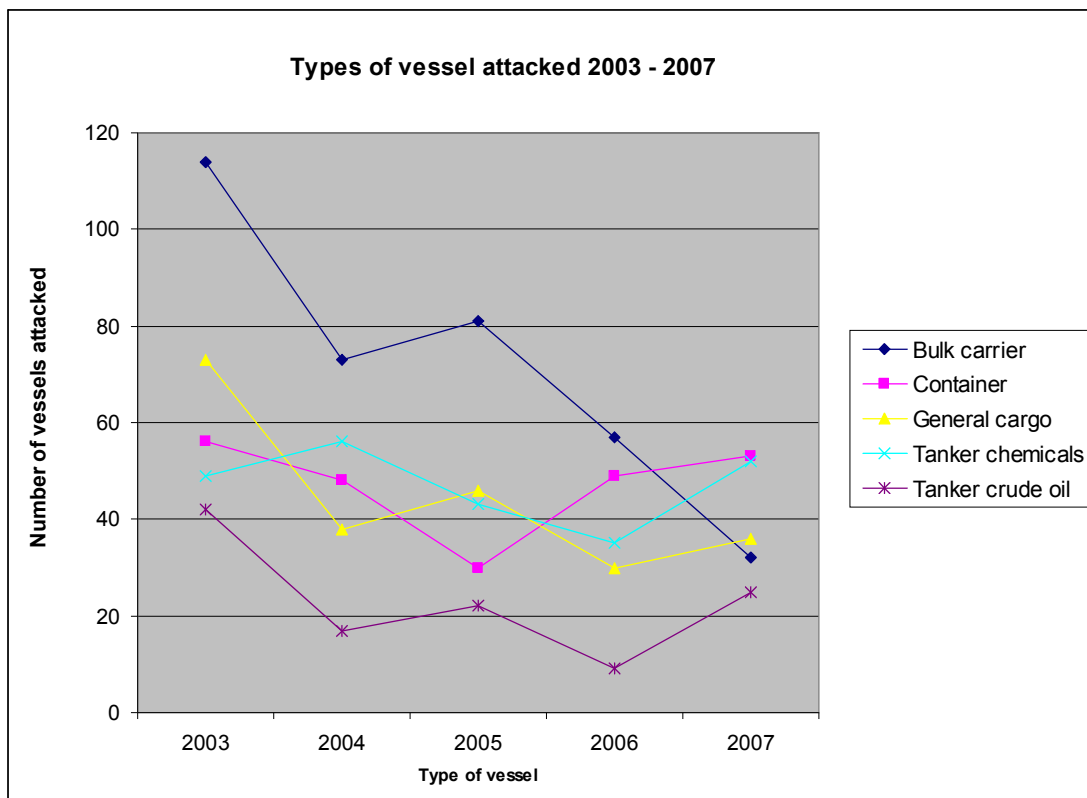


Figure 8: Types of vessels attacked by pirates during last five years.
Source: ICC IMB 2002/2007 Annual piracy report

4.2.2 Consequences of piracy

An analysis of the consequences of piracy can have so many approaches as the analysts who write about it, because cost and consequences can be measured in different ways: political, social, environmental, human, etc. The most basic level that should be considered about consequences of piracy is the physical and psychological damage that affect the welfare of the human element on board ships. The present chapter will consider the most essential piracy consequences that affect or modify the conduct and welfare of seafarers on board ships and people on shore, because maritime piracy is no longer a problem only for the shipping industry; now it is a global issue.

4.2.2.1 Human aspect

The most important consequence in relation to piracy is the direct danger to the lives of seafarers on board ships and to the welfare of the international community. According to the latest statistics,⁴⁰ piratical actions are reaching high levels of violence, especially in Lagos- Nigeria (where forty two actions were reported) and in Tanzania (where eleven actions were reported). In these two locations, pirates are robbing vessels and kidnapping crews for ransom.

A clear example of the high level of violence that piratical actions are reaching happened on 26 February 1996 on board the fishing vessel *Nomina*, which was attacked by two speed boats; according to the testimony of the only survivor, who escaped swimming from the vessel with a severe wound in the back of his head, in less than a minute one pirate killed nine men of the crew. Usually those crews who have had to undergo piratical attacks of great aggressiveness in which "... experienced or witnessed a traumatic or terrifying event in which serious physical harm occurred or was threatened..."⁴¹, present posttraumatic stress disorder (PTSD) in the way of helplessness, intense fear or horror, among other expressions.

40 ICC International Maritime Bureau, Piracy and armed robbery against ships, Annual report 1 January – 31 December 2007

41 Chris Brewin, Bernice Andrews, Suzanna Rose, Marilyn Kirk, Acute stress disorder and posttraumatic stress disorder in victims of violent crime American Journal of Psychiatry 156:360-366, March 1999

4.2.2.2 Economical aspect

Actions developed by pirates can cover a broad spectrum, from the robbery of ship's elements from her decks, crew's assassinations, robbery of the entire ship and her cargoes, to the creation of ships with a false identity to commit cargo frauds⁴². It must be highlighted at any moment, that the actions developed by the pirates not only affect the ship that this being attacked. It consequently brings a series of negative repercussions to world-wide maritime shipping, which is very difficult to quantify. According to a report cited by Wo (1997), losses caused by piratical attacks amounted to US\$ 200 million every year; and Eric Ellen, executive director of IMB, estimated the total maritime shipping loss closer to US\$ 250 million yearly. Another calculation was made by Smead in 1999, estimating the damage to the maritime industry due to piratical actions between US\$ 550 million to US\$ 1 billion per year, including the value of stolen pleasure craft. Another interesting calculation is imagining that due to piratical attacks the Malacca Strait and Singapore were closed, ships should be to take the following three alternatives water ways: Sunda, Lombok and Makassar Straights; under the previous conditions ships should add one week to their voyage and a minimum of US 500,000 to the trip of each one of the 50,000 ships that passed through Malacca and Singapore Strait every year (Winn, 2005).

4.2.2.3 Political aspects

During recent years some international organizations and policy makers are claiming for a new definition of piracy, arguing that the actual definition considers different types of crimes within the piracy definition, which is not accurate and not very useful during the development of policies (Robert, 2005). Malaysia's Deputy Prime Minister, Datuk Seri Mohd Najib Tun Razak, said during an international meeting that "... Malaysia, Indonesia and Singapore feel that acts of piracy should

⁴² See Abhyankar Jayant in the ICC International Maritime Bureau report "Piracy and maritime violence a continuing threat to maritime industry", explains that this kind of criminal act started since the late 1980's in the far East, receiving the denomination of "phantom ships".

be separated according to the crime committed...." (Utusan Malaysia Online, 2004) The reason for this statement was because, according to their experience, each crime classification requires different approaches, methods, organizations and resources. The lack of piracy's clear conceptual boundaries "... complicates targeting resources and disperses efforts to unrelated and inconsequential issues" (Utusan Malaysia Online 2004). According to Seri Mohd, IMO should be considering piracy under the following four classifications: first, maritime terrorism; second, sea robbery; third, piracy; and finally, corruption. It must be highlighted that corruption under this new definition is directed to States' agents (Robert, 2005). For countries previously mentioned, the actual definition considers different types of crimes within piracy's definition, which is not accurate and not very useful during the development of policies (Robert, 2005).

4.2.2.4 Social / Political aspects

The study of the reasons that favor the development of piracy in certain parts of the world has resulted in a huge number of factors, and one of these is the corruption, which could be considered as a mixture of social and political aspects. This complex combination of aspects seems to be the strongest reason behind the search for a new piracy definition.

According to Vagg's research there are four reasons behind the rise in maritime piracy since the 1970s in the Riau Archipelago in Indonesia; one of the reasons is official corruption. Wo (2003) established that in some places such as Indonesia, pirates are supported by corrupt military and police officers, who use the weak political stability in order to support criminal actions. Finally, Dana Robert established that the reasons for this irregular military behavior are due to two basic situations: first, the low salary level that military forces receive⁴³; and second, because the development of a long culture of corruption abetted by the military, during years of authoritarian governments (Robert, 2000).

43 Dana Robert, established in "Piracy in Asia: A Growing Barrier to Maritime Trade" 2000 that the problem of underpaid maritime security personnel and smuggling actions affected to China's People's Liberation Army (PLA) Navy as well. According to some reports ships on the high seas were boarded by personnel from military gunboats with PLA Navy markings and PLA Navy uniforms.

According to this information, through the adoption of a new definition of piracy, it will be easier to prosecute some criminal actions related to piracy, but not the piratical act itself; e.g. if a government servant or military tries to extort a pirate, in order to secure money, the situation could be solved with the adoption of measures against government officials' corruption and developing more directed actions against piracy.

4.2.2.5 Environmental aspect

The most typical approach of maritime piracy considers only two aspects: the danger to seafarers and the significant losses to shipping companies⁴⁴, forgetting the potential threat that piracy means to the marine environment. It must be considered that over 80% of the oil for Taiwan, South Korea and Japan is shipped through the China Sea, on board Very Large Crude Carriers with a capacity over two million barrels of oil per voyage, which is about 10% of the daily US consumption (Gao, 2007). According to the Energy Information Administration, in order to fulfill the requirements for diesel of those nations, between 16.5 and 17 millions barrels of oil per day⁴⁵ flows through the Malacca Straits every day. This amount is almost four times more than the amount that flows through the Suez Canal and thirty three times more than the amount in transit by the Panama Canal. According to Wo (2003), an increase in the demand of oil could be expected by Asia, which could duplicate the amounts cited over the next two decades.

This amount of diesel in transit through the Malacca Strait adds to the increase of the aggressiveness during piratical boarding. According to I.M.B., this creates the potential development of two main scenarios: first, the explosion of an LNG tanker; and second, a major oil spill. This last scene has not been far from becoming a lamentable reality, because of the modus operandi shown by pirates. According to IMB reports, pirates during the development of their actions, usually tie up ships' crew, leaving ships in danger of groundings or collisions in very restricted

44 For example, the cost of a tanker is about 150 USD millions, and the lost cargo can cost easily over 100 USD millions and spill clean up actions can cost over 175 USD millions over the course of 1 year, as happened during the Delaware River oil incident in United States of America (2005).

45 For information details visit http://www.eia.doe.gov/cabs/World_Oil_Transit_Chokepoints/Background.html

geographical areas. In fact a situation like this pushed several years ago to Indonesia, Malaysia and Singapore, to recognize that piracy was out of control (Smead, 2001), when a completely loaded oil tanker sailed a narrow channel without a man in the control of the ship, threatening the environment with considerable marine pollution.

4.2.3 Some considerations

It is necessary to remark that some years ago the waters off Sri Lanka were infected by pirates from the Liberation Tigers of Tamil Eealam (LTTE)⁴⁶. According to ICC statistics only two actions were reported during 2003 and no actions were reported during 2004 and 2005. During 2006 only one action was reported beginning to appear again during 2007 with 4 actions reported. This possible renaissance is coincident with the finishing of peace negotiations in January 2008. According to intelligence reports this organization is recognized as a threat to maritime shipping due to its maritime capability and its strength which is calculated close to 2000 personnel operating a fleet of up to 15 attack units and about 12 commercial vessels for clandestine transoceanic operations (Murariev, 2007)⁴⁷.

46 The LTTE commonly known as Tamil Tigers is a militant Tamil nationalist organization that has waged a violent campaign against the Sri Lankan government since the 1970s in order to create a independent Tamil state in the north and east of Sri Lanka, under a Socialist regime. This group has been defined as well as terrorist organization by some countries in the area. In 2001 the LTTE declined its demand for a separate state, instead to get a regional autonomy, declaring a ceasefire, been accepted by the Sri Lankan Government, in March 2002. During the following years several peace conversations were held between both parties, what consequently brought a diminution of piracy in the area.

47 Muraviev Alexey, Maritime Terrorism and Risks to the Australian Maritime and Resource Industries, 2007

4.3 Maritime terrorism

4.3.1 Introduction to Maritime Terrorism

Terrorism has been a historical phenomenon executed during many years in the territorial sea by a great number of nations world-wide, replacing from the first place nuclear confrontation, which was the prime threat during the Cold War (Mendelson, 2007⁴⁸). However, during the 21st century, terrorism has adopted the condition of “strategic” weapon, because today’s globalization, in spite of the economic benefits that it implies, has favored the incubation, facilitation and prosecution of terrorist acts in the maritime field. In this way, a well planned and executed terrorist action in the maritime domain (Burns, 2004), could start a domino effect reaction causing huge financial loss and systemic disruption.

In order to analyze terrorism applied against maritime targets, a new database was built for this study, considering maritime terrorist actions carried out from 1961 to 2004, with information available from open sources and Terrorism Knowledge database complemented with information from journals and research. With this more accurate database it will be possible to acquire a broader view about the application of terrorism to the maritime field.

Some organizations such as the Institute for the Analysis of Global Security (IAGS) or the Homeland Security Europe (HSE) organization, establish through their web pages, that maritime terrorism has “... emerged as a formidable threat in the world, targeting both civilian and naval vessels...” but is possible to say that this affirmation is not absolutely correct, since in 1961, forty seven years ago, a group of Spanish and Portuguese leftists hijacked the *Santa Maria*, a luxury cruise liner with 900 people on board. Years later, in October 1985 the hijacking of the *Achille Lauro*, carrying more than 400 passengers and crew, was established as the first actual terrorist act recorded in modern maritime history (Hesse & Charambolous, 2004). According to the information provided by RAND and the Terrorism Knowledge

48 Miriam E. Mendelson A systems theory understanding of terrorism March, 2007

database, terrorist have carried out more than 107 actions against maritime targets; the attack against the motor vessel tanker *Limburg* carrying 397,000 barrels of crude oil through the use of a small boat was the most recent one. The importance of this situation is because it was al-Qaeda's first successful striking against an oil target.

4.3.2 Maritime terrorism today

Terrorism has become today's hot topic since the terrorist attacks of September 11, 2001 against the World Trade Center in New York, demonstrated that the terrorism, more than 2000 years old stays effective, adopting new characteristics and exploiting vulnerabilities in today's targets, through different cells and terrorist groups around the world. After this event, a major security analysis was developed in several countries around the world, analyzing different scenarios susceptible to be denominated as targets by terrorists, establishing between many results that maritime vessels and port facilities are particularly vulnerable to terrorism (RAND, 2006), due basically to the globalization of maritime shipping. This maritime globalization depends upon a large and heterogeneous international fleet of vessels, reduced trading barriers and the facilitation of a series of administrative procedures (Zara, 2005).

It is because this dynamic aspect, common to maritime shipping and globalization, has pushed terrorism to develop different forms and adapt different tactics. In this way, ships can be considered as "vectors" or "weapons" within terrorist actions (Nincic, 2005). A vector ship is the vessel used to support terrorist actions developing making money operations to cover operational costs, transport of weapons and personnel or infiltrating men on board merchant vessels with false identities and false mariner skills. On the other hand, a "weapon" ship is the vessel used to cause direct damaged to a port facility or to another ship.

4.3.2.1 Number of terrorist attacks against maritime targets

Tracking the attacks is a very complicated task because the information is spread in several databases, and several open sources. According to RAND database, attacks against ships or port facilities are only a 2% percent within all terrorist actions around the world over the last thirty years, but it must be noticed that RAND considers only 13 actions although other databases claim the commitment of more than 107 terrorist actions during the same period. This upgraded database can be seen in Annex IV.

According to open terrorist databases, it is possible to establish that from 1961 to 2008, more than 88 actions were carried out by terrorists against maritime targets; a number that is completely different in comparison with the only 13 attacks considered by RAND (2006). The time distribution of these attacks can be seen in the Figure 9.

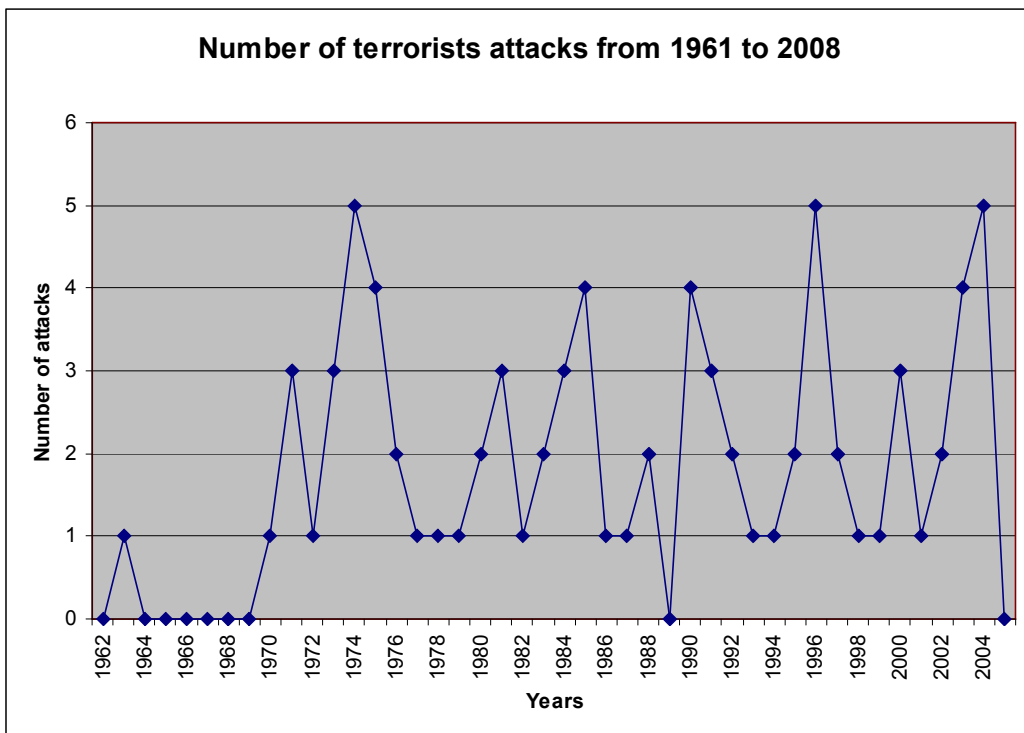


Figure 9: Number of terrorists attacks from 1961 to 2008.
Source: RAND database 2007, Terrorism Knowledge database 2003 & South Asia terrorism portal 2008

4.3.2.2 Geographical distribution

Regarding the geographical distribution of terrorist attacks it can be established that considering that 17 actions (15.7%) have not been linked to any specific geographical condition, 39,8 % of the terrorist actions have been developed in the African continent, 23.2 % in Asia and 16.7 % in America and only 4.6% in Europe. See Figure 10.

