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## UČINKOVITOSTI OBRANE TRGOVAČKIH BRODOVA OD PIRATSKIH NAPADA S ASPEKTA NJIHOVIH MANEVARSKIH SPOSOBNOSTI<sup>1</sup>

### *THE EFFICIENCY OF MERCHANT VESSELS' DEFENSE AGAINST PIRATE ATTACKS IN TERMS OF THEIR MANEUVERABILITY<sup>1</sup>*

#### SAŽETAK

Novi izazovi i prijetnje nekonvencionalne i netradicionalne prirode u prvi su plan stavile problem tzv. "nevojnog ugrožavanja sigurnosti". Pomorsko gospodarstvo svijeta izloženo je raznim vrstama ugrozbi, a u razdoblju od 2009. do 2011. bilježi se porast broja piratskih napada. Izvješća Međunarodnog pomorskog odbora (*International Maritime Bureau – IMB*) ukazuju na činjenicu da je razina piratstva diljem svijeta u porastu. Kao središte ovih piratskih aktivnosti nameće se piratstvo uz obale Afrike. Piratskim napadima izloženi su konvencijski i djelomice nekonvencijski brodovi. Napadi se provode određenom vrstom brodova, a u obrani od njih koriste se različite pasivne i aktivne mjere zaštite.

U ovome radu analiziraju se podaci o piratskim napadima u području Adenskog zaljeva i Indijskog oceana uz pregledna istraživanja analize uspješnosti napada s aspekta manevarskih sposobnosti brodova.

**Ključne riječi:** *pirati, Somalija, manevarske sposobnosti brodova*

#### SUMMARY

New challenges and threats of an unconventional and non-traditional nature put into focus the problem of the so-called "non-military security threats". The global maritime economy is exposed to various types of threats, and in the period from 2009 to 2011, a growing number of pirate attacks have been recorded. The *International Maritime Bureau (IMB)* reports indicate that the level of piracy rose all around the world. The center of these pirate activities is around the African coast. Ships exposed to pirate attacks are mainly conventional ships and some unconventional ships. The attacks are carried out by certain types of ships, and in defense of them, vessels use different passive and active measures.

This article analyzes data regarding pirate attacks in the areas of the Gulf of Aden and the Indian Ocean, including a thorough research analysis of the success rate of the attacks in terms of maneuverability of ships.

**Keywords:** *piracy, Somalia, ship maneuvering capabilities*

<sup>1</sup> Prikazani rezultati proizašli su iz znanstvenog projekta – Nove tehnologije u dijagnostici i upravljanju brodskih porivnih sustava – provedenog uz potporu Ministarstva znanosti, obrazovanja i športa Republike Hrvatske

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## 1. UVOD

Pomorski robni tokovi temelj su svjetskoga gospodarskog razvoja i napretka pojedinoga kontinenta, regije i države. Oni su glavni nositelji trgovinske razmjene između svih, pa i najudaljenijih dijelova svijeta. Ukoliko se uzme u razmatranje sva trgovinska razmjena dobara, postaje očito da se većina razmjene odvija putem manjeg broja glavnih pomorskih robnih tokova, koji prolaze nekolicinom područja i oceana. Uski kanali i prolazi koncentriraju pomorski promet. U takva "uska grla" uključujemo Adenski zaljev, prolaz Bab El Mandeb, Dover, Gibraltar, Hormuz, Lombok i Malaccu. Promet se u ovim područjima povećava, a brodove koji prolaze njima čini ranjivima za moguće piratske napade [4].

U posljednjim godinama ovoga stoljeća piratstvo<sup>2</sup> je osobito intenzivno u područjima Adenskog zaljeva i Indijskog oceana koji predstavljaju važne pomorske plovidbene pravce u svjetskoj trgovinskoj razmjeni dobara. Ovim plovidbenim pravcima godišnje se služi na desetke tisuća trgovačkih brodova. Isti spajaju Zapad sa Istokom, preko Crvenog mora i Sueskog kanala.

