

# A Study on the Enhancement of Maritime Security in Korea Maritime Jurisdiction

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**Abstract :** *The security vulnerabilities in Korea maritime domain were mentioned and analysed with the static data of crimes relating to maritime security. The counterterrorism and initiatives to reduce the security risk and to minimize the damage are introduced and evaluated. The maritime security strategy and the near term initiatives to enhance the non-military security at Korean sea and ports are proposed in order to response maritime security threats economically, efficiently and safely.*

**Key words :** *Maritime security, Terrorism, Security risk, Counterterrorism, Security strategy, Security vulnerability*

## 1. Introduction

In the aftermath of the September 11, 2001 terrorist attacks on the United States, concerns over terrorism, nuclear weapon proliferation and maritime security have become increasingly intertwined. Terrorism has clearly become the primary threat of the 21st century. The terrorist's attacks on World Trade Center not only exposed the loopholes in airport and airplane security but also alerted the world to the gaping security vulnerabilities in maritime industry.(Anne, 2004)

Throughout the history of maritime industry, it has had to contend with piracy, but it is only during 20 years that it has had to contend with terrorism. The goals have shifted from illicit profit to political hegemony. Therefore, any country tries to seek a solution to the risks of terrorism and prepare maritime security contribution program to prevent maritime security threats economically, efficiently and safely with minimum risk.(Mark, 1998)

South Korea is geographic region unlike any other country in its maritime significance and surrounded by ocean except the north side faced to North Korea. Maritime security and access to sea routes is of increasing importance, as these seaways are the maritime highways for vast trade flows critical to the rapidly growing prosperity of Korea. Even though the high security level in Korea maritime domain is relatively evaluated, it is necessary to take the strategic approach in order to reduce security risk and to prevent any maritime terrorism. The strategy provides direction and a framework for action to government departments and agencies that have a role in

maritime security. Additionally, it suggests step that local governments, private companies and organization, and individual Korean can take to improve our maritime security.(Kent, 1998)

In this paper, the implementations and initiatives of new maritime security across the world are introduced to build upon the layers of maritime security to reduce risks and the counterterrorism to prevent maritime threats and to minimize the damage and to recover from attacks that may occur. Then the security vulnerabilities in Korea maritime domain is viewed and analyzed on the basis of statistical data on security incidents happened within Korean maritime jurisdiction. In addition, the maritime security strategy and its execution to keep our water safe, secure and open for business are proposed.

## 2. Vulnerability and initiative of maritime security

### 2.1 Security threats and risks

Traditionally, the risk have been measured in the following.(Cox, 2001)

$$\text{Risk} = \text{Frequency}(F) \times \text{Consequence}(C) \quad (1)$$

In security risk management, the frequency element is separated into two parts as shown in the following

$$\text{Risk} = [\text{Threat}(T) \times \text{Vulnerability}(V)] \times \text{Consequence}(C) \quad (2)$$

In Eq.(2) threat(T) is a measure of the likelihood that a

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specific of attack will be initiated against a specific target(or scenario) and vulnerability(V) is a measure of the likelihood that various types of safeguards against a scenario will fail. Consequence(C) is the magnitude of the negative effects if the attack is successful.

## 2.2 Maritime vulnerability

Waters covers almost three-quarters of the globe and is home to roughly 50,000 ships, which carry 80 percent of the world's traded cargo. The sea has always anarchic domain. Unlike land and air, it is barely policed, even today. The vulnerabilities of maritime security can be summarized as follows:

- It is almost impossible to deploy security force in order to secure all oceans.
- Ships and port facilities can be easily accessed by terrorists, whereas land and air targets are relatively well protected.
- Security force and equipment are not established on commercial ships and ports.
- Maritime employers and seafarers have not been trained and educated to have security culture except safety culture.
- Maritime industry and shipping is usually international business which are applied to different security level because each country has its own security culture. International maritime commerce is the classical multilateral maritime security interest. Its protection always involves at least two countries.(Hong, 1995)