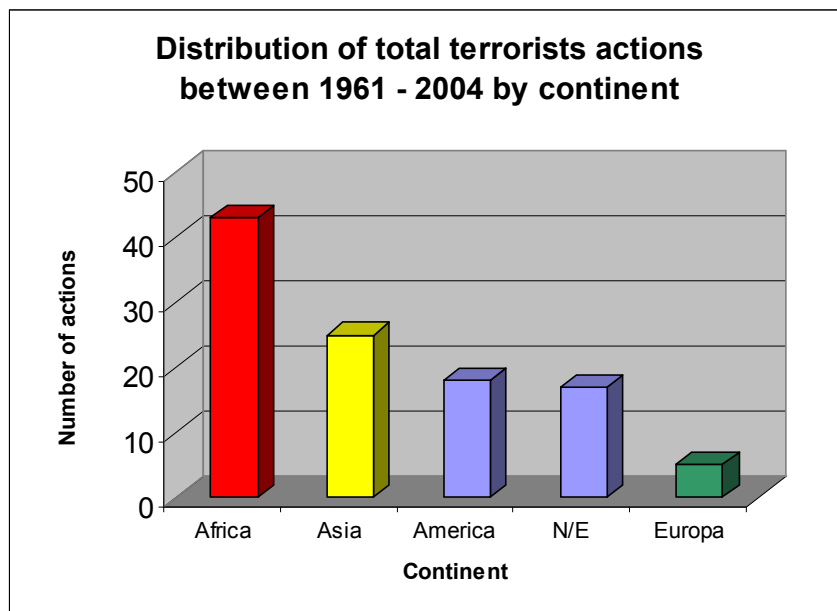


Figure 10: Distribution of total terrorists actions between 1961- 2004 by continent.
Source: RAND database 2007, Terrorism Knowledge database 2003

4.3.2.3 Level of violence

Although the Asian continent follows the African continent in relation to the number of terrorist actions developed, it is clear that the biggest number of deaths caused by terrorist actions in Asia, was due to the number of casualties resulting from the attack against the *SuperFerry 14* on February 27, 2004.

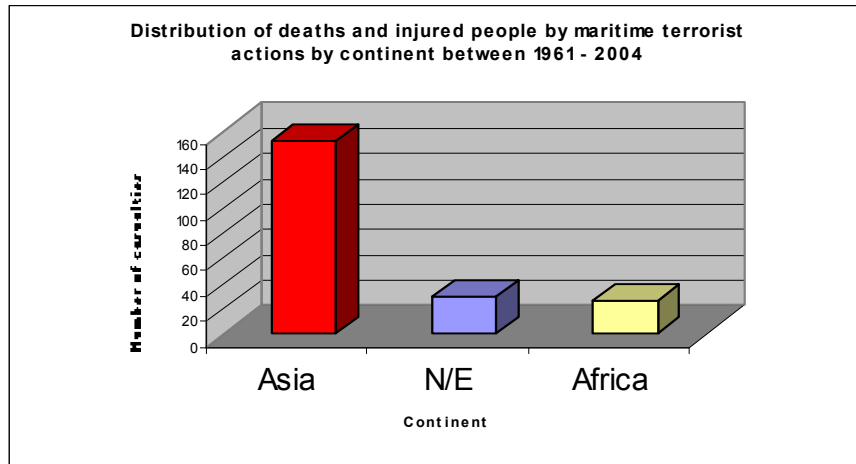


Figure 11: Distribution of deaths and injured people by maritime terrorist actions by continent 1961 / 2004. Source: RAND database 2007, Terrorism Knowledge database 2003

4.3.2.4 Commercial shipping

Maritime shipping continues as the most important element within modes of transportation world-wide, moving 90%⁴⁹ of all types of goods from one point to another. The transportation of petroleum is one of the most strategically important circulations of resources in the global economy (Rodrigue, 2004). The international energy market is dependent on secure and reliable maritime transport routes. During 2007 the total oil production in the world was close to 85 million barrels/ per day (bbl/d) and over 43 million (bbl/d) of this oil production was transported by tankers on fixed maritime routes (United States Energy Information Administration, 2007). These routes have been influenced mainly by the geographic and hydrographic conditions of the planet that force ships to use a set of straits and passages known as chokepoints of maritime convergence. During the navigation of these points, ships are forced to diminish their speed which affects their maneuverability and increase their vulnerability to offensive actions (RAND, 2006). The most strategic chokepoints are the Strait of Hormuz in the Persian Gulf and the

49 Furthermore must be highlighted that the transport of this 90% of world's goods is made through approximately 46.000 merchant ships that require port facilities. These facilities are close to 4.000 ports around the world, with different restrictions, equipments and security procedures (Sinai 2004), conditions that can not be controlled easily, representing vulnerabilities for the maritime shipping system and potential vulnerabilities to terrorist actions.

Strait of Malacca which links the Indian and Pacific oceans. Through the Strait of Malacca pass more than half of the world's trade (Energy Information Administration, 2008).

It must be highlighted that there are other aspects that are considered by terrorists (as well by pirates) namely, the use of small boats in piratical attacks.

4.3.3 Costs of terrorism

For several years, terrorism has imposed important costs on all economies around the world, especially within the complex maritime shipping system. This due to the following vulnerabilities:

- huge number of people from different cultures and with different beliefs
- use of ever larger ships
- movement of cargoes that are not inspected
- different port facilities with different security measures
- connection of these port facilities with different systems and ways of transportation in order to deliver the cargo to its final owner.

These vulnerabilities are being used by terrorists in order to commit criminal actions that affect not only the economy of the country where the terrorist action is developed; it also affects the world economy, in different ways with different speed.

According to the US Joint Economy Committee (Saxton, 2002), these effects are six in total and can be divided in two types: first, short term costs; and second, long-term costs; both costs should be understood and considered in order to take proper actions to prescribe economic policy remedies.

4.3.3.1 Short-term costs

The short-term costs are the immediate consequences due a terrorist action; and these are three: first, the immediate loss of human and non human capital; second, effects on uncertainty on consumers and investor behavior; and finally, effects of retrenchment on specific industries or localities.

4.3.3.1.1 Immediate loss of human and non human capital

The immediate and most shocking short-term cost of a terrorist action result from the loss of human lives and loss of productive capacity of those victims. As can be seen in Annex II, from 1961 to 2004, there were more than 107 deaths in the maritime field due to maritime terrorist actions. It must also be considered in these short-term costs all the money expended to ship repair, marine cleaning operations (due to diesel pollution) and on land cleaning operations (when the attack occurred in port installations). It must be highlighted that these costs are lower in comparison to the loss of capital assets.

4.3.3.1.2 Effects on uncertainty on consumer and investor behavior

The developments of terrorist actions create an uncertainty atmosphere of safety that mainly affects investor and consumer behavior. In this way, due to terrorist actions, the investors would doubt about the security in projects already adopted and will reduce their willingness in future investments. In relation to consumers, these terrorist events would diminish the demand of certain products, which would produce a decrease in the production of certain services and products, affecting the domestic economy's growth. Furthermore, it must be highlighted that because of the increase of the insecurity in a nation due to terrorist activities this can imply a loss of economic stability which will result in higher risk premiums, enhancing costs of protecting assets which will reduce foreign investment inflows and also lack of stability in the exchange rate with volatility and depreciations (Perkins, 2003). All

these effects will improve maritime shipping costs that could imply huge consequences in welfare; according to Rai (2003) a study estimated that a 1% increase in the costs of trade would reduce the world's welfare in U\$ 75 billion annually (Raby, 2003).

4.3.3.1.3 Effects of retrenchment on specific industries or localities

As a consequence of a terrorist activity usually it is possible to see a retrenchment in consumers and investors, who look for other safety alternatives to invest their resources. For example, in Sri Lanka, the actions developed by the terrorist group LLTTE in Hambantota, Tissamaharama and Lunumahavihara, have affected over 10,000 families and preventing the development of fishing and tourist activities. After 6 pm all the town is deserted and all day activities are restricted to the town limits (Sri Lanka Guardian, 2007).

4.3.3.2 Long-term costs

The long-term costs are important damages as consequences of terrorist actions, which seriously affect the macro economic condition of a nation. Increased costs of security are analogous to a "security" or "terrorist tax". These costs are related with security measures adopted in maritime shipping to improve security standards; sometimes these measures, while essential, do not improve very much security level standards; the quality of the supply of goods of service is also affected. In this way these security measures constitute negative impacts on maritime shipping meaning longer storage periods, less efficiency at ports, higher shipping costs, construction of special facilities at port, among other conditions. This implies major costs in comparison to the costs involved previous to the terrorist action that generated the new condition (Saxton, 2002).

According to a study developed by Mazaheri (2008) in 18 southern Swedish ports, whether or not the implementation of the ISPS Code affected the efficiency of ports and ports' activities, 54% of the surveyed ports recognized that the Code had no

effect in their efficiency, 28% recognized that the efficiency decreased and 18% recognized that the efficiency increased.

4.3.3.2.1 Anti terrorist expenditures crowd out

These costs are related to all the counter terrorist measures adopted in order to prevent terrorist attacks against port facilities and ships. After the implementation of the ISPS Code, maritime shipping stakeholders spent huge amounts of money in order to get the new international security measures on board ships and at port facilities.

4.3.3.2.2 Other long-run costs

These costs are related to the wide possibility of consequences due to terrorist actions; these kinds of costs could be human costs in relation to psychological effects post terrorist events such as anxiety, panic crisis and mental disorders. Within this classification all the counter-terrorism actions related to the analysis of new threat and terrorist hypothesis must be considered.

4.4 Conclusions

Maritime shipping is vital for the global economy and welfare, transporting 90% of the world trade around the globe. Globalization is an important factor within shipping network, determined by large and heterogeneous international fleet of vessels, reduced trading barriers and the facilitation of a series of administrative procedures. Terrorist attacks carried out on September 11, 2001 showed that terrorists can utilize weaknesses within transportation systems to threaten the entire world. Is at this step when International maritime organizations such as the IMO try to develop and apply international legal frameworks capable to apply equilibrium between maritime

security regulations such as SUA Convention and the ISPS Code and efficient maritime economic procedures.

The application of the previous international legal bodies cited has promoted the development of security actions on board ships and on port facilities to face international criminal networks carrying out terrorist and piratical actions. Both activities in spite of their particular differences have proved during the past years, that the use of small vessels to carry out criminal activities, is nowadays, the most successful “tool” to carry out these kind of actions against maritime shipping.

5 THE “SMALL BOAT THREAT”

“... They go in sea and on land in black robes; they will go and jam themselves against anything”

Captain Rajani Millar,

2003.

Criminals world-wide have shown that the use of small boats (under 500 gross tonnage) against maritime shipping is an efficient and powerful weapon to cause deaths, destruction and severe damages to the economy of the world. On the other hand, pirates who use small boats to carry out their criminal actions, have not yet been eradicated in spite of the efforts of several States, security forces, and the international community causing deaths, huge economical losses and permanent threat to ships' crews, the marine environment and the global economy. The number of deaths due to terrorist and piratical actions between 2003 and 2007 is about 308, not considering the number of injured people. Economic losses about billion USD must also be considered by both types of actions against maritime shipping. These are only a few reasons to establish that the small boat threat must be addressed as soon as possible.

5.1 Introduction

World waterways constitute places of development of great importance for the international shipping trade, receiving a great number of commercial and recreational ships. It must be emphasized that many marine commercial and recreational activities are also developed in waters under the sovereignty of each state, carried out by a huge number of boats that do not exceed 300 tonnes. These maritime areas and those port facilities that bring services to these ships provide welfare, economic development, environmental resources, and pleasure to many people; and these are the reasons why it is necessary keep them as safe and

secure as possible. These conditions have supported the proliferation of a number maritime commercial and recreational activities carried out by a large fleet of ships and boats under 500 gross tonnages. In this way, the definition applied for “small boats” is for all those ships under 500 gross tonnages, not covered by the ISPS Code, which can be small and fast watercraft (jet skies), fast boats, commercial tugs, large craft as small freighters, mini submarines and submarines and large private yachts (Carafano, 2007)⁵⁰.

The use of small boats in order to inflict damage to ships of greater spread is an old military concept that in spite of its antiquity is being used actively for the development of criminal activities in the marine environment. The use of small boats in piratical actions is an antiquity practice and recently it is becoming common to the commitment of terrorist operations, as can be seen in past actions against the *USS Cole* and the *MV Limburg*. The use of small boats against maritime targets is conditioned by social, legal, political, geographical and religious aspects.

The most basic reasons that pushed several navies around the world to use small boats in the past, are still the same: First, the construction of small boats imply low production costs; second, these kinds of vessels can develop great speed to surprise the enemy; and finally, these kinds of ships with special configurations can cause great damage to the enemy. Nowadays, those reasons are applied by terrorist and pirates to develop and support their criminal activities.

The small boats are not covered by the ISPS Code, but regulated by domestic jurisdiction that allows the application of different security standards, which can imply different levels of threats to ships involved in international trade (covered by the International Ships and Port Facility Security Code).

According to the latest reports submitted to ICC by seafarer victims of piratical actions it can be inferred that the way of transportation widely used by pirates during their criminal actions against ships and vessels is through the use of small boats. It

⁵⁰ Must be remembered that this dissertation considers as small boats all the ships less than 300 TRG.

must be highlighted that sometimes these small boats are supported by bigger ships in order to expand their operational and criminal capacities. It must also be considered that the terrorist actions against the *USS Cole* and the *MV Limburg*, considered the use of small boats fully laden with explosives. Further, terrorist have developed the use of small boats as platforms to conduct stand-off attacks, as the actions developed in August 2005, when terrorists fired rockets against two US warships docked in Aqaba, Jordan.

The adoption of security measures is subjected to a huge number of conditions, among others, the vastness, anonymity and limited governance of the shipping industry, which makes this scenario more complicated (DHS, 2008).

5.2 Historical development of the small boat concept as a threat

According to Schroeder (2007), it is possible to establish that the beginnings of small boats as weapons began in the early 16th century by the Italian Federico Gianibelli. During this period Gianibelli developed a number of tests which included the explosion of two bomb ships against a bridge, over the river Scheldt at Antwerp, Belgium, which caused a tearing of a 200 foot gap in it.

Some years later (276 years) during the Civil War of 1861 in the United States, President Abraham Lincoln adopted a number of innovations in naval warfare, including the improvement of the boats developed to that date, in order to hamper the South's efforts to obtain war materials from abroad.

Later in 1877, the British Navy ordered the construction of a torpedo boat under the name of *Lightning*; she was constructed by the shipyards of Sir John Isaac Thornycroft and was armed with self-propelled whitehead torpedoes, constituting itself as the first modern torpedo boat. The *Lightning* was built at the beginning with two lowering devices to put the torpedoes into the water. After several tests it was decided to install a single torpedo tube on the bow, with two reload torpedoes

amidships. Lately, major navies around the world adopted the use of small boats as an offensive weapon against big ships.

On 23 April 1891, in South America, during the Chilean Revolution, naval actions were developed , being the most important one registered as the first successful attack of small ships using torpedoes against large ships. On this occasion, small torpedo boats sank the cruise *Blanco*, at Caldera Bay.

This military concept of small boats against large ships suffered modifications which time and there were several technical and weaponry improvements, adapting this kind of boats according to different mission requirements.

In 1905, the British boat builder Alfred Yarrow, developed an experimental torpedo boat, 15 feet long, with a capacity to carry two torpedoes with a cruise speed of 25 knots. The successful experience of Yarrow was followed in other countries. In Italy in 1906 a motor torpedo boat was developed, and later, in 1907 France developed a motor torpedo boat with a revolutionary system which allowed the boat to fire the torpedo from the bow; this experience produced such unexpectedly good results that the French Admiralty ordered further studies based on this concept (Bulkley, 1962). In 1908 the United States citizen Lewis Nixon developed and sold to Russia ten motor torpedo boats. The good results obtained by the boats designed by Nixon, pushed US government, to order the construction of a small number of units to be used like coastal defense. This instruction was not completed until 1912, when its construction was materialized. Britain and Italy were the leaders in motor torpedo boat development during the First World War (Bulkley, 1962). Italy carried out a number of successful raids against Austrian naval units, with 69 feet torpedo boats, equipped with 2 to 4 torpedoes with a top speed about 33 knots. The most important actions were the sinking of the light cruiser *Wien* in 1917 and the sinking of the battleship *Szent* in 1918. On the British side, in 1915 Peter Thornycroft developed a 40 foot coastal motor boat, and later received an order construction for twelve units for the British Navy. Later, Thornycroft designed and constructed more boats with different specifications for the British, Navy until the end of the First World War. Thornycroft's boats won success during a post war operation, within the Russian revolution period, when they sank the cruiser *Oleg* and damaged two capital ships and two destroyers, loosing only one coast motor boat (Bulkley, 1962).

During the Second World War, the torpedo boat concept was applied again to warships, but in large size. In that way, in 1939, Germany developed the “Elbing⁵¹” class torpedo boat; a group of fifteen small warships that served in the “Kriegsmarine” during this conflict. Making a comparison with British ships of that time (displacement, weaponry, technical characteristics, etc), these Elbing ships were like British medium size destroyers and they operated in Baltic Sea from March 1944 until the end of the war and in western France from late 1942 until August 1944. According to the results obtained by the Elbing ships during this period, it is possible to establish that this kind of ships introduced huge changes to similar contemporary ships. These torpedo boats were effective fighting vessels being responsible of the sinking of the British cruiser HMS *Charybdis*, the escort destroyer “*Limbourne*” by torpedoes, and HMCS *Athabaskan* in 1944.

The same year, Germany started to develop the Ladungsschnellboot Linse, a small radio controlled explosive motor boat which was inspired in the Italian boats in order to be used by German commando troops. The first use was in April 1944 during the attack on the Anzio bridgehead, without success. After that attack the control of these 30 boats passed to the Kriegsmarine K-Verband (German Naval small battle force). These boats had a length of 5.75 m and powered by a 95 hp Ford V8 petrol engine, 95 hp = 35 kts. The following were the characteristics of these boats: displacement: 1.8 tons., length: 5.75 mts., beam: 1.75 mts.

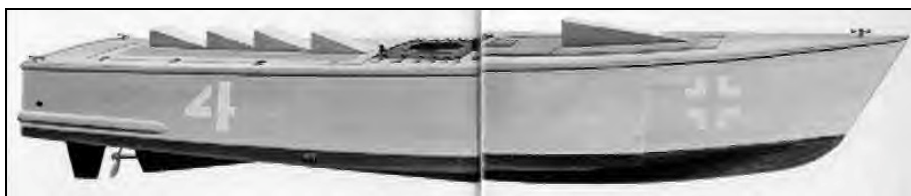


Figure 12: Germany explosive motor boat, known as *Ladungsschnellboot Linse*.
Source: Wikipedia, 2008

These boats operated in groups of three, where two were explosive boats and one was the control boat. The control boat was equipped with a 300 / 400 kg explosive

⁵¹ Known as Flottentorpedoboot

charge in the stern, and was piloted by a single crewman until the moment when the control boat took over by radio control. The boat operator then jumped overboard to be rescued by the control boat.



Figure 13: Germany operator about to jump off from a Germany explosive motor boat.
Source: Wikipedia 2008.

Another nation that applied the torpedo boat concept during the Second World War, was United States, which developed several small and fast vessels squadrons, which were known as “mosquito fleets”. At the beginning the reasons for developing small boats as a defense line against enemy destroyers⁵² were mainly two: low cost and low material requirement. But these economic and material reasons were enhanced by the huge psychological impact because their effectiveness in combat against the Japanese.