Napade i otmice izvode skupine pirata, koje su u današnje vrijeme opremljene suvremenim sredstvima navigacije i malim brzim brodicama. Uporabom velikih otetih trgovačkih brodova kao brodova matica, pirati svoje napade izvode daleko od obala Somalije na čvorištima pomorskih plovidbenih pravaca.

Međunarodna zajednica prepoznala je ovaj problem i angažirala nekoliko borbenih skupina koje djeluju u tome području, te nastoje uspostaviti nadzor nad ovim područjem. S obzirom na veličinu područja na kojemu djeluju pirati, ova zadaća postaje sve teža i u nekim slučajevima nemoguća za izvršenje.

<sup>2</sup> Piratstvo se sastoji od sljedećih aktivnosti:

a) svaki ilegalni čin nasilja ili otimanja ili bilo koji oblik pljačke, koji je počinila posada ili putnici privatnog broda, ili zrakoplova, a usmjeren je na:

- otvorenome moru, protiv drugog broda ili zrakoplova ili protiv osoba ili imovine u zrakoplovu;
- protiv broda, zrakoplova, osobe ili imovine u mjestu izvan jurisdikcije bilo koje države;

b) bilo koji čin dobrovoljnog sudjelovanja u radu broda ili zrakoplova za kojega se pouzdano zna da je piratski,

c) bilo koji čin poticanja ili namjernog olakšavanja djela opisanog u podstavkama a) i b).

*Međunarodna konvencija o pravu mora*, Souda Bay, 1982. članak 101.

## 1. INTRODUCTION

Maritime trade routes are fundamental for global economic growth and the development of individual continents, regions and countries. They are the main pillars of commercial exchange between all parts of the world, even the most distant ones. If commercial exchange of goods on a global level is taken into consideration, it becomes clear that the largest part of exchange happens via a small number of principal maritime trade routes, which pass through several areas and oceans. Narrow canals and passages are where maritime trade is concentrated. Those so-called 'narrow throats' include the Gulf of Aden, the Bab El Mandeb passage, Dover, Gibraltar, Hormuz, Lombok and Malacca. Traffic in these areas has been increasing, making the ships using these routes more vulnerable to potential pirate attacks [4].

In the past few years of this century, piracy<sup>2</sup> has particularly intensified in the areas of the Gulf of Aden and the Indian Ocean, which represent important maritime navigation routes used for the commercial exchange of goods on a global level. These navigation routes are used by tens of thousands of merchant vessels annually. They link the West to the East via the Red Sea and the Suez Canal.

Attacks and hijackings are executed by pirate groups, who are nowadays equipped with modern navigation tools and small fast ships. Using large hijacked merchant vessels as mother ships, pirates carry out their attacks far off the Somali coast at the crossroads of maritime navigation routes.

The international community has recognized this issue and has engaged several combat units which act in the endangered area, attempting to establish control over it. Considering the size of the area afflicted by pirate activity, this task is becoming more difficult, and in some cases, impossible to perform.

<sup>2</sup> Definition of Piracy consists of any of the following acts:

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

- On the high seas, against another ship or aircraft, or against persons or property on board such ship or aircraft;
- Against the 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 the knowledge of facts making it a pirate ship or aircraft,

c) any act of inciting or of intentionally facilitating an act described in subparagraph a) and b).

*UNCLOS*, Souda Bay, 1982. article 101.

Problematiku vezanu za pojavu piratstva u 21. stoljeću te njegov utjecaj na pomorske robne tokove, prepoznala je Međunarodna pomorska organizacija (International Maritime Organization - IMO) koja je temu piratstva označila kao glavnu temu u 2011. godini. Naime, na sjednici održanoj u Londonu 04. 02. 2011. godine glavni tajnik UN-a Ban Ki-moon, zatražio je od svih nazočnih odgovore na problem piratstva i pitanja što je napravljeno, što nedostaje i što treba poboljšati u tom segmentu.