## 2.3 Threat scenarios of vessel

The vessels can be categorized into five possible threat scenarios such as vessel as a mean, vessel as a weapon, vessel as a bomb, vessel as a disruption tool and vessel as a target in the Fig. 1. In the first scenario, the ship is used to smuggle goods to fund or support terrorist networks. They can also be employed to transport nuclear, chemical, biological or conventional weapons to terrorist groups or even the terrorist themselves. In the second case, a shipping vessel could be employed as the weapon itself. Terrorists having hijacked or assumed control of a large ship, particularly one laden with high explosive materials such as oil or liquefied natural gas, could then crash it into another ship or a port. The idea of modifying a shipping vessel as a floating bomb is simply taking as a weapon concept a step further. Detonating a weapon of mass destruction on board a ship, especially if rammed into a crowded port facility, is perhaps the most nightmarish

scenario possible. If disrupting international trade and crippling the global economy is a goal for terrorists, there are several ways a ship could be utilized. The sinking of a large vessel in a major port or in any one of several shipping choke-points could seriously impeded international trade, causing major economic losses, and significantly increasing transport and insurance costs. Were a vessel carrying oil or LNG to be used in such a scenario, or should an offshore oil facility be targets, the global environmental and economic impact would be far greater. Finally, ships can be the targets of maritime terrorists. Attacks on ferries or cruise ships carrying hundreds of passengers are one possibility.

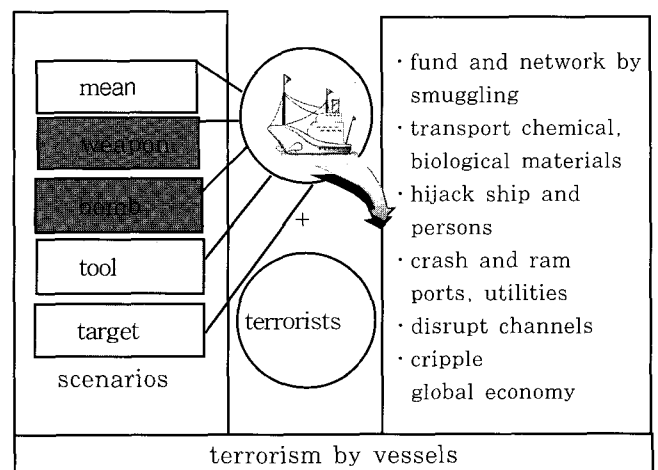


Fig. 1 Threat scenarios of vessel terrorism

## 2.4 Maritime Security Initiatives

### 1) The Proliferation Security Initiative(PSI)

The proliferation security initiative(PSI) most directly tie together concerns over counter-proliferation and counter-terrorism.(USCG, 2002) The PSI is an exercise in supplementing the right to self-defence under international law; pre-empting unclear terrorist attacks. The basis of the PSI lies in the principle of interdiction, the ability for the U. S. and other members states to stop and search ships, aircraft, and other means of transport suspected of illegally carrying or transporting weapons of mass destruction, delivery systems and related technology. Members states agree to meet on a regular basis in order to facilitate cooperation and information sharing and to take part in multilateral land, air and sea interdiction training exercises.

### 2) The Container Security Initiative(CSI)

The CSI aimed at tightening the security of containers consists of four main elements:

- using intelligence and automated information to identify and target containers that pose a risk for terrorism
- pre-screening those containers that pose a risk at the port of departure before they arrive at U. S. ports
- using detection technology to quickly pre-screen containers that pose a risk
- using smarter, tamper-evident containers

The CSI works by stationing U.S. CBP(Customs and Border Protection) officers in foreign ports to work with host nation counterparts to target and screen all containers that pose a potential threat.

### 3) The International Ship and Port facility Security Code(ISPS Code)

Unlike the PSI and CSI, the ISPS is not a U. S. program but is promoted through the International Maritime Organization, though there has been considerable U. S. pressure on the IMO to implement these measures. The ISPS Code identifies three security levels. Security Level 1 corresponds to the normal level or the minimum appropriate protection security measures to be maintained. Security level 2 equates to a medium degree of security risk and the corresponding security measures to be maintained. Security level 3 indicates the highest level of concern when a security incident is probable or imminent, even if the specific target cannot be determined. Contracting governments agree to set appropriate security threat levels for ships and ports, with the goal to operate at security level 1 at all times.(IMO, 2003)

The process begins with a risk assessment exercise by contracting parties to identify and evaluate important assets and infrastructures that are critical to the port facility as well as those areas or structures that, if damaged, could cause significant loss of life or damage to the port facility, identify the threats to those critical assets and infrastructure in order to prioritize security measures, address vulnerability of the port facility by identifying weaknesses in physical security, structural integrity, protection system, procedural policies, communication systems, transportation infrastructure, utilities, and other areas that may be targeted.