The United States Navy experimented different conditions in hull designs, hull materials, engines conditions, different displacement for different weather conditions and especially they experimented different weapon systems, developing small boats armed with configurations as the Elco boats with one 20 mm Oerlikon cannon mounted at the stern, and two twin M2 .50 cal (12.7 mm) machineguns mounted in open rotating turrets. Another configuration considered boats with twin-mounted .30 cal (7.62 mm) Lewis machine guns and two or four 21-inch (53 cm) torpedo tubes to launch Mark 8 torpedoes. Some time later some boats mounted one 40 mm Bofors gun aft and four launching racks, two on each beam, for Mark 13 torpedoes. Other PT boats were armed with two eight-cell 5-inch (127 mm) spin stabilized flat

⁵² In fact the name “destroyer” is a shortening of the name “torpedo boat destroyer”.

trajectory rocket launchers. Other boats were equipped with anti tank guns and aircraft automatic guns.

These small US boats caused severe damage to Japanese ships during the World War, mainly because they were equipped with Raytheon radars, with about 25 miles range, that allowed them to operate in zero visibility condition and due to their engines that allowed them to navigate until 45 or 50 knots.

Due to the development by United States in the construction of small military boats, the Japanese response did not wait too long in materializing itself, but with a new view. Japan decided to develop vessels similar to US ships, but under a “kamikaze” or suicidal modality. It seems that the “kamikaze” concept which meant the use of suicide airplanes against war ships was proposed by Vice Admiral Takijiro Onishi, commanding the 1st Air fleet on Luzon, on 19 October 1944, as a way to attack and ensure the destruction of American carriers, during the Second World War, a concept that lately was applied as well to small boats against war ships.

Under the previous circumstances, in April 1944, during the Second World War, Lieutenant General Suzuki, Commander of the Shipping Engineers at Ujina, developed studies to use land torpedo platforms in order to protect military installations from enemy ship attacks. This idea was well received and approved by the Imperial General Headquarters, who also ordered the development of small boats for the same role. Finally, in June 1944, a prototype of a small boat carrying torpedoes was tested in Tokyo Bay, creating late on 1 September 1944, the first Sea Riding regiment, of small boats, receiving the military classification of “Q boats”. Every regiment of Q boats was commanded by a Captain and assisted by 11 men, was composed of 104 personnel and 100 boats. Within this organization, was established that the minimum sized element to conduct tactical operations would be a platoon.

Q boats were manned by 16-17 years old officers cadets from Shipping Engineer Officer Academy. These boats were 18 feet long (5.58 metres), and 5 feet wide (1.55 metres) equipped with Chevrolet engines of 85 horse power that allowed to reach 20 knots speed an autonomy at that speed of 3.5 hours, an autonomy at low speed (6.5 knots) of 11 hours, equivalent to 70 nautical miles. With these

capabilities, the attack concept developed by Japan Navy, was low speed displacement to war zone, attack and escape at high speed. It must be established that due to the Q boats speed, which was not too adequate, they did not inflict too much damage to the enemy, and often they received a huge amount of fire from American automatic weapons.

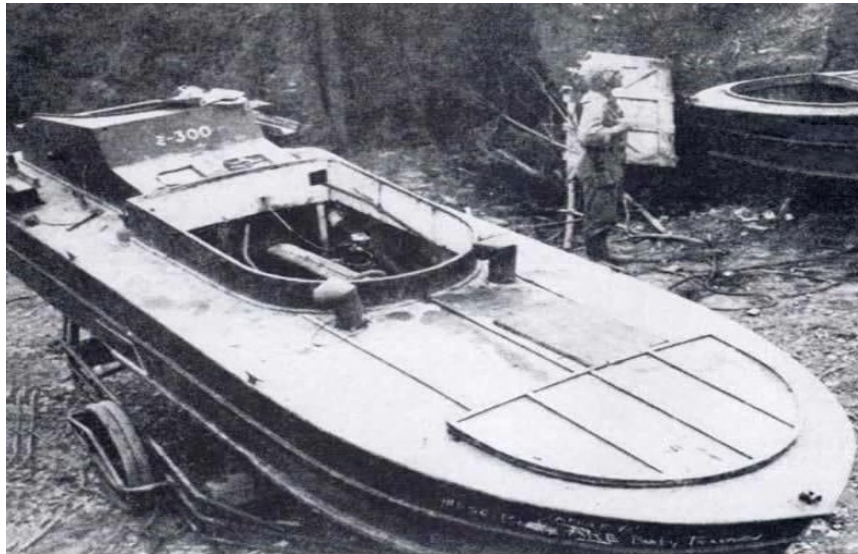


Figure 14: Japanese Q-boat.
Source: Wikipedia 2008.

Some of these boats carried 551 lb (225 Kg) explosive charge inside the bow, and others even carried on either side of the cockpit for 264 Lb (120 Kg) model 98 depth charge with a range of 5 meters in order to detonate alongside target ships. The Japan Navy developed some guidelines to these Q boats flotillas, the main aspects considered the use of these boats during night operations, in a number between 6 to 20 (or even more), separate by groups. The displacement to war zones would be at low speed in order to conserve fuel and avoid excessive noise from boat engines.

Twenty years later of the creation of the first Japanese Sea Riding Regiment, small boats appeared again in a military conflict during the Vietnam war. These small boats were constructed as a requirement of the United States government for a robust riverine boat with warfare capability. These boats started their operations under the classification of Patrol Torpedo Fast (PTF) in order to support Naval Special Warfare (NSW) forces. During the period March-June 1964, eight patrol

boats were delivered to different US units in Vietnam. These eight boats had two kinds of hull, aluminium and wooden⁵³, but all the boats were capable of getting speeds close to 44 knots at 75 tons displacement (70 tons plus half fuel), the boat had a cruising range of approximately 450 miles at maximum cruising speed, 500 miles at 35 knots, and 600 miles at 20 knots⁵⁴. The kinds of mission that these boats developed were mainly interdiction of Vietnamese small boats, shore recognition, infiltration of special forces and coastal bombing.

In the maritime field the small boat concept have been present during last decades hidden by piracy, especially in South East Asia and Africa, but has not been assumed yet like a real threat to maritime shipping. In times that the environmental situation is a world concern, some maritime administrations are assuming piracy as a threat to the maritime environment. The previous approach is again a veiled connection related to the use of small boats for commitment of criminal situations.

At a naval scenario, the threat that implies the use of small boats as weapons against large ships, have been adopted by a huge number of navies around the world, after the attack undergone against the USS missile destroyer *Cole* in which 17 people died and another 39 crew were injured in Aden harbour, Yemen, on October 12, 2000. On that occasion, a small craft, with two men on board and packed with 400/700 pounds of explosives collided the side of the *USS Cole*. According to later investigations and declarations made by suspects it was possible to establish a connection between attackers with the terrorist organization Al-Qaeda.

53 Some PTF's had aluminum hull, another had Norwegian wooden hull boats.

54 In a long range version of the PTF, the approximate cruising ranges expanded to 800 miles (38 knots), 900 miles (35 knots), and 1100 miles (20 knots) and each boat was armed with two 20-millimeter and two 40-millimeter single mounts. Later, another two PTF's were armed with 81-millimeter mortars.

5.3 Nature of the threat

The use of small vessels or boats offer to terrorists and pirates several advantages and potential capabilities to support the preparation and the later development of criminal actions. According to the Homeland Security Institute (2007), some of these actions consider smuggling of dangerous persons and weapons in areas controlled by regular security forces. The following are only some advantages that represent the use of small boats by criminals which represent at the same time threats to international maritime shipping.

5.3.1 Easy access

Today the recreational marine market offers a huge variety of boats under 300 tons, considering small boats, ships, and watercraft, etc. Boat manufacturers offer boats with different specifications and different price levels making them accessible to many people. Following a pure commercial interest salesmen are not concerned if the person who is buying the boat has proper marine skills or what the purpose is. In many countries exists a trend to promote the practice of the marine environment in recreational activities, making the process related to acquisition of small boats easier; in this way the legal obligation is not stipulated to inform the sale of a boat by the marine agencies to the local marine administration.

5.3.2 Dimensions

Due to the dimensions that small vessels or boats have it, is easy to transport them on land from one place to another in order to allow its use in different geographical and weather conditions, according to the owner's requirement. Sometimes these boats are in the water for short periods in order to decrease maintenance costs and protection. This facility to move a small boat from or to the water is difficult to control by maritime authorities, allowing to unscrupulous owners to avoid control actions.

5.3.3 Proximity to high value facilities

Due to the importance of maritime trade today, port administrations around the world have made great investments in harbor and port facilities, through the purchase of machineries, cranes, special trucks, aids to navigation, etc⁵⁵. All the investments in port facilities are developed in order to give a good and fast service to everyday bigger, complex and sophisticated vessels. As it was previously cited, at the end of 2006, 6,908 vessels were ordered equivalent to 302,3 millions of dead weight tonnage (UNCTAD 2007)⁵⁶.

Because of the natural conditions of the maritime shipping business the construction of fences is impossible, allowing the free flow and access of all ships involved in maritime shipping, all the ships involved in services to ships and port facilities, as well recreational boats

5.3.4 Proximity to people at high value coastal construction areas

The tourism industry has become a major aspect within the global economy since the later part of the 20th century and has registered a fast growth with a big annual rate. Tourism growth recorded a fourth consecutive positive year with an average of 1,5 percentage points above in comparison with the long term average of 4.1 of the previous year. During the first eight months of 2007, international tourist arrivals worldwide increased by 5.6% over the same period in 2006, where boats and ships contribute with a 2 % to the flow of tourists (ITB Berlin, 2007). This sector has shown a spectacle ability to create jobs, foreign investment, and decrease in the severance

55 The European Investment bank (EIB) made a loan of € 300 million for the construction of the Euromax container terminal and the Delta 2000-8 container terminal. Furthermore during beginnings of 2008 the EIB allowed the loan of € 900 million for different projects. <http://www.environmental-expert.com/resultEachPressRelease.aspx?cid=26926&codi=25203&level=0&idproducttype=8>. See also investments in South East Asia. In March 2007, a German investor announced a \$220-million, 3,000-employee investment in Johor, Malaysia, that will manufacture maritime shipping modules. Like other companies, Qimonda's southeast Asian investment pattern is coupled with Chinese investment: Its 2007 project portfolio also included two facility investments in Suzhou totaling \$217 million. <http://www.siteselection.com/features/2008/mar/seAsia/>

56 According to UNCTAD, review of maritime transport 2007. Ordered constructions in dead weight tonnage was: oil tankers 118 million, dry bulk carriers: 79 million, general cargo vessel: 8 million, container ships: 51.7 millions, other kinds of vessels: 45.6 millions.

pay with a political and social legitimacy (ElAdli Imam & Bashandy, 2003). The biggest driver of development in the European coastal zone during recent years has been tourism. Europe as the largest holiday destination of the world registers 60% of international tourists. The greatest tourist activity has been registered along the Mediterranean coastal zone where France, Spain and Italy receive 75 million, 59 million and 40 million visitors respectively a year. In this way small boats represent a potential threat for people and high value coastal constructions areas.

5.3.5 Complex maritime environment and overlapping jurisdictions

The political and territorial integration of the seas and oceans have been complex due, among other factors, to the complexity of different nations' sovereign rights. According to Sato (2007) nowadays maritime jurisdictions are still unclear and many times overlap with each other.

Security threats create the possibility of a crisis situated amid the complex layers of overlapping organizations' jurisdictions in a vertical (regional, federal, provincial) and horizontal way (departments, units). This managing situation will establish the need to develop an interdepartmental approach to security aspects and emergency planning (Avis & Grant, 2004); a task that is made difficult by the existence of a great number of boats with a great variety of characteristics with different operational areas.

5.3.6 Limited capabilities to identify and monitor small vessel operations

During the past few years, many nations have impelled the use of the marine spaces as sources of marine species, as also to push the practice of recreational marine activities. Following this spirit, many companies have put in the market a great number of small boats, offering an ample variety in prices and of manufactures' materials. Nowadays is possible to find boats with hulls constructed with: fiberglass, aluminum, roplene, carbon fiber, Kevlar, among other materials, offering different advantages according to specific requirements and needs.

It must be highlighted that all metals are highly reflective to radar, therefore, diverse designs and materials exist that enable them to reduce radar's signature; for example, boats built in steel and aluminium will require the utilization of Radar Absorbing material (RAM) in their super structure, or the application of a resistive coating or panel in the surface of the structure or the use of special nets, for this purpose (Aksu, Cannon, Gardiner & Gudze, 2002). The following image shows a 50 meter research vessel with radar reflection hot spots, from which can be understood the difficulty when trying to get contact with a small boat by radar and its later tracking (Harre, 2004).

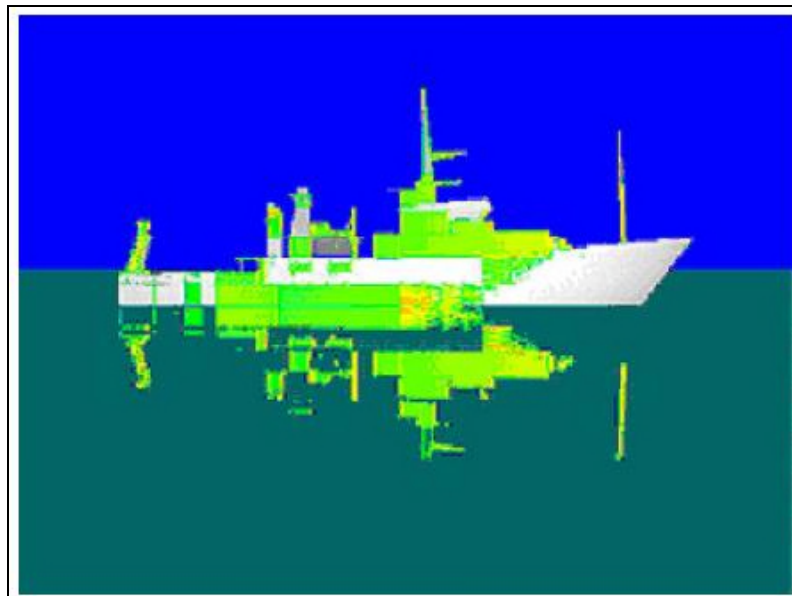


Figure 15: 50 meters research vessel with radar reflection hot spots.
Source : RCS in radar range calculations for maritime targets

These characteristics represent huge challenges to electronic sensors to detect small targets. The following capacities, among others are essential:

- high probability detection
- ability to discriminate between close targets
- noise and clutter suppression techniques
- low false alarm rate
- stable tracking

These electronic characteristics are usually on board warships, but not on board commercial ships exposing them to undetected potential attacks from small vessels; furthermore it must be considered that these electronic capabilities are unuseful, when the attacks are coming from the shore or in restricted waters.

5.3.7 Limited ability to screen small vessels for weapons

In some nations around the world a central small vessels' register does not exist, making it more difficult to maritime administrations and police forces to detect irregularities in their use, allowing the free and almost uncontrolled use of them. Currently the existence of electronic devices to detect weapons is very limited and in some occasions operators have not demonstrated proficiency in its use on board small boats. In this way, screened operations are established by the risk level established by the authority which defines the profile of the ships subject to be screened (DHS, 2008).

5.3.8 Tonnage

Ships, vessels and boats less than 300 tons, generally called small boats, are not covered by the ISPS Code or any other international regulation. Then, these kinds of boats are subject to the administration and regulation of their particular domestic administration. This lack of international standards to be applied to small boats allows the adoption of different procedures, plans and regulations different from one maritime administration to other. In this way the reasonable level of security or measures to be adopted against the use of small boats in criminal activities does not have a standard meaning.

5.4 Vulnerabilities of shipping environment

All societies and their associated systems have vulnerabilities, which can be used by terrorists and pirates to infringe different classes and levels of damages. These

vulnerabilities are under the criminals' vigilance with the objective to get their aims. Some of these maritime shipping vulnerabilities are: the "just in time" concept, the existence of mega ports, the importance of maritime shipping to the global economy, the increment of population in coastal areas and the existence of mega ships (Homeland Security Institute, 2007).

5.4.1 Just in time

In recent years it is possible to see that world trade continues growing, due to the shipping industry's effective response to new shipping challenges. During the past 15 years the quantity⁵⁷ transported by sea increased about 50%. The main reasons behind this growth are the availability, low costs and efficiency developed by the maritime transport system (International Chamber of Shipping 2007). These reasons are fully linked with the strategy "just in time", whose aim is to improve the return of the investment realized in an economic project through associated cost reductions. These costs are usually enhanced by the system's inefficiencies such as bureaucracy, excessive controls, and operational delays. But the "just in time" strategy constitutes a major vulnerability to maritime shipping security because physical security controls are only reduced to random inspections; that is the reason why the United States is pushing the development of the Container Security Initiative⁵⁸ (CSI) in order to pre-screen cargo containers at ports of origin or transit rather than waiting for these goods to arrive in US ports. In this way USA is trying to establish equilibrium between the "just in time" strategy and security measures, due to approximately 95 % of US trade enters through seaports and only 5% is been screened; a situation that according to some politicians is not adequate and have pushed them to claim for a 100% container screened (Etheridge, 2006).

⁵⁷ This measure is in tonne/km.

⁵⁸ The Container Security Initiative consider four core elements: 1) use of intelligence and automated information systems to identify and target potential high-risk containers; 2) pre-screening at the port of departure of those containers identified as potential high-risk carrier; 3) use of detection technology to quickly pre-screen potential high-risk containers; 4) use of smart containers. The application of the CSI have been initiated at the following 18 "mega-ports" that manage approximately two-thirds of containers shipped to the United States: Hong Kong, Shanghai, Singapore, Rotterdam, Pusan, Bremerhaven, Tokyo, Genoa, Yantian, Antwerp, Nagoya, Le Havre, Hamburg, La Spezia, Felixstowe, Algeciras, Kobe, Yokahama.

5.4.2 Mega ports and economic impact

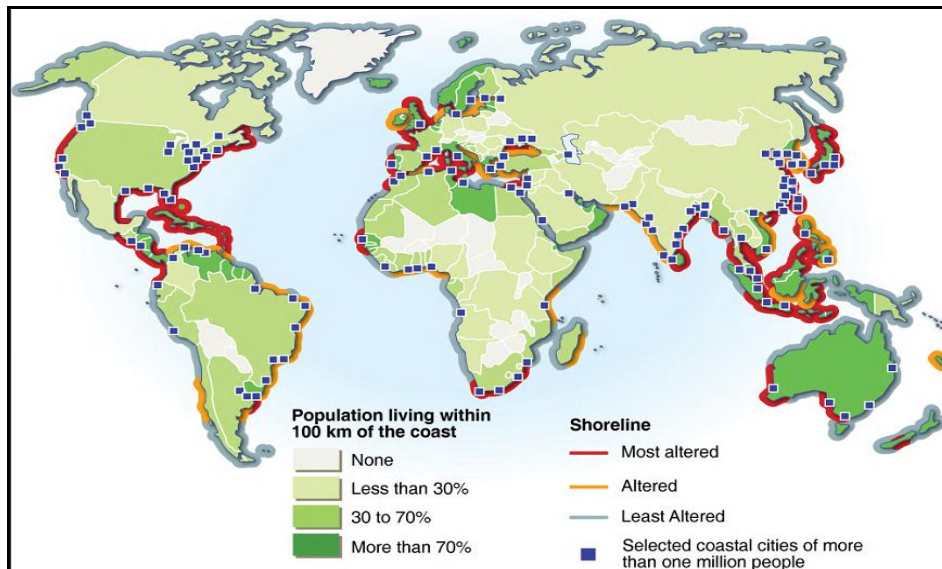
Considering that ports are vital and stable elements in the economic relationship between countries, its clear how big the importance of the so called “mega-ports” is. Hub ports or “mega-ports” are potential lucrative targets for terrorists. These “mega-ports” are important elements within the Security Container Initiative, because the ports are managing the highest volume of ocean going container traffic into the United States and because from these “mega-ports” nearly one-half of all container trade sets sail to different parts of the globe. But the application of security initiatives to these big managers of cargo is a very complex and problematic situation. (Banomyong, 2005). Due to the importance that “mega-ports” represent within the global economy, efficient and secure rules are required in order to not affect normal shipping trade.