Piratskim napadima izloženi su konvencijski i djelomice nekonvencijski brodovi. U obrani od piratskih napada brodovi koriste različite pasivne i aktivne mjere zaštite. Korištenje pasivnih mjera zaštite koje uključuju i izvođenje upravljačkih manevara brodom, u cilju izbjegavanja piratskih napada, ponekad nije dovoljno za uspješno izbjegavanje napada.

U daljnjemu radu analizirat će se podaci o piratskim napadima u području Adenskog zaljeva i Indijskog oceana uz pregledna istraživanja analize uspješnosti napada s aspekta manevarskih sposobnosti brodova.

## 2. UGROZBA I POMORSKO GOSPODARSTVO

Novi izazovi i prijetnje nekonvencionalne i netradicionalne prirode u prvi su plan stavile problem tzv. "nevojnog ugrožavanja sigurnosti". Pomorsko gospodarstvo svijeta izloženo je raznim vrstama ugroza, a u posljednjima godinama ovoga stoljeća bilježi se porast broja piratskih napada. Izvješća IMB-a ukazuju na činjenicu da je razina piratstva diljem svijeta u porastu. Kao središte ovih piratskih aktivnosti nameće se piratstvo uz obale Afrike. Tek je u protekloj godini zabilježen blagi pad ukupnog broja piratskih napada u svijetu u odnosu na 2010. godinu [15].

Ukupan pomorski promet znatno se je povećao u posljednjem desetljeću, a globalna ekonomska kriza je dovela u posljednje vrijeme industriju na rub egzistencije. Nadalje, postoje određene naznake da bi se situacija mogla uvelike promijeniti, ali nitko ne može prognozirati kakve će rezultate donijeti ovaj proces globalizacije. Ujedno, rastuća opasnost od pirata i terorizma može utjecati na pomorske robne tokove [4].

Problems related to the appearance of piracy in the 21st century, and its influence on maritime trade routes, have been recognized by the International Maritime Organization (IMO). The IMO proclaimed piracy its main topic in 2011. At a conference that took place in London on February 4, 2011, the UN Secretary General Ban Ki-moon urged all present to address the piracy issue and assess what had been done, what was missing and what had to be improved in this area.

Conventional and some unconventional ships are both exposed to pirate attacks. Ships use various passive and active security measures as defense. The use of passive security measures, including employment of evasive maneuvers in order to avoid pirate attacks, is sometimes not enough to successfully avoid the attack.

The following study analyzes data regarding pirate attacks in the areas of the Gulf of Aden and the Indian Ocean, including a thorough research analysis of the success rate of the attacks in terms of maneuverability of ships.

## 2. THREATS AND THE MARITIME SECTOR

New challenges and threats of an unconventional and non-traditional nature have put into focus the problem of the so-called "non-military security threats". The global maritime economy is exposed to various types of threats, and, in the past few years of this century, a rise in the number of pirate attacks has been recorded. The IMB reports indicate that the level of piracy is rising all over the world. The center of these pirate activities is around the African coast. The year 2011 finally saw a decrease in the overall number of pirate attacks in the world as compared to the year 2010 [15].

The overall, international maritime traffic has increased significantly in the past decade, but the global economic crisis has led the industry to the edge of existence in most recent times. There is an indication that the situation might change for the better, but it is hard to predict the results globalization processes might bring. At the same time, the growing risk of pirate attacks and terrorism can affect maritime trade routes [4].

Maritime trade routes are fundamental for global economic growth and the development



Pomorski robni tokovi temelj su svjetskoga gospodarskog razvoja i napretka pojedinoga kontinenta, regije i države. Stoga, biti uključen na intenzivan robni tok imperativ je za svaku državu željnu brzog i snažnog gospodarskog razvitka [2].