## 3. Korea maritime jurisdiction and crime

### 3.1 Korean maritime jurisdiction

The marine area of South Korea jurisdiction is 4.5 times larger than the areas on land, covering about 130,000 square

miles of ocean area and extending 900 miles of coastline. Fig.2 shows the maritime jurisdiction of South Korea in detail. It composes of territorial waters, Exclusive Economic Zones including Korea-China Joint provisional waters and common waters between Korea and Japan. Korea strait is an important regional navigational route connecting the East Sea and the East China Sea and is a strait used for international navigation which means the transit passage regime applies. Through a high seas corridor, ships may transit without entering the territorial seas of South Korea and Japan.(KCG, 2004)

The Northeast Asian region contains two huge semi-closed sea: that is the Yellow Sea encompassing 362,000 square miles; the East Sea encompassing 445,000 square miles. The following general observations of the region need to be made. First, the littoral and adjoining areas have the heaviest population concentration in the world. Second, these areas have one of the heaviest concentration of industry in the world. Third, this area has a heavy concentration of shipping routes of the world, with its susceptibility to pollution from collision, grounding, discharges from tank cleanings, leaks or human error. Finally, there is considerable oil and gas in the offshore.(Stanley, 1996)

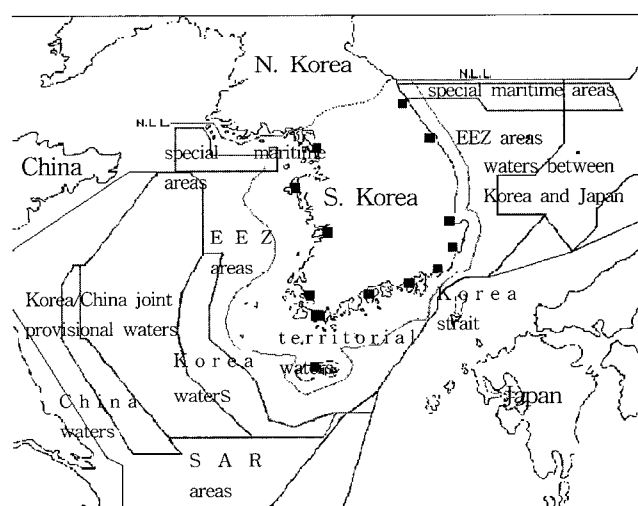


Fig. 2 Korea maritime jurisdiction in detail

### 3.2 Status of maritime crime in Korea

Table 1 shows the status of crime happened in maritime domain of South Korea during last 7 years.(KCG, 2004) Here the penal offence means the incident such as murder, aggravated assault and larceny while the special law offence is the crime breaking the special law of maritime transportation, pollution and fishing. Over 30,000 incidents and their number's increase committed each year mean that

Korea maritime domain has security risk by diverse threats.

Table 2 shows the numbers of fishing boats which violated Korea Exclusive Economic Zone (EEZ) and were captured by Korea Coast Guard (KCG). The number of China boats fishing in Korea EEZ remarkably increases.

Table 3, 4 show the numbers of stowaway and smuggling into South Korea respectively. While stowaway through waters decreases on the peak of 2000 year, smuggling incidents were detected over 10 times each year. These boats not only threaten fishing resource but also commit additional security incidents such as smuggling, terrorism and so on. Table 5 shows the numbers of Korea fishing boats captured by foreign coast guard.

Table 5 The number of Korea fishing boats captured by foreign coast guard (unit: boat)

country \ year	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05
total	13	15	9	29	29	25	35	27	22	13
China	.	.	3	5	.	.	1	.	2	.
Japan	13	15	6	23	25	24	32	27	19	13
Russia	.	.	.	1	4	1	2	.	1	.

Table 1 Static data of maritime crime in South Korea

year	'97	'98	'99	'00	'01	'02	'03
total	24,680	36,335	34,716	30,588	31,587	32,268	34,728
penal offence	3,050	3,970	5,757	5,121	5,713	5,521	8,409
special law offence	21,630	32,365	28,959	25,467	25,874	26,747	26,319
increase rate (%)	-	+47.2	-4.5	-11.9	+3.3	+2.2	+7.6

Table 2 The numbers of fishing boats captured by KCG (unit : ship)

country \ year	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05
China	45	39	39	80	62	174	175	240	656	567
Japan	.	.	.	4	1	3	1	.	6	.