In order to have an idea about the economical importance that “mega-ports” have, the following information should be considered. In October 2002, when US western coast ports were closed due to industrial action, the costs were about US\$1billion a day. It can also be highlighted that, according to some projections, the cost of the closure of Singapore Port could easily exceed US\$200 billions per year from disruptions to inventory and production cycles (Ho, 2004).

5.4.3 Increased coastal population density

In recent years there have been changes in the distribution of different nation’s population. Figure 16 shows the proportion of the population that lives within 100 km of the coast, for each of the world's nations and where there are coastal zones with high degree of human alteration (compared to “natural” land cover).

As a general trend, people have moved to coastal areas, especially in Central American countries, in United States in California and the west coast, Europe, in Africa in Mauritania and Senegal, in Asia in India, Thailand, Myanmar, Indonesia, Malaysia, Sri Lanka, and Japan and on Australia’s eastern coast. It can also be seen that a huge number of countries have registered a progressive trend to live close to coastal areas.



**Figure 16: Coastal population and altered land cover in coastal zones (100 Km. of coast line).
Source: United Nations Environmental Programme (UNEP)**

Figure 16 considers data from 1993 to 1996, but the information agrees with the European coastal population distribution projected by the European Commission (EUROSTAT) in 2001.

In this way the development of a terrorist action against a maritime target close to coastal areas as an attack with weapons of mass destruction (WMD) could cause a huge number of victims.

5.4.4 Mega ships

Due mainly to the economic concept of “economy of scale”, actual conditions for construction of ships with huge cargo capacity or “mega ships” are favorable. These “mega ship,” or Super Post-Panamax vessel have the capacity to transport more than 4,500 TEU and huge quantities of petroleum products⁵⁹. By the end of 2001, about 10% of the global trade was shipped by super Post-Panamax vessels. According to a report developed by Drewry Shipping Consultants, the cost

⁵⁹ An example of the damage that can occur when light oil is spilled in heavy wave conditions , where evaporation is minimal in comparison to the oil mixing with water, was a tanks barge’s ground near to Point Judith, Rhode Island, spilling about 20.000 barrels of heating oil. The resul of this spill affected animals and plants living on the sea bed, with an estimated mortality of 9 million lobsters, 7.6 millions of crabs, 4.2 millions of fishes and 19.4 millions of clams. The oil spill affected an area about 250 miles, during a period of five months.

advantages of a 6,000 TEU "Super Post-Panamax" ship over a 4,000 TEU vessel in transpacific service were in a diminution about 21% (Helmick, 2001). It must also be consider the existence of "mega-ships" with people on board, such as the Royal Carnival fleet (*Triumph, Destiny and Victory*) with a capacity to transport over 3,400 passengers.

It seems to be clear that the existence of major structures in the maritime industry has an impact on the environment, but the aspect that is not clear is the quantification of this situation. It must be highlighted that "mega-ships" and "mega-ports" are vulnerable (Loy, 2001) and could represent interesting targets to the development of potential terrorist actions because of the huge economical impact, number of potential victims, and potential environmental damage that these targets represent.

5.4.5 Complex maritime environment and overlapping jurisdictions

Maritime jurisdictions of several nations have been delimited according to the concepts established in the United Nations Convention on the Law of the Sea (UNCLOS), as a way to adopt uniform criteria during the maritime boundary delimitation process. This Convention has been very important establishing different maritime zones and States' rights over those zones, but provides little guidance for the delimitation process (Smith, 2004). Nowadays, more than 30% of the oceans of the world are within the jurisdiction of some state, a situation that creates overlapping maritime zones and the need of about 430 international boundaries, of which only half has been agreed (Pratt, 2007). The lack of clear guidelines has been reflected in the establishment of unclear and overlapping maritime jurisdictions within different countries, making the normal development of certain domestic and international situations difficult and increasing the vulnerability of maritime security enforcement through corruption situations (Sato, 2007).

5.5 Assessing and identifying the small boat threat

Maritime terrorism and piracy are criminal activities that represent real threats to maritime shipping security, which consider the use of small boats to reach their criminal aims.

Piracy is a criminal activity that normally considers the use of one small boat (at least) to commit violence, depredation or detention of another ship to carry out actions such as robbery, kidnapping, injuring crew, taking hostages or assault the ship or the crew of another ship. According to the Piracy Reporting Centre, piracy registered an increase of 10% in comparison to the number of actions reported in 2006.

Maritime terrorism has been considered a real threat against maritime shipping from the hijacking of MV *Santa Maria* in 1961. From then, terrorists have used different techniques in order to achieve their objectives, the most common during the past few years, being the use of small boats fully loaded with explosives against port facilities and ships.

Type of actions carried out from 2000 / 2008

	Small boat attack	Human bomb device	Explosive on board	Hijacking / trafficking	Others
2000	3	0	0	0	0
2001	1	0	0	0	0
2002	1	0	0	1	0
2003	0	0	0	2	2
2004	1	1	3	0	0
2005	1	0	0	0	0
2006	5	1	0	0	1
2007	1	0	0	0	0
2008	0	0	0	0	1
Total	13	2	3	3	4

Figure 17: Type of criminal action carried out from 2000 / 2008

Source: RAND database 2006, Terrorism knowledge database 2003 & South Asia Terrorism portal 2008

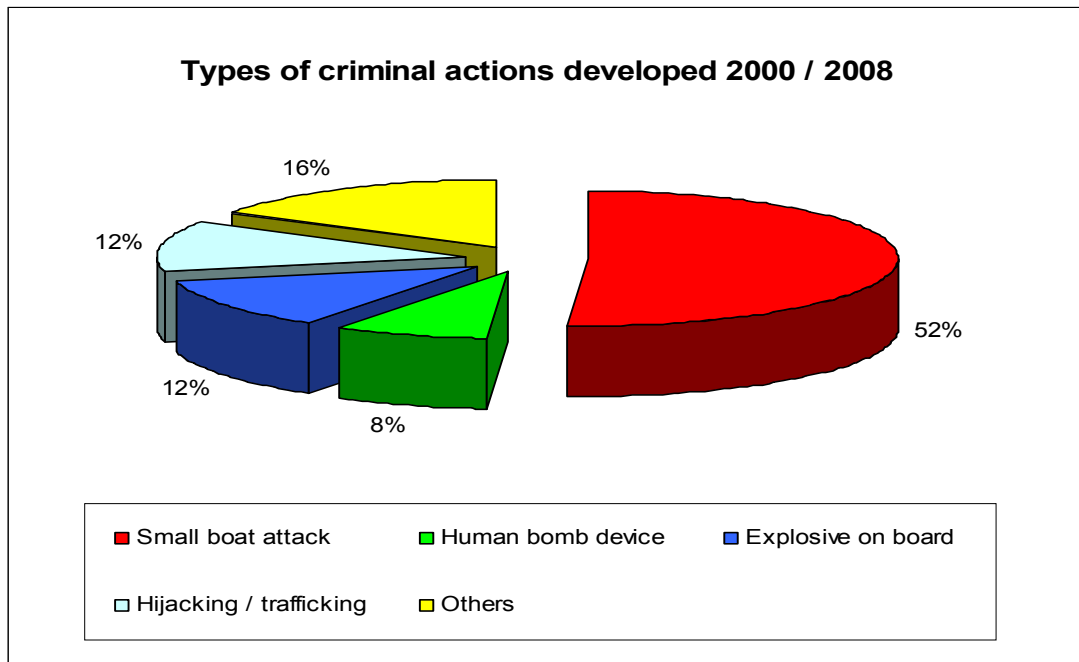


Figure 18: Graphic representation of type of criminal action carried out from 2000 / 2008.
 Source: RAND database 2006, Terrorism knowledge database 2003 & South Asia Terrorism portal 2008

The development of both criminal actions despite their different aims, will be analyzed thoroughly in order to establish if the small boats represent a real threat to maritime shipping and if so, which these threats are.

5.5.1 Are small boats a real threat to maritime shipping?

The use of small boats against maritime shipping security is a real threat used actively by pirates and terrorists, which has had huge and deep economic impacts in security investments: for example, the "war against terrorism" costs to the United States more than US\$1 billion each month⁶⁰ and after the terrorist attack against the *MT Limburg*⁶¹ the insurance premium rose to 300% for those ships operating close to Yemen (Peter Raise, 2005). The USCG estimated that the cost implications of

60 According to the information available in Embassy of Afghanistan's web page, below the link, news 2005 <http://www.afghanembassyjp.com/en/news/1082>

61 The attack against the *MV Limburg* was carried out on October 6, 2002. The *Limburg* was repaired in Dubai for US\$45 million; in 2003 it was sold to Tanker Pacific and renamed Maritime Jewel.

security compliance in US ports could reach UD\$1.1 billions for the first year and UD\$656 millions each year up to 2012. According to these estimations, the OECD developed a report in which more than UD\$2 billion was expected for initial investment and UD\$1 billion annual expenditure just for developing country ports alone (Bichou, 2004). It is possible to notice (see Figure 19) that during the last decade a number of terrorist actions have been carried out through the use of small boats, which is a new trend against maritime shipping security (Gunaratna, 1998).

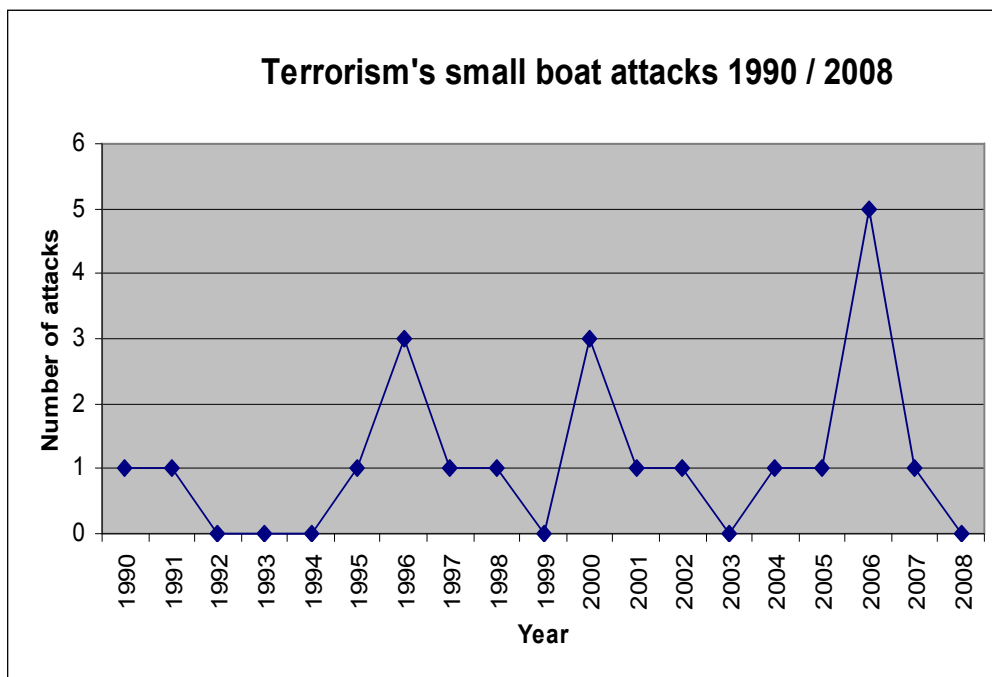


Figure 19: terrorism's small boat attacks 1990-2008.
 Source: RAND database, Terrorism knowledge database 2003 & South Asia Terrorism portal 2008

It is possible to see that the use of small boats in past terrorist actions have proved an efficient way for terrorists to get their objectives. According to databases is possible to see that from July 12, 1990 to 2008, about 20 terrorists operations have been carried out using small boats against maritime targets, of which only three were detected previous to reach their objectives, which allowed security forces to suppress the threat (as can be seen in Figure 20).

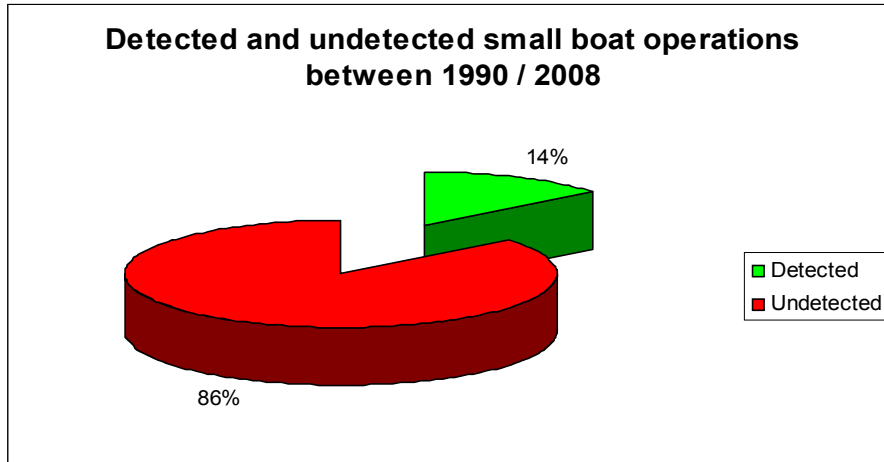


Figure 20: Detected and undetected small boat operations between 1990 - 2008.
Source: RAND database 2006, Terrorism knowledge database 2003 & South Asia Terrorism portal 2008

Other organizations such as RAND Corporation do not consider the use of small boats in potential scenarios against maritime security, as can be seen in Figure 21:

Ship classification			
GAO	RAND		
Tanker ship	Ferries	Cruise ships	Container ships and cargo vessels
1.Suicide small boats attacks 2.Stand off attacks 3.Armed assault ----- 1.Internal crew conspiracies 2.Collisions with other vessels piloted by terrorists	1.On board bombings	1.On board bombings 2.Stand off attacks 3.Water contamination	1.Dirty bomb attack
Consequences' classification			
1.Substantial damages to public safety, environmental and economic issues	1.Potential economic harm 2.Less human casualties 3.Not huge environmental damage	1.Potential economic harm 2.Potential huge human casualties	1.Severe economic consequences 2.Modest human consequences 3.Principal use to transport weapons

Source: RAND 2006, GAO 2007.

Figure 21: Potential scenarios against maritime security, considering ships' classification and consequences.

RAND's analysis does not consider the use of small boats as major threats to maritime shipping unlike it is consider by GAO in its 2007 report to the American Congress. In spite of the existence of clear evidence, and a large number of attacks registered against maritime shipping [as was previous mentioned], through the use of small boats, it seems that RAND has not assumed the real threat that these kind of small boats represent to maritime shipping.

On the piracy side, from the 1970s modern pirates have developed their actions threatening maritime shipping, by improving their boarding techniques, changing their procedures, acquiring automatic weapons, changing their objectives on board merchant ships and changing their assault boats which have become more efficient, dangerous with great destruction potentials capacities (Murphy, 2007). During the year 2006, 239 piratical actions (actual and attempted) were reported and during last year, 263 actions were reported to the Piracy Reporting Centre in Kuala Lumpur;

which means an increase of 10%, showing an increase of piratical actions carried out in Nigeria and Somalia and a steady drop in Malaysia, Malacca Strait and Singapore. These numbers only reflect a general trend because around 50 % of piratical activities are not reported (Chalk, 2008). The decrease in the number of piratical attacks in South East Asia region is due to the “Eyes in the Sky”⁶² initiative efforts.

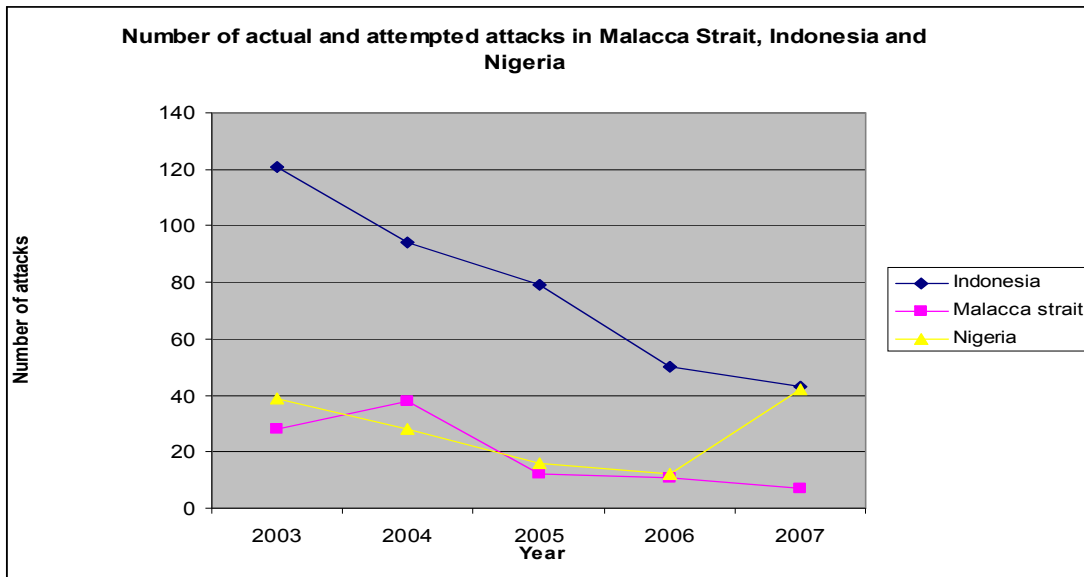


Figure 22: Number of actual and attempted attacks in Malacca Strait, Indonesia and Nigeria.
Source: ICC IMB 2002/2007 Annual piracy report.

This drop in piratical attacks does not mean that piracy has disappeared from the South East Asia region. Master mariners still have to establish special security measures during transit through the old hot spots. The nature of attacks shows that pirates are better armed and do not vacillate to cause physical damage to crews. (ICC Annual report, 2007). The IMB calls for major international governmental attention regarding the piracy situation, because according to them piracy is not a local problem; it also affects the final consumer, who can be anywhere in the world.

⁶² Eyes in the sky (Eis) is an integrated plan to enhance security in the Straits of Malacca launched by military personnel from the littoral states of Malaysia, Indonesia, Singapore and Thailand on 13 Sept 2005.

5.5.2 How the small boats attacks are carried out

As a general concept, military organizations, are always trying to increase the agility and versatility of their weapons systems, assuming that the former task is always linked to the improvement of military intelligence, surveillance and reconnaissance capabilities, especially when there are new threats. As well as military organizations, terrorist groups carry out different intelligence, surveillance, reconnaissance and training tasks, previous to the execution of a terrorist attack. The execution of a maritime criminal attack requires also people with special mariner skills, in order to infringe the major damage possible; in this way a maritime criminal must consider how the winds, tides, cargo distribution, coastal accidents and weather conditions, among other factors, will affect to the operation (Pelkofski, 2005). It should be taken into account that the use of underwater explosives requires personnel with previous diving experience and special training to use explosives underwater conditions.