Glavni nositelji trgovinske razmjene između svih, pa i najudaljenijih dijelova svijeta, jesu pomorski robni tokovi. Važnost međunarodnih pomorskih tokova implicira činjenica prema kojoj se dvije trećine ukupnoga svjetskog robnog prometa odvija upravo morskim putem. Količinu raznovrsnih roba koju je moguće prevesti morskim putem, nije moguće prevesti niti jednim drugim oblikom prometa. Time se, između vodećih područja masovne proizvodnje i potrošnje formiraju snažni i vrijedni pomorski robni tokovi.

Zbog velikog kapaciteta i ekonomske isplativosti, pomorski promet omogućuje globalno gospodarsko povezivanje pa je zato temelj svjetske robno-trgovinske razmjene. U skladu s tim pomorski promet i pripadajuće pomorske robne tokove karakteriziraju kompleksne i relativno česte strukturalne promjene. Tako se, primjerice, svaki politički ili ekonomski događaj brzo osjeti i reflektira na promjene u svjetskom pomorstvu, koje se manifestiraju u promjenama volumena pomorskih robnih tokova ovisno o vrsti tereta i glavnim smjerovima kretanja [2].

Prema studiji koja je provedena piratstvo danas košta međunarodnu ekonomiju između 7 i 12 milijuna US \$ godišnje. U studiji su analizirani troškovi koje uzrokuje piratstvo uz obale Nigerije, Malajskog tjesnaca i Roga Afrike. Središte studije je bilo na troškovima piratstva uz obale Somalije jer je na tom području skoncentrirana većina piratskih aktivnosti [8].

Za male i spore brodove, za koje je vjerojatnost od piratskog napada veća, izbjegavanje opasnih zona mogla bi biti sigurnija i jeftinija varijanta. Kao primjer služe brodovi koji izbjegavaju prolaz Adenskim zaljevom i Sueskim kanalom, te umjesto toga plove oko Rta Dobre Nade. Neke kompanije su najavile kako preusmjeravaju plovidbu svojih brodova. Primjer je najveća europska brodarska kompanija AP Moller-Maersk, koja je preusmjerila plovidbu svoja 83 tankera. Isto tako su učinile i tankerske flote kompanija Norwegian Stolt, Odfjell i Frontline. Preusmjeravanje plovidbe brodova

of individual continents, regions and countries. Thus, to be included into a busy trade route is imperative for every country interested in fast and strong economic growth [2].

Maritime trade routes are the main pillars of commercial exchange between all parts of the world, even the most distant ones. The importance of international maritime routes is implied by the fact that two thirds of the international trade are conducted by sea. The amounts of different merchandise that can be transported by sea, cannot be transported in any other way. In this way, strong and important maritime trade routes are formed between the areas of mass production and the areas of large demand.

Due to its large capacity and cost efficiency, maritime trade enables the integration of global economies, and is, therefore, the foundation of international trade and commercial exchange. In accordance with that, maritime traffic and the affiliated maritime trade routes are characterized by complex and relatively frequent structural changes. For instance, every major political or economic upheaval is quickly felt and reflected in changes in international maritime affairs, which are manifested as modifications of the volume of maritime trade routes in terms of the type of cargo and main movement directions [2].

According to a study, today piracy costs the global economy between US\$ 7 and 12 billion per year. The study analyzes the costs of piracy near the Nigerian coast, the Strait of Malacca and the Horn of Africa. The focal point of the study is the cost of the attacks near the Somali coast, as the area has the highest concentration of pirate activity [8].