Table 3 The number of stowaway into South Korea (unit : person)

number \ year	'98	'99	'00	'01	'02	'03	'04	'05
persons	256	407	1544	859	243	257	30	34

Table 4 The number of smuggling detected through waters (unit : time, person)

number \ year	'98	'99	'00	'01	'02	'03	'04	'05
incident	14	19	25	16	10	5	11	2
person	50	32	46	26	14	12	26	3

#### 4. Maritime counterterrorism

##### 4.1 Maritime terrorism

The attack on the Achille Lauro in the mediterranean in 1985, the USS Cole in Aden in 2000, and the Silk Pride in Sri Lanka in 2001 demonstrated the interest of terrorist in maritime transportation as high profile targets. (Anne, 2004) Security experts claim that AL-QAEDA is set to stage a water-born 11 September attack. A terrorist act involving chemical, biological, radiological or nuclear weapons at seaports could result in extensive loss of lives. Terrorist groups have warned the attack to the choke-points such as used major sea lanes and critical straits such as the Malacca strait through which 600 vessels and 11 million barrels of oil passing each day. (Anthoy, 2004) Intelligence agencies such as CIA reported and warned that the affiliated terror group were increasing the likelihood of attack not only within South Korea but also Korea flag ships. During 2004, Korea Coast Guard got intelligence on terrorist's threat at 14 times.

The kinds of main maritime security threats can be listed such as terrorism, piracy, drug, smuggling, stowaway, hijacking, illegal weapon, vandalism and demonstration.

##### 4.2 Piracy and armed robbery

The maritime industry faces a new threat. Piracy is growing at 20% per year, thriving on a combination of vulnerable, undermanned ships carrying both dangerous and valuable cargoes sailing in unpoliced waters. However, the threat is not from traditional commercial pirates, but from a new breed of maritime terrorist, whose skills evolve from a conventional piracy base, but whose aims and goals are more sinister, and whose potential to wreak havoc with

the global supply chain is still largely unrecognized. The importance of the growth rate in piracy lies not in the quantity, but in the quality of the attacks. Fig. 3 shows the numbers of piracy and armed robbery happened in Asia. There are increasing signs that piracy is becoming more organised, more intensive, more ambitious and better connected.(ICC, 2004)

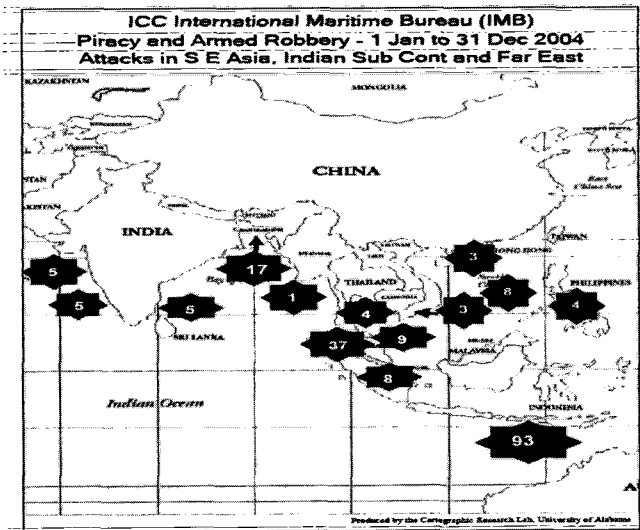


Fig. 3 Piracy and armed robbery in Asia.

### 4.3 Enforcement of ISPS Code in Korea

#### 1) Ships and companies in application

Table 6 shows the numbers for companies and ships to be applied to ISPS Code in 2004.

Table 6 Numbers of ships and companies in application of ISPS code

company	ship				
	total	passenger ship	cargo ship	tanker	unit
115	383	6	269	107	1

#### 2) Comparison with U. S.

Table 7 shows the comparison between Korea and USA in enforcing the Code. While the ISPS code is enforced and unified by USCG, and utilized constructively to reduce the risk of maritime security threat under maritime transportation Act in the USA, it is formalized for the sake of application to international agreement and its operations is distributed and enforced by KCG and MOMAF under the notice of Ministry of Maritime Affairs and Fisheries formality(MOMAF).

Table 7 Comparison with U. S.

contents	Korea	United States
Lawmaking	Notice of MOMAF	MTSA(Maritime Transportation Act 2002)
Vessels	425 ships passenger ship and cargo ships over 500T	10,000ships all flag ships foreign ships over 100T
Ship alert system	MOMAF	USCG
Port security	MOMAF Port administration	USCG
Port State Control	MOMAF	USCG
Reporting security info.	MOMAF	USCG
Response Team	Rapid Response Force(KCG) 121 KCG men	Port Security Unit 870 USCG men

### 4.4 Maritime counterterrorism system

Fig. 4 shows the maritime counterterrorism system to response maritime terrorism. KCG and local KCG play the role of maritime counter terrorism center and incident control center respectively.