Terrorists like predictability (Carafano, 2007); they develop accurate plans to identify all the pros and cons of each possible scenario, in order to prepare alternative responses and to quantify potential damages and consequences. For example, the attack against the *USS Cole* was an alternative course of action, because the primary target was to attack the *USS Sullivan*; but due to the sinking of the small boat that was designed to carry out the action, the situation was postponed and re scheduled when the boat was refloated and the explosives recovered (Richardson, 2006). It must be highlighted that often criminal actions on maritime activities with high people assistance (marine parade, tall ship races, etc) are carried out by “lone wolves” (Carafano, 2007); the “lone wolf” concept is similar to a “sleeper cell”, these are operative elements who establish deep and complex covers to evade security forces in order to accomplish their mission in hostile environments (Hameed, 2008). According to Carafano (2007) through the analysis of the information provided by intelligence, surveillance and reconnaissance operations; it is possible to establish that criminal operations basically are defined by twofold: first, limited security response and second, highly predictable patterns of behavior. Both characteristics can be found in ships navigating in restricted conditions (leaving or arriving to port, navigation through chokepoints, or diesel operations) and in port facilities.

5.5.2.1 Ships navigating close to shore

Ships navigating close to shore, or navigating through chokepoints follow predictable routes and procedures which can be discovered by adequate intelligence and surveillance tasks (Pelkofski, 2005). The acquisitions of this valuable information allow pirates and terrorists to establish their aims, ships targets, to plan their operations and define logistics requirements. It must be highlighted that criminals' maritime surveillance when a ship is far from the shore can be easily detected but this condition is easier for criminals when the ship is close to shore, because the shore provides many places for terrorist and pirates to carry out surveillance tasks.

5.5.2.2 Ships under restricted conditions

When a ship arrives or leaves a port it must follow standard procedures and must navigate pre defined routes at low speed. Some of these restrictions that force a ship to reduce the speed are: facilitate the reception of health / international police / and port authority inspectors, facilitate the reception of pilot on board, facilitate pilot and tug maneuvers and provide safety conditions to on deck crew. Furthermore, it must be considered that ports have traffic separation schemes, which can be seen in ordinary publications and maritime charts. For example, the 2002 terrorist attack against the French super tanker *Limburg* was carried out while the ship was navigating at low speed in the gulf of Aden waiting for the pilot boat; the Malacca Strait area is known as a hot spot of piratical actions due to ships navigating this chokepoint must decrease their speed making them vulnerable to this kind of attacks.

5.5.3 The experience of criminal groups with maritime capabilities

As has been indicated the development of criminal actions at sea are not an easy task for terrorists and pirates for a number of different conditions. In relation to the

experience acquired by pirates it can be mentioned that the literature available on this topic does not mention the existence of particular organizations or cartels carrying out piratical activities. While some writers claim that pirates and terrorists are working together in order to develop joint operations to direct vessels against other vessels, or port facilities (Roggio, 2005), some scholars claim that is a highly debatable alternative that must be considered, although terrorists and pirates have many different and conflicting objectives (Greenberg, Chalk, Willis, Khilko & Ortiz, 2006). According to Aegis' report there is little or no evidence to suggest that pirates are forming links with international or regional terrorist groups⁶³, such as al-Qaeda or J.I., in order to carry out attacks against maritime targets. For the Malacca Strait area, the only suspected link between piracy and terrorism is the use of pirate tactics, as the small boats' employment, by the separatist group known as the Free Aceh Movement (Zara, 2005).

According to Greenberg, Chalk, Willis, Khilko & Ortiz (2006), several groups have recognized the advantages and results to carry out terrorist attacks against maritime targets, but only 11 groups have carried out operations during last ten years, which can be seen in Table 1. Some of these groups operate from South East Asia, known as the home of a number of militant Islamic groups (Zara, 2005), as the Abu Sayyaf Group (ASG) which is based in Philippines, the Free Aceh Movement (GAM) in Aceh, Indonesia, the Jemaah Islamiyah (JI), which operates from Indonesia, and the Al-Qaeda network⁶⁴.

63Some piratical actions can be confused with terrorist actions as the situation lived in 2001, on board the MV Dewi Mandrin, a 3,900 tons chemical tanker, off the coast of Sumatra, when the ship was hijacked by a dozen of men, and over an hour the leader of the group took the control of the vessel and practiced a set of maneuvers that showed a familiarization with the ship's equipments.

64 Intelligence reports establish that Al-Qaeda moved to South East Asia, later the destruction of its bases in Afghanistan.

Table 1: Terrorist groups with maritime capability

1.	Liberation Tigers of Tamil Eelam
2.	Al-Qaeda
3.	Palestinian Authority
4.	Gerakan Aceh Merdeka (GAM)
5.	Lebanese Hezzbolah
6.	Jamaat al-Tawhid
7.	Abu Sayyaf Group
8.	Jemaah Islamiyah
9.	Rajah Soliaman Revolutionary movement
10.	Hamas
11.	Al-Aqsa Martyr's brigade

Source: RAND database 2006, Terrorism knowledge database 2003 & South Asia Terrorism portal 2008

But undoubtedly Al-Qaeda and the Liberation Tigers of Tamil Eelam have been considered as the terrorist groups most equipped with maritime capability. Although some authors and countries do not consider the Liberation Tigers of Tamil Eelam (LTTE) known as the Tamil Tigers, as a terrorist organization⁶⁵, others recognize this group as having a “...formidable skilled, organized, and equipped maritime arm...” (Pelkofski, 2005). The maritime branch of this group registered its first action on May 5, 1991 when they carried out an attack against a naval vessel with a boat filled with explosives, killing five Sri Lankan sailors. Prior to the 2000 ceasefire, this branch employed about 3000 personnel to operate between 100 and 200 ships carrying out terrorist operations against maritime shipping and naval vessels. According to intelligence reports, the Tamil Tigers have a maritime academy to train its personnel (Pelkofski, 2005).

⁶⁵ Some countries does not recognizes the Tamil Tigers, because they are fighting a national war of liberation, and according to them, that is not terrorism.



Figure 23: LTTE Sea Tiger suicide boat
Source: Maritime Terrorism Research Center 2008

The last most popular small boat attack against a maritime target was carried out by Al-Qaeda, on October 12, 2000, when made explode a boat filled with 400 - 700 pounds of exploded to the *USS Cole*'s port side, while she was refuelling offshore, in the Yemeni port of Aden⁶⁶. Almost two years later, on October 6, 2002, Al-Qaeda carried out another attack using a small boat, which explode at *MV Limburg*'s starboard side, in the gulf of Aden, while she was waiting for pilot's boat. As a consequence of this attack three people died and about 90.000 barrels of oil leaked out. It has been claimed that the Tamil Tigers' expertise has been used by Al-Qaeda to plan and carry out attacks against maritime targets (Pelkofski, 2005); expertise that maybe was used during the preparation of some of Al-Qaeda's operations against ships in some geographical chokepoints. According to the current president of the United States, George Bush, US and states allies in the "war against terrorism" have thwarted at least ten serious Al-Qaeda's terrorist plots, since September 2001, including attacks against maritime targets. These plots considered attacks against ships in the Persian Gulf and Strait of Hormuz region (Baker & Glasser, 2005).

⁶⁶ The mastermind of the attack against the *USS Cole* was Abdul al-Rahim al-Nashiri (al-Qaeda), known as the Prince of the Sea, who recognized to manage maritime operations considering four main options: first, through the use of zodiac speed boats packed with explosive to ram warships or other ships; second, use of medium sized boats as bombs to be blown up near slips or ports; third, use of airplanes to ram boats; and finally, use of underwater demolition teams (Lorenz 2007).

5.5.4 Small boat threat impacts

Risks associated with the small boat threat are complex because they are linked to a large number of conditions as vulnerabilities, nature of the threat, establishment of potential scenarios and potential targets, etc. But basically it can be said that there are three major risks linked to the threat that the small boats represent: first, the psychological impact; second, the physical destruction of the target and its vicinity; and third, the disruption of international maritime shipping supply network (Carafano, 2007).

5.5.4.1 The psychological impact

Impacts produced by terrorist as well pirate actions are composed of two main aspects: first, a disproportionate public perception of threat, danger and risk to the real criminal capacities; and second, these kinds of actions get an impact beyond the people under direct threat or damage (Friedland & Meravi, 1985). These conditions affect and alter the normal behavior not only of those crews involved in a piratical hijacking or attacks or those crews on board ships attacked by small boats filled with explosives; they also affect crews' families, neighbors and colleagues.

A study carried out in France between 1995 and 1996, regarding victims of terrorists attacks established the following percentages: 19% had severe initial physical injuries; 51% presented hearing problems; 33% presented cosmetic impairment and 31% had Post Traumatic Stress Disorder (PTSD) (Verger, Dab, Lamping, Loze, Deschaseaux-Voinet, Abenhaim & Rouillion, 2004).

According to a survey⁶⁷ developed in New York, one year after the attack against the World Trade Center, it was established that 33.4% of the people surveyed had a very high fear about future terrorists attacks and 75% had made preparation for future attacks (Boscarino, Figley & Adams, 2003). The same study suggests that according to the experience during the West Nile virus epidemic, an adequate public education and communication plan can reduce population panic and fear.

⁶⁷ For further details about the method applied, survey instruments and measurement, visit document available in following URL <http://mailer.fsu.edu/~cfigley/boscarino%20terror%20study%20final%202.pdf>

5.5.4.2 Physical destruction

It must be noticed that a small boat attack can not produce huge physical destruction and material losses unless in the attack been used certain highly hazardous materials or weapons of mass destruction have been used (Carafano, 2007); the 1917 *Mont Blanc's* experience at Halifax harbour⁶⁸, in Nova Scotia is a good example of the damage that can be caused by a ship's accident at port. The *Mont Blanc's* blast was said to be the largest man made detonation before the invention of the atom bomb, causing that over 2,000 people died and some 9,000 were injured and damages were estimated over USD 30 millions.



Figure 24: Halifax's harbour after the Mont Blanc's explosion.
National archives of Canada

According to recent studies even the development of criminal actions against port facilities with huge material losses as a consequence (involving thousands of lives and billions of dollars in damages) is unlikely to have long term negative consequences, except for United States' ports (Carafano, 2007). Leamer and Thornberg (2006) argue that if a port is closed, due a terrorist action, many shippers

68 On 6 December 1917, the French ammunition ship *Mont Blanc* carrying on board 2500 tons of Benzol fuel, TNT, picric acid and gun cotton, collided with the Norwegian ship *Imo* close to Halifax harbour in Nova Scotia. As a result of the accident an area over 2.5 square kilometers from the pier was flattened with only few buildings left standing. Over 2000 people died and some 9000 were injured, damages were estimated over USD 30 million. The blast was said to be the largest man made detonation before the invention of the atom bomb.

will reroute their shipments through other ports, workers will be displaced to alternative employments and the economy will adjust to the new conditions.

In spite of the economic analysis carried out by Leamer, Thornberg and others, the actions developed by the small boat threat are not cheap; for example, the *USS Cole* was a billion-dollar warship that was damaged and her reparation costs were estimated over USD 240 millions⁶⁹; and *Limburg's* reparations costs about US\$ 45 millions.

Authors as Carafano (2007) argues that port facility and ship costs associated to damages caused by the small boat threat are considered within security and safety measures that have already been adopted as a consequence of the ISPS Code for port facilities and ISPS and standard drills considered on board ships to face firefighting assets and leak control. In this way, the equipment and the security/safety structure already adopted contribute to reducing the damage costs by the small boat threat.

5.5.4.3 Disruption of international maritime shipping supply network

The development of criminal actions through the use of small boats could cause the disruption of a huge number of services due to the presence of urban centers close to port facilities. In this way, a maritime accident could cause the fall of a bridge, affecting not only the delivery of goods by sea but also the delivery of goods and services by land. Another possible scenario considered by security forces around the world is the use of ships to block waterways. In this way several joint international exercises are carried out in different waterways around the world to protect chokepoints that could be target as potential objectives by pirates and terrorists. The previous threat (the use of ships to block waterways) has been considered due to the confessions of some terrorists during interrogations sessions, as attacks against ships in the Strait of Gibraltar, Persian Gulf and the Strait of Hormuz, among other chokepoints (Richardson, 2006).

⁶⁹ Information provided by the US Department of Defense, during the *USS Cole* briefing by the Secretary of Defense, Mr. William S. Cohen, on January 19, 2001, available at the following URL <http://www.defenselink.mil/transcripts/transcript.aspx?transcriptid=889>

5.5.5 The scope of the challenge

The small boat threat is a complicated element against maritime security due to the magnitude of the areas and activities related to the small boats; the huge security requirements to control their activity; and the limited capabilities to establish a positive control over them (Carafano, 2007). These kinds of boats (small boats) does not have appropriate sea keeping conditions to operate at open seas having to remain close to the coast and because of their characteristics (length and draft) can be berthed in different locations along coastlines. This condition makes it more difficult to exercise control over small boats by security forces, considering the length of world's coastline is approximately 1.6 millions of kilometers. Furthermore, it must be highlighted that small boats could represent a threat to inland maritime shipping and recreational activities, making the control of this kind of boats more difficult.

5.5.5.1 Policing a large domain

Developing small boat policies (under 500 and 300 gross tonnage, not covered by the ISPS Code), is a huge task not only due to their number in different nations of the world but also due to the different characteristics and purposes of these boats (under 500 gross tonnage is possible find from jet skies, to commercial tugs or small freighters) (Carafano, 2007). Regarding the number of the small boats, only in the United States there are about 17,000 small boats (Thomas, 2007).

In several nations the acquisition of a small boat is a commercial act that is ruled by the offer and demand law and by the money. In this way, the only restriction to acquire a small boat is only to have the money required by the seller. Likewise, in several nations the obligation of the seller to inform to the Maritime Authority or Maritime Administration about the sale of the boat does not exist, unless there is a previous registry recorded at one of these authorities, but only as a way to prove property over the "thing"; if the new owner does not want to declare his/her property

over the boat to the Maritime Administration, it is a situation that can be easily covered by the authority.

A number of small boats can be under different domestic laws, for example, boats between the US and Canada or between the US and Bahamas, making it more difficult for security forces efforts to control this kind of activity demanding cooperation among international agencies, which is not an easy task.

Furthermore, it must be considered that not all the coastline of the world, offers appropriate conditions for marine activities; some sectors on the coast usually offer better conditions for berthing places for small boats for reparation, etc. Sometimes these conditions that are favorable for small boats are favorable also for big ships. In this way are usual find marinas and shipyards for small boats, closed to international shipping facilities, allowing the access of small boats close to big ships, as Sydney's ports situation⁷⁰ (Sydney's port authority, 2008).

5.5.5.2 Situational awareness

The development of safety services by different maritime administrations and port authorities have pushed the establishment of Vessel Traffic Services, known as V.T.S. in different ports of the world to manage the Automatic Identification System (A.I.S.) supplied by ships in order to provide safer operation standards. Also the establishment of security regulations such as the ISPS Code has prompted the utilization of different systems to provide better security standards to maritime shipping. In this way it is usual to find in ports around the world, security cameras, guards, better lightning conditions, etc. Sometimes these security and safety conditions are only directed to ships over 300 gross tonnage as the requirement established by the International maritime Organization for the A.I.S. system. In this

⁷⁰ According to Sydney's ports authority, this port alone handles over \$50 billion of international and domestic trade annually making an important contribution to the NSW economy. This port is usually used by bulk carriers, container ships, car carriers, oil tankers, ferries and charter boats, among other types. On any given day at Sydney port can be more than a dozen trading vessel movements and hundreds of recreational boats at the same time.

way this system can not obtain information about small boats caught by radar displays if they can get in contact with those small boats.

5.5.5.3 Interdiction and response

There is a need to develop responses against small boat threats, which have resulted in the development of a large number of initiatives. In spite of a huge number of local, regional and national efforts against piracy and maritime terrorism around the world, these systems⁷¹ present limited capacities to detect, deter and strike back attacks developed by divers and small boats; generally, these systems only provide a warning restricted only to a couple of meters (Carafano, 2007).

For example, the US Homeland Security Department and some local authorities have the capacity to scan boat hulls through the use of sophisticated technical equipment which allows the detection of parasites, but simultaneously it is time-consuming. Usually these kinds of systems do not offer a clear appreciation about parasites on board boats producing a large number of “false negatives” and “false positives” problems during the threat’ identification process (Carafano, 2007).

Given the limitations of every maritime state around the globe to develop a constant response during the time to handle and control a large number of threats, in different scenarios, considering that these threats can be domestic or international, cooperation among states through security agencies acquires high importance, because it allows the development of fast and overwhelming responses (Sakhuja, 2003).

5.5.5.4 Ensuring economic competitiveness

The concept “economy of scale” can be seen clearly in maritime shipping, where every day huge ships move cargo from one place to another, over the surface of the

⁷¹ Some of these maritime security networks at ports include the use of: A.I.S. and V.T.S. systems, underwater detection systems, infra red devices, smart identification cards and biometric profiles among other systems (Sakhuja 2003).

world. These movements of cargo at once improve the cost-efficiency of maritime trade and protect the marine environment, because shipping is carried out on board environmentally friendly vessels, which produce less air emissions and where discharge of wastes is not allowed at sea. Conditions previously mentioned give to maritime nations competitive advantages that pushed the development of maritime shipping activities and the investment in maritime infrastructure.

It must be highlighted that maritime security initiatives should not affect maritime shipping effectiveness. Excessive regulations and restrictions, as well as lax maritime security measures, will not give incentive to the development of maritime shipping which will affect nations' interest and final consumers (Carafano, 2007).

5.5.5.5 Human rights

In relation to criminal activities, against the safety of citizens, human rights laws imposes an important duty on States to take positive steps to protect those within their jurisdiction against possible terrorists acts (Berlin declaration, 2004). States must follow and apply two specific rights for those arrested in relation to suspicion of participation on terrorist actions and charged with those; offences, these rights are: first, right to liberty; and second, right to a fair and public hearing trial. Both rights could also be applied for piracy actions.

After terrorists attacks against World Trade Center in the United States and maritime attacks against the *USS Cole* and the *MV Limburg*, several European countries, renewed their efforts on prevention in counter terrorism regulations. According to the nature of maritime terrorists activities, it is not logical to wait for a terrorist attack to prosecute and take actions against perpetrators. This condition is defined as ...

A mature view about human rights related to States, because is not only related to constraints on what states can do; also impose positive obligations under the sense of protection of human lives and physical integrity of everyone within the jurisdiction of that

state. At the same time its essential to avoid any counter productivity which instead of enhancing protection, may well undermine it. (International Commission of Jurists, 2004).

However the development of preventive counter terrorism strategies has created some dilemmas, because usually during the development of intelligence security missions, a big number of extra-judicial measures arise over normal criminal system procedures in order to prosecute terrorist suspects⁷².

5.5.6 Responses

According to an experience cited by Zara (2005) a retired Australian Navy's commodore recognized that "... there is a lack of trained maritime police, inadequate boats and equipment, as well as inexperience with complicated concepts of law enforcement such as doctrine of hot pursuit...". But apparently everything is not so negative. The following are different experiences acquired and responses adopted by different organizations around the world.