For small and slow ships, for which the probability of pirate attacks is higher, avoiding the danger zones might be a safer and cheaper option. An example of this are ships which avoid passing through the Gulf of Aden and the Suez Canal, and sail around the Cape of Good Hope instead. Some companies have announced the rerouting of their ships' trajectories. A good example is Europe's largest shipping company, AP Moller-Maersk, which has rerouted the trajectories for 83 of its tanker ships. Norwegian Stolt, Oldfjell and Frontline have done the same with their tanker fleets. Rerouting ship trajectories requires additional costs. For instance, a rerouting of a tanker ship from Saudi Arabia headed to the USA via the Cape of

iziskuje dodatne troškove. Primjer je preusmjerenje tankera iz Saudijske Arabije za Sjedinjene Američke Države preko Rta Dobre Nade gdje se putovanje produljuje za dodatnih 2 700 NM. Preusmjerenje plovidbe broda iz Europe prema Dalekome istoku će produžiti putovanje linijskog broda za 6 dana te 15 do 20 dana za teretni brod. Ovo produženje vremena tranzita smanjuje ukupan godišnji broj plovidbi broda sa šest na pet što odgovara 17% smanjenju godišnjeg prijevoznog kapaciteta [1].

Proračunima se došlo do podatka da brodarstva industrija godišnje plaća trošak od 2,3 do 3 bilijuna US \$ za preusmjerenje plovidbi. Provedena studija predviđa da će u slučaju neodgovarajućeg otpora vlasti somalijskim piratima doći do 30 postotnog smanjenja prometa brodova kroz Adenski zaljev. Time bi se ukupan makroekonomski gubitak svjetske ekonomije zbog preusmjerenja plovidbe popeo do približno 30 bilijuna US \$ [1].

### 3. VRSTE NAPADNUTIH BRODOVA

Piratskim napadima svakodnevno su izloženi konvencijski i djelomice nekonvencijski brodovi. Prvoj vrsti brodova pripadaju brodovi na koje se primjenjuje SOLAS konvencija, definirani u prvom poglavlju, Pravila II. SOLAS konvencije. Za označavanje brodova na koje se

Good Hope makes the trip an additional 2700 NM longer. Rerouting a ship headed from Europe to the Middle East will make the voyage 6 days longer for a liner ship and 15 to 20 days longer for a cargo ship. This extension of transit time decreases the overall annual number of voyages per ship from 6 to 5, which corresponds to a 17% decrease in annual transit capacity [1].

Calculations have shown that it is costing the ship industry an annual US\$ 2.3 to 3 billion to reroute ships. The conducted study predicts that in the case of the authorities' inadequate reaction to Somali pirates, a 30% decrease in maritime traffic through the Gulf of Aden will occur. That would raise the overall macroeconomic loss to the world economy caused by the rerouting of ships to almost US\$ 30 billion [1].

### 3. TYPES OF TARGETED VESSELS

Pirate attacks frequently target conventional and, with lesser frequency, unconventional ships. The former category includes ships applying the SOLAS Convention, defined in the first chapter, rule II, of the SOLAS Convention. To distinguish ships defined by the Convention, the term 'SOLAS ships' is also used. The other category consists of ships not covered by the SOLAS Convention – unconventional ships. Unconventional ships can be referred to as the 'non-SOLAS ships'. They are:



Slika 1. Brod matica [9]  
Figure 1 Mother ship [9]

konvencija odnosi koristi se i nazivom SOLAS brodovi. Druga vrsta su brodovi na koje se ne primjenjuje SOLAS konvencija – nekonvencijski brodovi. Za nekonvencijske brodove susreće se i naziv non-SOLAS brodovi u koje se ubrajaju, teretni brodovi manji od 500 GT, ratni brodovi, drveni brodovi primitivne gradnje, brodovi za razonodu, ribarski brodovi i jahte.

U napadu na konvencijske brodove pirati u načelu otimaju vrstu brodovlja koja plovi brzinama manjim od 18 čv<sup>3</sup> i ima nisko nadvođe. U napadima na nekonvencijske brodove, kao što je to slučaj s ribarskim brodovima ili manjim lokalnim teretnim brodovima, pirati mogu koristiti takve brodove kao brodove matice, slika 1. Brodove matice pirati koriste kao bazu za izvođenje napada na veće i vrijednije trgovačke brodove na velikim udaljenostima od obala Afrike, a napade izvode malim brzim brodicama<sup>4</sup> koristeći pri tome i vatreno oružje [9].