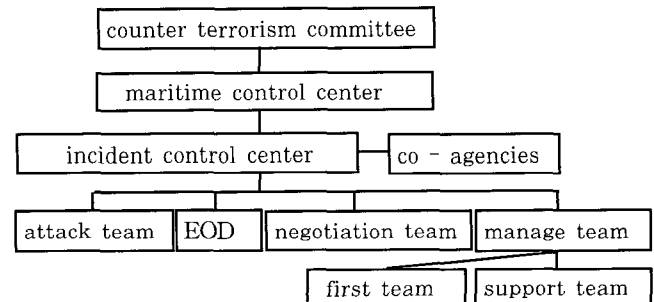


Fig. 4 Maritime counterterrorism system

During 2004, Korea Coast Guard took preventive measures to counteract maritime terrorism as table 8. International cooperation drills and practice with Japan, Russia and Malaysia were carried out as well as domestic drills and practice were taken at 46 times. Fig. 5 shows the scene of joint counter-piracy, counter-terrorism training exercise held near the Langkawi Islands in Malaysia.

Table 8 Preventive measures to counter maritime terrorism in 2004

Preventive measure	objects
Inspecting tanker and cargo vessels	1,677 ships
Watching suspicious vessels	101 ships
Patrolling facilities and ports	78 places
Drilling and practice with domestic agencies	46 times
International cooperation drills and practice	4 times

The layered security measures are designed to protect the three phases in the following Table 9.



Fig. 5 International joint counter-piracy, counter-terrorism training exercise

Table 9 Surveillance in the three phases

layer sort	first layer	second layer	third layer
guard zone	around subjects	around port limit	territorial sea
security force	39 patrol boats	27 patrol boats	14 cutters
remarks	boats in 3 Ton	patrol boats in 20 Ton	cutters in 250 Ton

## 5. Strategy of Korean maritime security

### 5.1 Maritime security strategy objectives

The strategic objectives of maritime security can be set as(USCG, 2004 ; Fred, 1995 ; Stephen, 2004),

- 1) minimizing maritime crimes relative to maritime security.
- 2) preventing terrorist attacks within, and terrorist exploitation of the Korea maritime domain.
- 3) reducing Korean vulnerability to terrorism with the Korea maritime domain.
- 4) protecting critical infrastructure, maritime borders, ports, coastal approaches, boundaries and seams.
- 5) protecting Korea maritime transportation system while preserving the Korea maritime domain for legitimate pursuits
- 6) minimizing the damage and recovering from attacks in the Korea maritime domain.
- 7) keeping the high economical competition of maritime industry in the world.
- 8) defending homeland against any provocation of North Korea

### 5.2 Maritime security strategy elements

The maritime security strategy consists of the following

seven elements, which serve as the method to achieve the strategy objectives.(Homeland, 2004)

- building the security culture of seafarers and persons employed in maritime domain.
- increasing maritime domain awareness to create a comprehensive knowledge base for maritime security operation.
- conducting enhanced maritime security operation by establishing and maintaining a new threshold level of maritime security readiness, including layered maritime security operation.
- closing port security gaps by strengthening the port security posture and reducing the vulnerability of strategic economic ports.
- building critical security capabilities by developing required capabilities and improving core competencies.
- leveraging partnerships to mitigate security risk by organizing and sustaining a public-private sector partnership, while increasing international cooperation.
- ensuring readiness for security defense operations by preparing, equipping and training forces.

### 5.3 Near term initiatives to strategic elements

The near term initiatives to achieve the objectives of maritime security strategy can be listed up according to strategic elements in the Table 10.

Table 10 Near term initiatives of maritime security strategy

strategic elements	near term initiatives
build the security culture	• strength security drill and exercise
	• educate skills and knowledge about security
	• apply ISPS code
increase awareness	• establish maritime intelligence center
	• joint surveillance between navy and KCG
	• expand surveillance system
conduct security operation	• acquire crafts and planes with high capability
	• enhance boarding team capability
	• conduct robust exercise plan
close port security gaps	• conduct and update port security assessment
	• establish port security committees
	• conduct port-level counter-terrorism exercises
build security infrastructure	• expand and train boarding team of KCG
	• modernize security equipment
	• expand security-training infrastructure
strengthen partnerships	• conduct port vulnerability assessments
	• increase partnerships with related agencies
	• strength international cooperation
Defend homeland	• support navy military operation
	• share information and intelligence
	• develop train program

## 6. Conclusion

The maritime security vulnerabilities are analysed and evaluated with crime static data happened in Korea maritime jurisdiction. Even though the high security level is relatively kept, the strategic approach have to be considered in order to reduce maritime security risk and to prevent any maritime terrorism. The counterterrorism and initiatives of international maritime industry are introduced and compared with the countermeasures of Korea. Finally, the maritime security strategy in Korean sea and ports are set and the near term initiatives which achieve the objectives of maritime security strategy are proposed in order to respond maritime security threats.

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