5.5.6.1 The IMO response to the small boat threat

On May 10, 2005, during the opening address of the Seminar on maritime security measures for Non-SOLAS vessels, at the Japan International Transport Institute, Efthimios Mitropoulos, Secretary-General of the International Maritime Organization, recognized that in spite of nearly 100 per cent of the world's international merchant fleet is covered by ISPS Code regulations, hundreds of thousands of vessels all

72 The European court of human rights has interpreted and applied the rights previous mentioned with an special degree of flexibility, according to the difficulties that security agencies must face during criminal investigations. According to the U.K. Joint Committee on Human Rights (2006) these difficulties are five: first, intelligence information may not fulfill standard evidence' requirements in an adversarial court; second, if the intelligence information is accepted as admissible, is likely to fall short of the criminal standard of proof beyond reasonable doubt; third, existence of some legal restrictions related to intercept evidence in court; fourth, usually security agencies are not prepared to make available intercept evidence in a open court; and finally, existence of legal restrictions in relation to disclosure of other intelligence materials not relied with the specific process.

over the world that are not covered by the SOLAS Convention becoming potential threats to maritime security⁷³.

In response to this concern the Maritime Safety Committee (MSC), during its 82nd session⁷⁴, began its work in relation to those ships not covered by SOLAS chapter XI-2 and the ISPS Code in order to address the threat that this kind of ships represent to maritime shipping, on the basis that ships on international route share the same operational environment with small boats.

Finally, it must be highlighted that was agreed that any guidelines developed in relation to security measures against the small boat threat should be non mandatory and that their application should be under the approval of each Contracting Government⁷⁵.

5.5.6.2 The maritime response

In the ICC-IMB annual report 2007, it is possible to find a full chapter related to narrations of piratical attacks against ships in different parts of the world during the year, resulting interestingly that a large number of security actions have already been adopted on board ships without extra costs and have proved to be efficient “weapons” against this threat carried out through the use of small boats. Some of the actions can be seen in Table 2.

73 Opening address by Efthimios Mitropoulos, Secretary-General of the International Maritime Organization, during the Japan International Transport Institute: Seminar on maritime security measures for Non-SOLAS , held on May 10, 2005, retrieved from the World Wide Web: http://www.japantransport.com/conferences/2005/05/st_mitropoulos.pdf

74 This session was held from 29 November to 8 December 2006,

75 Information retrieved from IMO's World Wide Web page, available at the following address: http://www.imo.org/Safety/mainframe.asp?topic_id=1470

Table 2: Security actions adopted on board vessels under piratical attacks.

Security actions adopted on board vessel under attack	
1.	Raise general alarm on board.
2.	Sound ship's whistle.
3.	Increase speed.
4.	Took evasive maneuvers with drastic changes in the course.
5.	Muster the crew to organize counter piracy measures.
6.	Activation of fire hoses, to difficult pirates' maneuvers.
7.	Presence of crew on deck with long pipes and sticks.
8.	Fired of rock parachute to warn other vessels in vicinity
9.	Turn on search lights at pirates' boats.

Source: ICC-IMB annual report 2007

Another security measure already adopted on board some cruise ships that has proved efficient against pirates using small boats is the use of the L-RAD system. The Long Range Acoustic Device (L-RAD) developed by the US Military and manufactured by the American Technology Corporation, is defined as a flat panel, multi-transducer, phase coherent emitter, capable to transmits highly directional voice and warning tones with clarity and authority in excess of 500 yards, over water surface.



Figure 25: Small boat L-RAD test with USS Coronado's crew.
Source: American Technology Corporation



Figure 26: Small boat L-RAD test with USS Coronado's crew, distance of the small boat, 450 yards, receiving instructions loud and clear.
Source: American Technology Corporation

The concept of the LRAD is support the efforts of security personnel, defusing potential dangerous situations through the communication of voice instructions and influence behavior with a highly irritating warning tone (150 decibel). The first time when the L-RAD was used was off Somalia in November 2005, when pirates tried to attack the US liner *Seabourn Spirit*.

5.5.6.2.1 Naval response against the small boat threat

Lamentably, the US Navy has learned by blood that the small boat threat is real, fast and lethal; after the attack against the *USS Cole*, the US Navy has improved the speed in the development of different plans, security measures and devices, in order to protect the blue water fleet and its personnel. According to Sirrs (2002), the small boat threat is basically analyzed by the US Navy in three different factors, which are also applied within other navies' analysis as the Chilean Navy: first, force; second, space; and finally, time.

5.5.6.2.2 Force: generally the primary strike force of a modern navy is not constituted by small boats. Nevertheless, some navies such as Iran's and North Korea's consider this kind of boats as important components

within their combat structure. Sirrs (2002) established that the common vulnerability for small boat combatants (who for the present analysis are pirates and terrorists) lack the protection of a central command to give them protection; under this condition, the use of helicopters are the most dangerous weapon against small boats⁷⁶.

5.5.6.2.3 Space: the effective use of space factor is the most important factor considered by terrorists and pirates to carry out their operations, which plus the use of mines and geographical conditions (islands, reefs, etc.) bring them protection, due to difficulty experimented on board ships, to detect them. Under the space concept it must be considered furthermore, that the existence of sophisticated weapons in black markets, allow small boats to carry out attacks from longer distances.

5.5.6.2.4 Time: under this concept it must be considered that the naval concept about the use of coastal defense installations and the use of small boats are oriented not to destruction of major ships; the time concept involved in this kind of situations is related to the delay that the small boats can cause to general operations (Sirrs, 2002), which applied to criminal actions is related to delays in maritime shipping and to prevent security forces' reaction.

Finally, it must be considered that different navies around the world are developing remote sensor systems for detection of small boats. These surface sensors are known as Surface Warfare (SUW) Mission Packages, which are composed of a combination of a number of remote sensors and precision attack weapons developed for littoral combat ships in order to face threats in the line of sight or over

⁷⁶ In relation to the use of helicopters or airplanes against small boats, can be recall the action carried out this year by the Sri Lanka Navy, last July 21, supported by the Sri Lanka Air Force in an area close to the south of Nachchikudha; according to the Ministry of Defence, during this raid 6 LTTE boats were destroyed and 2 heavily damaged. Information available at following web site, <http://firstlanka.com/english/defence/navy-and-air-force-attack-ltte-boats-south-nachchikudha/>

the horizon. Also, the US Navy is developing another “package” of sensors to carry out countermeasures and antisubmarine warfare actions⁷⁷.

5.5.6.2.5 The United States Coast Guard approach against the small boats

The new approach⁷⁸ adopted by US against the threat that small boats represent to maritime shipping security is based on the development of a fleet of small and swift watercraft that allow them to operate in shallow waters in order to develop efficient and successful operations against terrorist and pirates (Aho, 2006). This concept known in the military jargon as “brown navy” is reassuming importance due to the last successful terrorist actions against maritime and naval targets, and piratical actions against merchant ships, which represent a real threat to the maritime lines of communications, global economy and environmental conditions. The number of ships and boats involved in “brown navy” operations is large and varies according to different mission requirements, but recently the United States (that include US Navy, Coast Guard and Marines Corps) has adopted the use of a small boat to protect maritime shipping lines with similar characteristics to the boats in use by terrorist and pirates. The requirements established by the US government for these small security boats were seven: length 25 ‘, easily trailerable, enclosed wheelhouse for four men, 40 knots cruise speed, operate with 6 foot waves, able to be transported into a C-130 cargo plane and capacity for 10 extra men (Marsh, 2005). The result of

77 According to the official US Navy web page, some of the components inside these mission packages for maritime use consider the use of electro-optical/infrared sensors mounted on board unmanned air vehicles to provide over-the-horizon detection, 30mm guns to close-in targets and the use of MH-60R helicopters for surveillance and attack.

http://www.news.navy.mil/search/display.asp?story_id=31482

78 The history has a tendency to repeat it self each certain amount of years. In this way, several nations and navies around the world have had to change their aims and development programs due to the threat that represents terrorism and piracy to maritime shipping routes' security. This new condition had pushed the development of security strategies that considers the use of warships and military technology, against small and fast boats close to coastal areas, which have proved be extremely effective against merchant and warships. The existence of small boats to the commitment of criminal actions and threats against maritime security has caused in countries as the United States of America, the development of different specific plans for different areas. In December 2002, the US Coast Guard published its “Maritime Strategy for Homeland Security⁷⁸,” document which established main objectives and ways to achieve them in order to diminish two fold: first, threats and risks associated against maritime security; and second, to prevent terrorist attacks. The primary components of this strategy are three: first, awareness of threats and vulnerabilities; second, prevention and protection against these threats; and finally, response to potential attacks⁷⁸. In this way, United States of America has reactivated old units that were important during Vietnam's war due to the use of special small combat boats, to develop actions as protection of infrastructure and seas lines, among others.

this requirement was the development and later acquisition of a 25-foot boat, by SAFE boats International in Orchard, United States. This boat concept has been adopted by the US Navy, Coast Guard and Marines Corps⁷⁹ through the use of the RB-S, which correspond to a governmental definition for “Response Boat Small” known as “Defender class”. These RB-S have a length of 25-foot and have been built to develop a number of different security activities, including weapons platform, anti terrorist unit, and high speed patrol / pursuit, among others. The experience from these American organizations has been so successful since 2002 that the US Coast Guard alone has ordered over 700 of these boats within a contract of U\$ 145 million, with a price per boat close to U\$ 200.000 (Marsh, 2005).



Figure 27: USCG 25 foot patrol boat
Source: Flickr.com 2008

The experience from the US Coast Guard in the use of this kind of small unit to develop security tasks, have been adopted by other maritime administrations and navies around the world, in Asia, Africa and South America, where the Chilean

⁷⁹ The United states Marines Corps use a similar version to the RB-S version, which considers another kind of military specifications a larger fire power capacity (Small Unit Riverine Craft (SURC), version)

Maritime Administration has bought four of this kind of boats and according to an unofficial source, is managing the purchase of a number of 25-foot and 42-foot Archangel boats in order to be deployed for security missions.

5.5.6.3 Singapore's experience about the small boat threat

In Singapore, the State provides certain conditions that allow the efficient work of the Maritime and Port Authority of Singapore (MPA), the Police Coast Guard (PCG) and the Republic of Singapore Navy (RSN) in order to face threats against maritime shipping. These organizations have been working during past years enforcing the ISPS Code, to all ships covered by this regulation, carrying out major maritime security exercises at sea with the participation of all the security agencies, operators of sensitive installations and sensitive vessels and conducting random audits to assure readiness against maritime threats.

Furthermore it must be considered that due to the presence of about 3,000 small ships operating in and around the port of Singapore, the Maritime and Port Authority, decided to apply the "Harbour Craft Security Code", developed with the local pleasure craft community, providing security guidance to the pleasure craft community based on four key areas: first, establishment of need for preparedness; second, vigilance during navigations; third, maintaining an observant attitude and finally, being proactive with maritime authorities⁸⁰.

Also, during the past years, the Maritime and Port Authority has successfully developed and tested a low-cost transponder system, named HARTS⁸¹, in order to establish a positive control over the small ships, at Singapore's harbor. According to MPA reports, the use of HARTS have enabled to port authorities to track and identified around 98% of all small vessels around the port. With the implementation

80 Retrieved from the World Wide Web, where full article can be found at http://64.233.183.104/search?q=cache:nawca8h-1WIJ:www.mpa.gov.sg/circulars_and_notices/pdfs/pc06-08.pdf+%22Harbour+Craft+Security+Code%22&hl=en&ct=clnk&cd=2

81 The three most important key features of the HARTS transponder are: First, automatic transmission of craft identity, position, course and speed in real time; second, devices that not allow the use of the transponder on board of more than one vessel; and finally, "panic button" to alert security authorities in case of emergency.

of HARTS, Singapore was the first country in the world to implement a system similar to AIS to monitor potential threats from the small boat sector⁸².

5.5.6.4 The Malaysia, Indonesia, Singapore and Thailand experience

In June 2005 in Singapore, during the last Shangri-La Dialogue, the Deputy Prime Minister of Malaysia proposed the Eyes in the Sky (EiS) initiative, as a way to enhance the security in the Straits of Malacca and Singapore and combat piratical activities. In this way, Malaysia, Indonesia, Singapore and Thailand agreed to carry out joint operations against maritime threats, respecting sovereignty jurisdictions of participant States.

The aim of the EiS initiative, at the beginning, was to recover and keep the maritime domain awareness over the Straits of Malacca and Singapore, considering the use of airplanes and ships. The EiS included the establishment of Operations Centers in each participant State in order to coordinate flight schedules, and supply support to airplanes through patrol ships located in different areas within each jurisdiction.

The success of the EiS initiative can be seen in the ICC International Maritime Bureau statistics, which showed that from January to late December 2007, zero percent of piratical actions were reported in the Malacca Straits and a clear reduction of attacks in the waterways of Sabah and Sarawak (on Borneo Island)⁸³.

5.5.6.5 Maritime Special Forces around the world

During past years the number of Special Forces deployed to face threats against maritime shipping has improved. Different maritime authorities and Coast Guard organizations around the world are developing highly trained and professional units

82 Information provided by the Japan transport Institute; from the World Wide Web: http://www.japantransport.com/conferences/2005/05/st_yew.pdf.

83 Information provided by the Ministry of Defence of Singapore on the World Wide Web page: http://www.mindef.gov.sg/imindef/news_and_events/nr/2005/sep/13sep05_nr.html

to carry out counter-terrorism and counter-piracy operations. An example of this kind of professional units was the operation carried out by the Philippines Maritime Special Forces, on June 21, 2002; according to the Philippine Center on Transnational Crime, this operation finalized with the death of the Abu Sayyaf Group's (ASG) top leaders, and two of his men and another four were captured while they were fleeing Mindanao island in a boat⁸⁴.

⁸⁴ Information available on the Philippine Center on Transnational Crime web page, available on the World Wide Web page <http://www.pctc.gov.ph/updates/tandctia.htm>

6 CONCLUSIONS

The use of small boats against maritime shipping is a real threat used actively by pirates and terrorists. Piratical attacks carried out in some parts of the globe are responsible for a large number of deaths and losses i.e. around USD1 billion to the maritime industry every year, and the scaling of terrorist actions against maritime objectives during the past few years, could present today, potential economical losses at around USD1.3 trillion in lost trade alone.

It is possible to see that the use of small boats in past terrorist actions has proved an efficient way for terrorists to achieve their objectives; from 1990 to 2008, about 20 terrorists operations were carried out using small boats against maritime targets, of which only three were detected before reaching their objectives. Actions against maritime security have resulted in the development of expensive security investments such as the US "war against terrorism" costing more than US\$1 billion each month.

On the piracy side, during the year 2006, 239 piratical actions (actual and attempted) were reported and during the last year, 263 actions were reported to the Piracy Reporting Centre in Kuala Lumpur, which means an increase of 10%. According to piratical historical aspects and last intelligence reports, some similarities have been identified between piracy and terrorism, which in spite of being different activities, pirates and terrorists are using small boats as a common "weapon" to carry out their actions.

In recent years piratical attacks with small boats have become more frequent, sophisticated and severe, proving that if this menace is not controlled appropriately, it can be immensely destructive; further terrorist actions, such as the attacks against the *MV Limburg* (October 2002), and the *MV Invincible* (May 2008) were carried out through the use of small boats loaded with explosives, demonstrating the damages that can be inflicted upon maritime shipping.

According to intelligence, surveillance and reconnaissance reports it is possible to establish that the use of small boats in criminal operations is defined by the following characteristics: first, limited security response, and second, highly predictable patterns of behavior; characteristics which can be found in ships navigating in restricted conditions (leaving or arriving to port, navigation through chokepoints, or diesel operations) and in port facilities; previous conditions plus the following advantages: small dimensions, proximity to high value facilities, proximity to people at high value coastal construction areas and complex maritime environment and overlapping jurisdictions, among others. All these factors promote the development of criminal actions against maritime targets.

The establishment of highly efficient transnational criminal networks against maritime shipping has motivated the development of conventions and agreements by States and international organizations in order to develop joint operations against criminal maritime threats. It is at this stage that international efforts against criminal activities face their first problems. Although there is a definition for maritime piracy, counter-piracy actions are not free from difficulties; the situation is more complicated for counter-terrorist actions, considering that international efforts to establish a broad acceptance definition for terrorism has failed, generating international debates and discrepancies, and over all, international legal gaps to carry out efficient global counter-terrorism actions.

Based on the information presented and analyzed in this dissertation, the following cardinal observations can be established:

Education

Firstly, it is necessary to establish that criminal actions such as maritime terrorism and piracy are linked to three kinds of protection levels that must be deployed by States under specific conditions; these steps are known as primary, secondary and tertiary prevention levels (Garrison, 2004). During the primary prevention, people must become aware of different cultures, their characteristics and beliefs through education, in order to promote understanding of each other; in this step, concepts

such as freedom, liberty and equality for all people and not just for “my people” must be promoted, which will attack the roots of terrorism. During the secondary prevention, surveillance and monitoring activities must be carried out, in order to improve security. Finally, during the tertiary prevention step, governments must be prepared to develop specific actions to prevent the extension of damage because of a criminal act, train and keep rescue teams on alert to help survivors and specialists in order to give consolation to the victims and to give them back the security and tranquility.

Recognize possible devastating human and economic consequences.

It seems that a number of people are focused on to hide the real importance of terrorism in different societies today. For example, researchers led by Nick Wilson of Otago University, in New Zealand, established that the number of deaths due to road accidents in developed economies is 390 times higher than the death toll in these countries from international terrorism; in this way, Wilson (2005) claimed for more resources to avoid car accidents rather than counter-terrorist measures. Also the Turkish Deputy Chief of Police and Chief of Traffic Services Celal Uzunkaya, made a comparison between car accidents and terrorism, namely “... society should be more sensitive to traffic accidents, which result in a significant loss of life.”⁸⁵ Positions previous mentioned are only some examples of people trying to hide the real importance and consequences related to maritime terrorism and piratical activities. According to Buky (2007) consequences related to terrorist actions could be huge, around USD 74 billions⁸⁶ or USD 1.3 trillions considering a Nuclear Biological Chemical (NBC) explosion, without considering the number of dead and injured people.

⁸⁵ Full article available at Today's Zaman web page, article posted on August 14, 2008, at following URL:

<http://www.todayszaman.com/tz-web/detaylar.do?load=detay&link=150164>

⁸⁶ Considering a nine-day shutdown of all American ports.

According to previous information, it is recommended that counter-criminal actions should always be considered as important issues within international governmental agendas.

Adoption of real and useful regimes for small boat regulations

According to some intelligence reports (Buky, 2007), it is probable that the experience acquired by the LTTE Tamil Tigers was adopted and refined by al-Qaeda during the planning against the *USS Cole* and the *MV Limburg*, which showed a high degree of sophistication. These kinds of criminal activities with high levels of innovation and technology require useful security actions, which must be adopted according to different realities and conditions of each nation and each port. For example, maritime security regulations adapted at Tasmanian ports, which considered a 50 meter exclusion zone around passenger ships⁸⁷, warships and tankers, are useful for ships at Tasmanian ports but could be difficult to apply at other Australian ports. In this way, it is recommended that security measures for ships and port facilities should follow international standards considering domestic conditions and local security requirements.

Combining maritime shipping globalization factors and security measures

Maritime shipping has an enormous importance and impact on global economy. In this way, security measures have to be applied with equilibrium in order to establish an efficient relationship between the “just in time” strategy and security measures (Etheridge, 2006), such as the Container Security Initiative applied by the United States. In this way, the growth of maritime shipping will be protected in spite of the adoption of procedures related to globalization requirements.

⁸⁷ Full information about new security requirements for ships and ports in Tasmania, can be seen in following web page:
<http://www.mast.tas.gov.au/domino/mast/newweb.nsf/v-content/5069452A688A4133CA256ECC00206341>

Application of clear international legal framework and efficient counter-criminal structures

Due to the existence of highly efficient transnational criminal networks against maritime shipping, maritime security today requires the establishment of a clear international legal framework to combat maritime terrorist actions and it also requires international understanding of neighborhood nations in order to carry out efficient counter-piracy actions. Furthermore, maritime security requires a rationalization of agencies involved in this matter and the abolishment of complex vertical and horizontal overlapping organizations' jurisdictions in order to develop an interdepartmental approach to security aspects and emergency planning (Avis & Grant, 2004).

The "small boat threat" against shipping is a real one and must be addressed and eliminated as soon as possible; unless these criminal situations are attacked by a united front, the small boats will continue operating below the radar threatening international shipping.

ANNEX I

Historical background of Piracy

Pirates have existed and have been a problem, almost as long as maritime trade (Wo, 2003), developing actions that have been offences against the universal law of different societies, because their dehumanized actions on the Indian coast, East Asia, Eastern Europe, North Africa and in the Caribbean.

The term piracy comes from the Greek concept *peiran*, which means "to attack". In ancient Greece some states used to hire pirates to fight battles on behalf of Greeks, because they didn't have enough money to maintain a fleet; this concept was later extended to privateers. The Thracians gained a bloody reputation due to their actions close to the island of Lemnos. The Greeks may also have devised some of the punishments that were commonly inflicted on pirates.

During the 1st century BC the Romans suffered similar problems to Greeks, coining the term *pirata* which was taking from *peiran*, to classify the actions developed by States along the Anatolian coast against their ships.

From the 2nd century BC, the Cilicians got such operation level and efficiency that posed a threat to the economy of Rome itself. In order to eliminate this threat against the Roman Empire, Cilicia was turned into a Roman province in 102 BC; but the threat was not totally controlled until the reign of Pompey. In 67 BC, Pompey received special powers (the *Lex Gabinia*), to eliminate Mediterranean's pirates⁸⁸. Pompey's bloody campaign led to the death of more than 10000 pirates, the destruction of more than 1300 ships and the capture of 20000 prisoners. It is important to remark that in the beginnings pirates were often more interested in ship's passengers than its cargo, in order to get more money from ransom operations. Those that were not sufficiently rich to deserve a ransom were sold as slaves.

⁸⁸ In order to establish the origins of these powers, must be remember that in 75 BC during a voyage across the Aegean Sea, Julius Caesar was kidnapped by Cilician pirates and maintained as a prisoner in Pharmacusa island, waiting the payment of a ransom. After the ransom was paid, Caesar prepared a fleet and captured and imprisoned the pirates

From the 13th century, piratical actions in South East Asia were developed by Wokou. Wokou's roots, comes from the actions developed by soldiers, merchants and smugglers from Japan, China and Portugal, against the policy of Hai-Gan and tributary trade (Chan, 2004), that threatened the maritime shipping close to the coastlines of China and Korea. The developments of piratical activities in this region were mainly due to "... the huge efficiency loss generated from the pro authority trade policies in the Ming dynasty..." and the lack of political stability in Japan at that time (Sengoku period). Japanese pirates developed their actions in the East Asia's seas, threatening maritime trade over three hundred years.

During the apogee of piracy the threat of slavery was largely applied against maritime travelers, affecting mainly those ships that operated in the Mediterranean, where the Barbary corsairs plied their trade, developing attacks against Christian ships. These corsairs, mainly descendants of the Moors, operated out of the three North African regencies of Algiers, Tripoli and Tunis, due to the control applied by Turks. According to late studies "... Corsairs did not arise from a vocation for theft, but for the sea, since fishing was initially their main activity..." (Department of culture and Euskera of Spain, 2007).

During the 16th century European pirates threatened Indian foreign trade, especially those vessels on route to Mecca. The situation reached the climax when, in the autumn of 1613, Portuguese pirates attacked and captured the *Rahimi*, a Mariam Zamani's (the Mughal queen), a situation that triggered an especially harsh response by Mughal's government (Findly, 1988).

Prior to the 17th century, the corsairs generally developed their operations on board of galleys, rather than on board sailing ships. Until the 17th century most of the galleys were operated and deployed by their own states, supported by corsairs' actions. In this way, during the seventeenth- and eighteenth-century pirates operated and controlled the waterways that formed major shipping routes⁸⁹, which covered major portions of the Indian and Atlantic Oceans, Caribbean Sea and Gulf of Mexico (Leeson, 2007). During this period known as the "golden age"⁹⁰, pirates

89 According to which included waters surrounding Bahamas, North American and Europe sea coast, waters between Cuba and Haiti and waters around Madagascar.

90 According to Leeson, The "golden age" extended from 1690 to 1730, reaching its climax between 1716 and 1722.

got such strength that "... they were in no concern about preserving themselves from the justice of laws..." (Leeson, 2007).

The Barbary corsairs were a threat to maritime shipping from the time of the Crusades until 1816, when a joint operation developed by British and Dutch ships destroyed Algiers' port. Furthermore, Catholic Church organized Christian corsairs, in order to eliminate Muslim maritime trade. Some of these Christian corsairs were the Knights of St. Stephen, based in Leghorn (Italy) and the Order of the Knights of St. John, which was stationed in Malta. The operational structure of the Knights of Saint John was almost the same to the Barbary counterparts, receiving official authorizations from the Catholic Church, known as "letters of marque", which were given by the king of a contractual state, and authorized to steal and develop actions against enemies of that specific state, sufficient reasons for which they could be sentenced to hanging, in case of being captured by their enemies. These "letters of marque" differentiated corsairs from pirates, allowing corsairs to operate in a "legitimate way"; considering conditions previous mentioned the Knights of St. John operated as privateers and treating their enemies as criminals.

ANNEX II

Piracy type of violence

Many of the top three types of violence (kidnapping for ransom, injured crew and missing crew) were reported in Nigeria and Somalia. Only during last year did Nigeria register 36 reports of taking hostages and 40 kidnappings for ransom; on the other hand, Somalia registered 154 reports of taking hostages and 20 kidnappings for ransom.

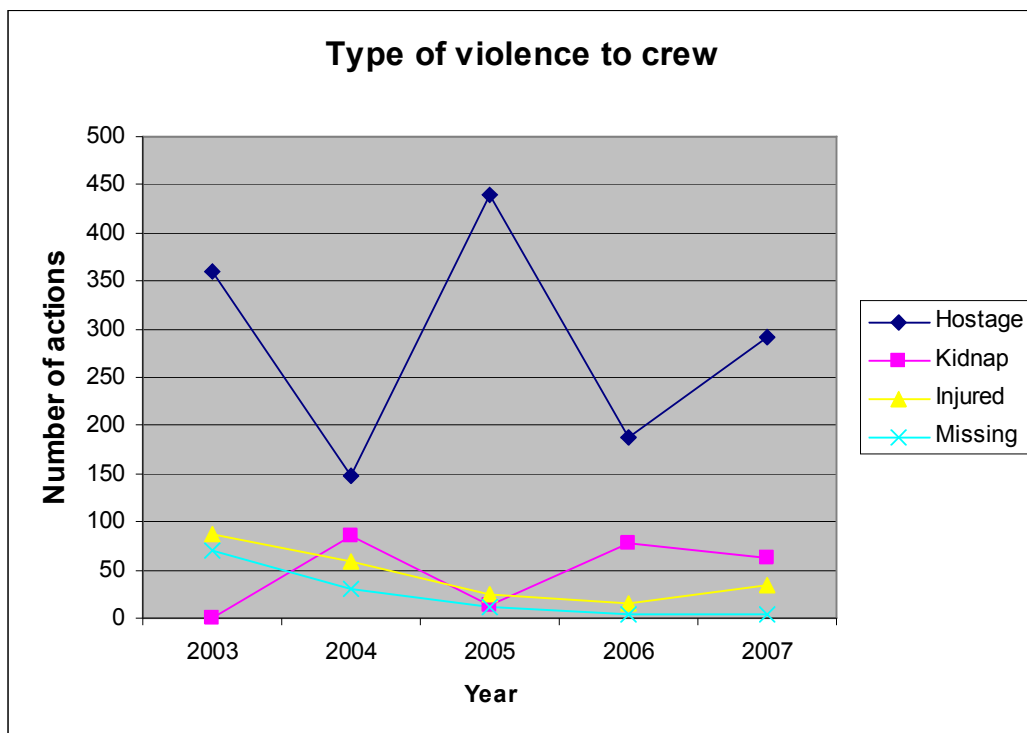


Figure 28: Comparison of type of violence to crew between 2003 / 2007.
Source: ICC IMB 2002/2007 Annual piracy report

Types of weapons used during piratical actions

An important aspect that must be considered during the analysis of the degree of violence in piratical attacks is the kind of weapons that pirates are using during their

actions. It is possible to establish that knives are still the favorite weapon being used in 29,7% of the actions developed from 2003 to 2007⁹¹, followed closely by the use of guns with 25,3% during the same period.

Table 3: Type of weapon used during piratical actions

Type of weapon	2003	2004	2005	2006	2007
Gun	100	89	80	53	72
Knife	143	95	80	76	67
Not stated	168	130	103	100	110
Other weapon	34	15	13	10	14
Total at year end	445	329	276	239	263

Source: ICC IMB 2007 Annual piracy report

Another graphic representation of the actions that have implied a level of violence against crew and passengers by pirates during the last sixteen years can be represented in the following form.

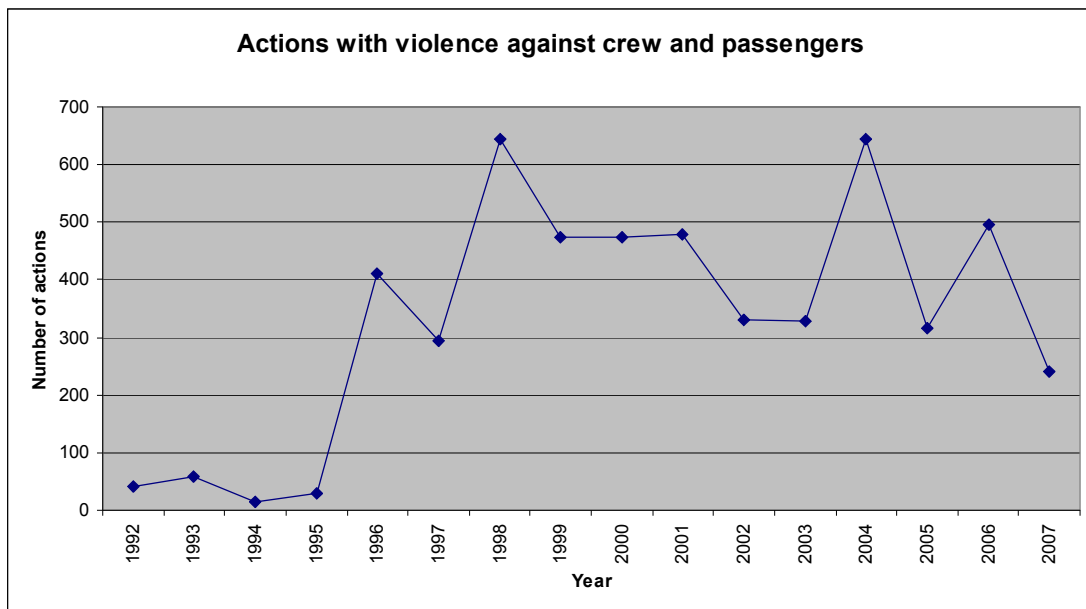


Figure 29: Actions with violence against crew and passengers between 1992- 2007.
Source: ICC IMB 2002/2007 Annual piracy report

⁹¹ Detailed information in ICC-IMB piracy and armed robbery against ships report- Annual report 2007, table 6, page 12.

As was cited previously the level of violence shows a trend to decrease, but it is still high, in spite of international efforts made against piracy.

It is important to notice that there still remains 45% of situations in which weapons used were not stated or were not identified by the victims. This point is highly important because according to some reports, pirates are using during the development of their actions automatic machine guns and rocket propelled grenade (RPG), as they did against the cargo vessel “*IBN Yunus*” on May 14, 2007⁹² and against the cruiser liner ship “*Seabourn Spirit*” on November 5th 2007, that fortunately did not explode on board, and was removed by US Navy personnel⁹³. These new levels of violence imply great risks for crew, passengers and ships and for the international maritime trade.

Table 4: Type of violence during piratical attacks 1991-1998

Type of violence	1991	1992	1993	1994	1995	1996	1997	1998
Crew taken hostage	33	18	6	11	320	193	419	244
Crew threatened	3	9	1	8	59	56	119	63
Crew assaulted	2	12	4	0	2	9	23	58
Crew injured	4	16	3	10	3	9	31	37
Crew/ passenger killed	0	3	0	0	26	26	51	73
Crew missing	0	0	0	0	0	0	0	0
Total year	42	58	14	29	410	293	643	475

Source: ICC IMB 2002/2007 Annual piracy report

92 Information provided by the US Office of Naval Intelligence, Civil maritime analysis department.. For further information visit following URL.

http://www.nga.mil/MSISiteContent/StaticFiles/MISC/wwtts/wwtts_20070613100000.doc

93 For further information, visit following URL.

http://www.navy.mil/search/print.asp?story_id=20930&VIRIN=29688&imagetype=1&page=1

Table 5: Type of violence during piratical attacks 1999 – 2006

Type of violence	1999	2000	2001	2002	2003	2004	2005	2006
Crew taken hostage	402	202	210	191	359	148	440	188
Crew threatened	21	72	45	55	65	34	14	17
Crew assaulted	22	9	16	9	40	12	6	2
Crew injured	24	99	39	38	88	59	24	15
Crew/ passenger killed	3	72	21	10	21	32	0	15
Crew missing	1	26	0	24	71	30	12	3
Total year	473	480	331	327	644	315	496	240

Source: ICC IMB 2002/2007 Annual piracy report

ANNEX III

Origins of terrorism

Violent acts on behalf of social and political organizations, among others, are old as the man himself. Terrorism is not something new in the Middle East, as either it is not to Jews or Muslims either. In past times (66- 72 A.D.) Jewish Zealots used terrorism to resist the Romans and Muslims used terrorism to resist each other (Shi'ites vs Sunni). The first terrorist group was the Sicarii⁹⁴; this was a Jewish group founded in the 1st Century of the Common Era⁹⁵, composed of descendents of Judas of Galilee that developed actions against the Roman census of the Jews under the rule of Roman in order to tax them⁹⁶. Sicariis claimed that the Jews should be ruled only by God; following this concept, they mounted attacks and they assassinated enemies in their campaign to oust their Roman rulers from Judea. During this period, terrorism was oriented to kill religious enemies, establishing a strong connection between religion and terrorism, which is still valid today. Assassination was a common tactic to dispatch Roman tyrants. In total, 32 Roman Emperors were murdered by poison, stabbing or strangulation⁹⁷. Included in this number can be recalled the assassination of Julius Caesar by Brutus whom with the other conspirators of the fading republican cause, called themselves the Liberators. Later, from the 11th to the 13th century, another organization named the Hashhashin⁹⁸, a secretive Islamic sect active in Iran and Syria, executed assassinations of political figures as Abbasid and Seljuk governors that terrified their contemporaries with their decisions.

94 Sicarii comes from the Latin word for dagger sica, and means assassins or murderers. The Sicarii, or "dagger men" carried out murders and assassinations with short daggers. Home Base: Judea. Romans, taking off from the biblical description of Jewish kingdom of Judah, called the province they ruled over in ancient Israel Judea. Judea is located in modern day Israel/Palestine, and extends from Jerusalem east and south until the Dead Sea. It is a fairly arid area, with some mountain ridges. The Sicariis undertook assassinations and other attacks in Jersusalem, at Masada and in Ein Gedi.

95 Also called A.D., anno domini.

96 Sicariis claimed that the Jews should be ruled only by God; following this concept, they mounted attacks and they assassinated enemies in their campaign to oust their Roman rulers from Judea.

97 Assassination and anarchism. Adam Young, available in <http://www.strike-the-root.com/52/younga/younga6.html>

98 whose name gave us the English word "assassins,"

During periods previously mentioned, the development of suicide actions, which meant the death in the service of god, was common. In this way terrorism, as a religious act was considered a good and worthy act.

Origins of Modern Terrorism

The word terrorism comes from Maximilien Robespierre who established a "Reign of Terror" during 1793 and 1794, following the French revolution. Robespierre considered terror as "... nothing other than justice, prompt, severe, inflexible; it is therefore an emanation of virtue; it is not so much a special principle as it is a consequence of the general principle of democracy applied to our country's most urgent needs...". Robespierre, one of twelve heads of the new state, ordered to kill over 12,000 enemies of the revolution and applied a dictatorship to stabilize the country. Robespierre introduced a new essence to terrorism, which was that terrorism has virtue in that it can be a tool to bring about "legitimate" governmental ends. In this way Robespierre used terror systematically to eliminate opposition to the government. Robespierre introduced Government-sponsored terrorism: the use of terror to maintain power and suppress rivals⁹⁹.

In other parts of Europe, between 1890 and 1910 anarchists started to develop several actions during the late 19th and early 20th century¹⁰⁰. The anarchists believed that through the assassination of the Czar and other kings of Europe they could overthrow several governments. In order to get their goal they developed individual terrorism¹⁰¹, which meant the use of violence without mass support. The use of terror made by anarchists was selective because targets were defined according to

99 The Delaware criminal justice council web page: <http://cjc.delaware.gov/terrorism/history.shtml>

100 A few examples are the assassination of Czar Alexander II by the political terrorist organization the People's Will, the assassination of King Alexander I of Serbia by a Croatian nationalist group in 1903, and the assassination of Franz Ferdinand and his wife by one of a group of six assassins coordinated by Danilo Ilić, in 1914, which triggered the beginning of First World War. The political objective of the assassination was to break Austria-Hungary's south-Slav provinces off so they could be combined into a Greater Serbia or a Yugoslavia.

101 Trotsky compared individual terrorism to "liberals with bombs".

their position within the political and governmental system (Laqueur, 1999)¹⁰². Furthermore, anarchists explored the communicative effect of terrorism, known as “propaganda by deed” which is an active component in today’s terrorism (Garrison, 2004). The aim of the propaganda by the deed was to promote violence against political enemies to inspire the masses in the cause and catalyze revolution¹⁰³.

Later during the Soviet Revolution (1917), first Lenin and then Stalin, applied the idea of terrorism sponsored by the government, as a tool to keep and maintain the control of an entire class of people within society, through the systematic use of terror (Atran, 2003)¹⁰⁴. In order to build society, fear was used as a factor of motivation and public conformity by governmental operations.

Between 1919 and 1921, Michael Collins led the Irish Rebellion with the goal to obtain Irish independence from England, applying terrorism to any person who could represent England, which included police officers, soldiers, judges, etc. It is important to highlight that actions developed during this period contributed with three new components that improved the modernity of terrorism (Garrison, 2003): first, selective terrorism; second, sustained terror over time; and finally, cell operations. Sustained terror over time, proved to be an effective component within the new terrorism’ structure during the Irish rebellion, because they had to break down the will of the England’s government¹⁰⁵.

102 It is important to remark that this kind of individual terrorism acts were limited to ensure that innocent bystanders were not hurt; which was not applicable to terrorist actions during the second half of the 20th century.

103 The development of an action e.g. the explosion of a bomb generates society’s questioning in order to know the reasons that pushed someone to commit that action, which gives to terrorists a stage with audience for the spread of their ideas.

104 Scott Atran, Genesis of Suicide Terrorism, Science 7 March 2003: Vol. 299. no. 5612, pp. 1534 - 1539

105 Sustained terror over time means the systematic development of terrorist actions against a government that oblige to security services and public remain constantly vigilant in order to avoid the commitment of this kind of criminal actions. The previous condition facilitates the physical and physiological wearing down of the human element involved in counter terrorism agencies and affects the efficiency of security services.

The Irish Rebellion also introduced the concept of “cell operation” which elevated the level of perfection of compartmentalized terrorism. Through the application of this concept every operative part (cell) within the Irish Rebellion had a specific goal or operational objective but did not have contact with other cell. Each cell was independent, which prevents the entire Irish Rebellion movement from disruption if one cell would be discovered.

After the Second World War, terrorism appeared again as a tool to obtain liberation from colonies, mainly in third world countries. It must be highlighted that during this period the selective terror changed from targeting governments officials to civil people independent if they agreed with colonization nations (The Delaware Criminal Justice Council Terrorism Research, 2007).

In the 1960's while the world was basically divided in two blocks, led by the United States and the Soviet Union, some States started to sponsor terrorist activities for their own political interests. Some examples of this state-sponsored terrorism were: Iran supporting Hizballah, Libia supporting Abu Nidal, or States providing training camps as Iraq, Cuba, Sudan and Algeria (Wolf, 1989). During the late 1960's, terrorist organizations started a new rampant phase of development, marked by the murder of innocent civilians with the aim to seed fear and secure political conditions¹⁰⁶. During this period terrorist organization showed to be motivated by hostility toward particular policies and political figures rather than by revolutionary aspirations (Stohl, 1988)¹⁰⁷.

During the 1970's the world was victim of "... several thousand terrorist incidents..." (Mickolus, 1980¹⁰⁸). These actions covered a wide range use of tactics and targets, but it must be notice that more than 20 terrorists attacks were directed against European and North American airlines whith the use of bombs and hijackers. Between May 1, 1961 and December 31, 1972, skyjackers around the world took the control of 159 aircraft. There was a period in 1972, when hijackers "... took a

106 Some of these organizations were the "Weather underground", in the United States of America, the Marxist "Baader-Meinhoff gang" in West Germany and the "Red brigades, in Italy. Also terrorist actions were developed on the Middle East after the end of the Arab-Israel war in 1967 by defeated nations against Israel.

107 In the early of 1970s multinational terrorism reached the first climax (Laqueur 1977) beginning its internationalization during the Tri-Continental Conference held in Cuba, sponsored by the Soviet Union. In this meeting, terrorist and liberations groups from all parts of the globe began to work together and build financial, political and intelligence alliances, flourishing over the preceding two decades. Europe suffered a decade of terrorist activity, due to alliances made between European and Middle Eastern terrorist groups e.g. the Red Army Faction (German group) allied itself with Black September (Palestinian group); in France, Action Direct (French group) allied with the Red Army Faction and the Red Army Brigade (Italian group); in Japan, the Japanese Red Army allied with the Popular Front for the Liberation of Palestine. Cuba became a training ground for terrorist groups.

108 E F Mickolus , Transnational Terrorism - A Chronology of Events, 1968-1979, National Science Foundation, USA

plane every Friday over a seventeen week period...” (Piszkievicz, 2003¹⁰⁹); of therefore, the adopted name for all Friday’s flights “the skyjack Friday”.

According to some scholars, during the last twenty years of the 20th century, terrorism finalized a period that lasted 1500 years. The rise of the Ayatollah Khomeini in Iran (1979), established the return of religious based terrorism. “ ... Militant Islam and the protection of Islam against Jews, Christians, and the West formed an independent justification for terrorism...” (The Delaware Criminal Justice Council Terrorism Research, 2007). A clear sample of this are the religious suicide martyrdom carried out by men and women serving Allah’s desires. The 1990’s have been marked by terrorist actions characterized by the indistinct slaughter and large mass casualties.

According to the facts, ultimately terrorism has transformed in a tool with spectacular capacities to change mass behavior (Garrison 2003, Caplan 2005).

109 Piszkievicz Dennis, *Terrorism’s war with America: a history*. Greenwood Publishing Group. 2003.

ANNEX IV

Terrorism database 1961 / May 2008

	Incident	Year	Group	injured	Deaths	Remarks
1.	Hijacking of <i>MV Santa Maria</i>	1961	Portuguese and Spanish rebels		N/A	The incident constitutes the first modern day hijack at sea.
2.	Hijacking of <i>MV SS Anzoategui</i>	1963	Venezuela's communist insurgent group			The search activities were unsuccessful as the terrorists entered the Brazilian port of Belem and received political asylum.
3.	Seizure of <i>MV Columbie Eagle</i>	1970	Crew's member			Action developed by two crew members protesting the war in Vietnam.
4.	Attack against <i>MT Coval Sea</i> in Bab-el-Mandeb Str.	1971	Palestinian fighters			Action developed to deter usage of Israeli port of Eilat on the Red Sea.
5.	Attack against a Portuguese ship	1971			23	Action developed off Mozambique coast.
6.	Attempted attack against <i>Queen Elizabeth II</i>	1971	IRA			IRA attempted to blow up the ship.
7.	Attack against Soviet research ship	1972	Castro opponent group JCN			
8.	Sank of the <i>MV Sanya</i>	1973	Black September group		00	The ship was carrying 250 US tourists on board.
9.	Attack against a vessel	1973	Cuban nationalist group			This terrorist group bombed a vessel awaiting cargo at a Miami river dock to protest government of the Bahamas for the murder of Cuban nationals.

10.	Transport of weapons on board MV <i>Claudia</i>	1973	Provisional Irish Republican Army (PIRA)		N/A	On board were five tons of munitions, 250 assault rifles, pistols, mines, grenades and explosives.
11.	Hijacking of a Greek ship in Karachi	1974	Moslen International Guerrillas			
12.	Attack against a Soviet cruise vessel <i>Maxim Gorki</i> .	1974	Cuban nationalist group	02		This terrorist group dropped a hand grenade
13.	Hijacking of ferry <i>Laju</i>	1974	Red Army and two Palestrian PFLP			Terrorists were given a safe passage by the Singapore government.
14.	Hijacking of MV <i>Voy</i>	1974	Moslen International Guerrillas			Action was developed in Karachi
15.	Sank of <i>Caribe Star</i>	1974	Jewish defense League			Attacked developed in Los Angeles harbour
16.	Stopping of Japanese MV <i>Sheiro Maru</i>	1975	Moro National Liberation Front			
17.	Hijacking of a Japanese freighter	1975	Filipino separatist group MNLF		00	The ship was attacked with 27 persons aboard in Manila. The terrorists surrendered unconditionally and released all the hostages.
18.	Attack against a Chilean training vessel and a Kobe University ship	1975		02		Ships were docked at the International Ocean Exposition in Okinawa were terrorists used molotov cocktails.

19.	Attack against an Argentinean navy ship <i>Sentisima Trinidad</i> .	1975	Argentine opposition movement Montoneros		00	The explosion damaged all the electronics aboard and delayed the deployment by a year.
20.	Developed of four different attacks against Soviet and Cuban vessels	1976	Cuban nationalists			Two of the attacks were in US waters.
21.	Sank of four Greek vessels	1976	Lebanese Christian Group			Sank of four Greek vessels by limpet mines placed by frogmen in Lebanon.
22.	Attack against a Spanish trawler	1977	Polisario Front guerillas			The attack was developed with mortar and machine-gun fire seized three Spanish firemen.
23.	Discovery of a plot on board the <i>USS Trepan</i>	1978				The attempt to steal a U.S. Navy nuclear submarine
24.	Explosion of Lord Mountbatten's fishing yacht	1979	IRA		04	The yacht was exploded by a bomb in Mullaghmore, Ireland.
25.	Attack against a Libyan gunboat.	1980	Maltese Liberation Front			The attack was developed in the port of Genoa, Italy, with a bomb was placed by frogmen.
26.	Attacks against ships of different nationalities	1980	Polisario Front guerillas			The attacks were developed against a Moroccan, a Portuguese and a Spanish ship.

27.	Damaging of a Spanish ship by Basque insurgents	1981					
28.	Seized of the rocket boat <i>Taberzin</i>	1981	Iranian nationalist paramilitary organization				The action was developed to protest Khomeini.
29.	Attack against a Portuguese fishing vessel	1981	Polisario Front				The attack was developed off the coast of Western Sahara.
30.	Attack against a Lebanese cargo ship	1982					The ship was blown up at the port of Tyre, Lebanon.
31.	Explosion of a British cargo vessel	1983	IRA				The attack was developed in Lough Foyle.
32.	Attack against a Danish ship in Falkland Islands.	1983	nationalist Argentine group				The ship was carrying construction material which would be used to build a monument for the British soldiers died in military conflict between Argentina and Great Britain the year before.
33.	Sank or damaged of 11 ships	1984	Nicaraguan Democratic Force and the Democratic Revolutionary Alliance				The attacks were developed through laying mines around the entry of the main ports in the country.
34.	Attack against two freighters in the harbor of Luanda	1984	UNITA				The actions were developed in the fight against the government of Angola.
35.	Multiple attacks against ships passing through Suez Canal	1984	Hezbollah and government of Libya				19 ships were affected from this organized attack. It was later claimed that 190 acoustic mines were laid in the canal.

36.	Multiple attacks held off the coast of Morocco	1985	Polisario Front Guerrillas				
37.	Hijacking of <i>Achille Lauro</i>	1985	Palestine Liberation Front (PLF)		01		Cruise ship hijacked in an attempt to coerce the release of 50 Palestinians being held in Israel.
38.	Attack against a Cypriot vessel	1985	Hezbollah.				Attacked was developed by the use of submarine mines laid in the Red Sea.
39.	Captured of an Israeli yacht in Cyprus.	1985	Al-Fatah		3		The action was developed to demand the release of 20 prisoners.
40.	Attacks against Spanish and Soviet ships.	1986	Polisario Front Guerrillas				Theses attacks were carried out against three Spanish and Soviet ships off the Moroccan coast.
41.	Captured of a French yacht off the coast of Gaza Strip.	1987	Abu Nidal				The action was developed to warn Arab leaders not to entitle King Hussein of Jordan to be the representative of Palestinians in peace talks.
42.	Attacked against a Greek cruise ship.	1988	Abu Nidal		11		
43.	Attack against a ferryboat.	1988			02		As a result of guerrilla ambush, two people were killed on a ferryboat with an American delegation on board.
44.	Attacked developed by a gunboat against a Cypriot ship	1990		25	01		

45.	Attack developed against a supply ship for Victoria.	1990	IRA			
46.	Attack against a naval vessel	July 12, 1990.			06	The attack was carried out by a LTTE's group of suicide against a Naval vessel in Trincomalee with an explosives laden boat.
47.	Hijacking of a Polish cargo ship.	1991	Somalian nationalists			The action was developed in the gulf of Aden.
48.	Attack against naval personnel	May 11, 1991	LTTE		03	At Kankesanthurai, three Navy personnel are killed during an attack by a group of three male 'Sea Tigers'.
49.	Attack against a naval vessel	May 5, 1991	LTTE		05	The attack was carried out by 02 LTTE's combatants against a Naval vessel in Trincomalee with an explosives laden boat.
50.	Targeting of cruise ships on the Nile river	1992-1994	Al-Gama'a al-Islamiyya		N/A	The group targeted at least four cruise ships during these two years in order to undermine the Egyptian tourist sector.
51.	Attack against naval vessels	April 19, 1995	LTTE		12	A suicide squad attacks two naval vessels in Trincomalee killing 12 soldiers.

52.	Attack against naval facility	October 17, 1995	LTTE		09	Nine Navy personnel are killed and a vessel is damaged after a male suicide bomber targeted the naval facility in Trincomalee.
53.	Attack against a naval facility	October 25, 1996	LTTE		12	Twelve personnel of the Sri Lankan navy are killed when a boat laden with explosives is detonated by two suicide squad cadres in Trincomalee.
54.	Hijacking of the Turkish passenger ferry <i>Alvrasya</i> in the Black Sea.	1996	Chechen rebels		N/A	Nine rebel gunmen held 255 passengers hostage during four days, in order to bring international attention to the Chechen cause.
55.	Attack against a port facility	April 1, 1996	LTTE		10	At least 10 personnel are killed after two suicide squad cadres detonate a boat laden with explosives at Vettalaikerni.
56.	Attack against a port facility	April 18, 1996	LTTE		09	The naval wing of the LTTE, Sea Tigers, launched a boat suicide raid on the port of Colombo.
57.	Two attacks against Chinese and North	1997	LTTE			

58.	Sri Lanka's navy action	March 23, 1997	LTTE			02 suicide boats were completely destroyed by the Sri Lankan Navy in Mullaitivu
59.	Attack against naval vessels	February 23, 1998	LTTE		79	Suicide attack on the Point Pedro coast in northern Sri Lanka, eight boats laden with explosives and driven by suicide bombers crashed into two navy ships.
60.	Attack against a docked ship	July 25, 1999	LTTE		02	A woman suicide bomber targets a ship docked in the Trincomalee harbor, hours before it was to take on passengers killing herself and a civilian.
61.	Attack against naval vessel	June 5, 2000	LTTE		34	Suicide squad of the 'Sea Tigers' sinks a gunboat of the Sri Lankan Navy off Vadamarachchi coast in Jaffna peninsula.
62.	Attack against a merchant ship	June 26, 2000	LTTE		08	The <i>MV Uthana</i> , carrying private cargo to Point Pedro from Trincomalee is attacked by a ring of LTTE suicide boats and the vessel was sunk after explosion.

63.	Suicide bombing of the USS Cole	October 12, 2000	Al Qaeda	19	The assault involved 600 pounds of C4 explosive on board a small boat that rammed the Cole's side.
64.	Suicide attackers against a ship carrying fuel.	October 30, 2001	LTTE	07	The attack was developed by five boats full of explosives.
65.	Suicide bombing of the MV Limburg	2002	Al Qaeda	3	The attack was developed by the use of a small fiberglass boat packed with 100/ 200 Kg of TNT, which rammed into the tanker.
66.	Transport of weapons on board MV Karine A	2002	Palestinian Authority (PA)	N/A	On board were 4,000 tons of munitions, rockets, anti tank missiles, sniper rifles and more than two tons of explosives.
67.	Attack against a Turkish tanker.	2003			The ship was carrying oil from Turkey to Iraq.
68.	Suicide attack on an Israeli ship at the port of Antalya	2003			It is claimed that a suicide attack on an Israeli ship at the port of Antalya in Turkey was not launched because the ship could not dock due to weather conditions. The target was changed to the British Consulate General in Istanbul, Turkey.

69.	Hijacking of MT <i>Penrider</i>	2003	Gerakan Aceh Merdeka (GAM)		N/A	This is one of the few instances where GAM has directly claimed responsibility for a maritime attack.
70.	Transport of weapons on board MV <i>Abu Hassan</i>	2003	Lebanese Hezbollah		N/A	The owner was recruited by Hezbollah and trained specifically to carry out maritime support missions.
71.	Attack against Pakistani port of Karachi.	2004.			02	A bomb exploded at the Pakistani port of Karachi, killing two
72.	Attacks against the Kwar Al Amaya oil terminal and Al Basrah oil terminal	2004	Jamaat al-Tawhid		03	The attacks were claimed by al Zarqawi using small crafts in suicide modality
73.	Bombing of <i>Superferry 14</i>	2004	Abu Sayyaf Group (ASG) with elements from Jemaah Islamiyah (JI) and the Rajah Sollaman Revolutionary movement (RSRM)		116	Attack considered the use of 20 sticks of dynamite planted in a hollowed-out television set.

74.	Suicide attack against the port of Ashdod	2004	Hamas, al-Aqsa Martyr's brigade with possible support of Al Qaeda		10	Perpetrators apparently been smuggled to the terminal inside a commercial container four hours before the operation.
75.	Attack against port facilities.	2004				A series of bombs exploded to discourage workers' involvement in a port project.
76.	Attack against naval vessel	Jan 7, 2006	LTTE		15	Fifteen Sri Lankan Navy personnel are killed in a suspected suicide attack by the LTTE on a navy gunboat outside the Trincomalee naval harbor in Trincomalee district.
77.	Sri Lanka's navy security operation	Feb 11, 2006	LTTE	01	04	One of four suspected LTTE Sea Tigers aboard on a speeding trawler blew himself up in mid-sea off Talaimannar.
78.	Attack against naval vessel	March 25, 2006	LTTE		14	Suspected suicide attack by the outfit, when a boat heading to northern Sri Lanka and carrying LTTE cadres exploded off the northwest coast near a naval craft in the Kalpitiya area of Puttalam district.

79.	Sri Lanka's navy security operation	Sept 1-2, 2006	LTTE	02	80	According to the Sri Lankan military 12 LTTE boats were sunk and 80 LTTE killed, in a sea battle off the northern Jaffna peninsula. In this action participated 20 LTTE boats, including five suicide boats laden with explosives, had attacked a patrol near the Kankasanturai harbour.
80.	Attack against naval facility	Oct 18, 2006	LTTE	29	16	Suspected LTTE cadres carry out a suicide mission on the Dakshina Naval Base in Galle.
81.	Attack against a passenger vessel	Nov 9, 2006	LTTE		40	The SLN personnel foil a major LTTE attack on the civilian passenger vessel 'Green Ocean I' with 300 Jaffna bound civilians from Trincomalee in the sea off Nagarkovil, destroying a flotilla of Sea-Tiger boats, including three suicide boats. An officer declared that two suicide boats rammed into two Dvora fast Attack Craft escorting 'Green Ocean I', destroying one and damaging the other.

82.	Sri Lanka's navy security operation	Nov 10, 2006	LTTE		06	The SLN destroys one weapon laden LTTE suicide craft and captured another that were sailing in the seas off Nilaveli coast in the guise of ordinary fishing boats in the Trincomalee district.
83.	Attack against naval vessels	Oct 19, 2007	LTTE		02	During an attempt to destroy a naval gunboat on the north eastern coast, two sailors are killed and two LTTE boats are sunk.
84.	Attack against naval vessel	May 10, 2008	LTTE			Diver attack against Sri Lanka Navy's ship <i>MV Invincible</i> , in Trincomalee.
85.					61	571

ANNEX V

Iran's navy small boats



Figure 30: Iran's navy small torpedo boat.
Source: FARS news agency



Figure 31: Iran's navy small attack boat.
Source: FARS news agency

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