#### 4. NAPAD I VRSTE NAPADA NA BRODOVE

Početak 90-ih godina prošloga stoljeća u Somaliji se pojavljuje piratstvo kao posljedica loše ekonomsko-političke situacije popraćene dugogodišnjim ratom. Somalski pirati operiraju uzduž obale duge 2 300 milja i na području od 2,5 milijuna kvadratnih milja oceana. Od 2007. do danas somalski pirati svakim danom povećavaju domet svojih napada te izvode napade bliže obalama Indije nego Afrike. Pirati napade izvode sve južnije i istočnije od obala Somalije, udaljavajući se na taj način od koalicijskih snaga i njihovog brodovlja. Napadi se većinom događaju na prirodnim čvorištima pomorskih plovidbenih pravaca, koji vode preko Crvenog mora i Adenskog zaljeva do Sueskog kanala. Ovi pomorski plovidbeni pravci su lako predvidljivi i stoga brodovi predstavljaju laki plijen za pirate.

Somalski pirati djeluju iz dobro opremljenih i naoružanih baza na obalama uzduž središnje Somalije i dijelova Puntlanda, iz gradova Xabo, Garacad i Haradhere [3]. Svoje baze napuštaju u malim brzim brodicama od stakloplastike i drveta, pogonjenima jednim ili dvama vanbrod-

cargo ships with less than 500GT, war ships, wooden ships of rudimentary construction, entertainment ships, fishing boats and yachts.

When attacking conventional ships, pirates usually hijack the types of ships that sail at a speed of less than 18 knots<sup>3</sup> and have a low freeboard. The reason for attacking unconventional ships, as it is the case with fishing boats and smaller local cargo ships, is that pirates can then use those ships as mother ships, figure 1. Mother ships are used as bases from which to organize attacks on larger and more valuable trade ships at large distances from the African coast, the attacks then being conducted with small quick ships and with the help of fire arms [9].

#### 4. ATTACK STRATEGY AND TYPES OF ATTACKS

Piracy in Somalia first appeared in the early 1990s, as a result of the economic and political decline of a country exhausted by many years of war. Somali pirates operate along the 2300 mile-long coast and in an area of 2.5. million square meters. From 2007 onwards, Somali pirates have been increasing the range of their attacks on a daily basis, launching attacks closer to the coast of India than that of Africa. They have been perpetrating attacks more to the south and east of the Somali coast, distancing themselves from the forces of the anti-piracy coalition and their ships. Attacks occur mainly at the natural crossroads of maritime navigation routes that lead across the Red Sea and the Gulf of Aden to the Suez Canal. These maritime routes are easily predictable, making these ships easy targets for pirates.

Somali pirates operate from well equipped and armed bases along the coast of middle Somalia and parts of Putland, from the towns of Xabo, Garacad and Haradhere [3]. They leave their bases in small fast ships made from fiberglass and wood, powered by one or two external engines of 60 HP, able to achieve speeds of up to 25 knots, figure 2.

These fast boats usually attack the types of ships vulnerable during the day due to their speeds of less than 18 knots and low freeboards. Upon spotting a ship, the pirates usually coor-

<sup>3</sup> Do danas nema podataka da su se pirati ukrcali na brod koji je plovio brzinom većom od 18 čv, ali obzirom na razvoj njihove taktike i tehnike moguće je da će u budućnosti doći i do promjena po ovome pitanju. Više o tome u [9].

<sup>4</sup> engl. skiff

<sup>3</sup> To date, there are no data present confirming that pirates boarded a ship sailing with a speed over 18 knots, but given the development of their tactics and technique, it is possible that changes will occur in this area. More on the subject in [9].





Slika 2. Skiff s piratima [3]  
 Figure 2 Skiff with pirates [3]

skim motorima snage 60 KS, sposobnih postići brzine do 25 čv, slika 2.

Ovakvi brzi čamci obično napadaju tijekom dana osjetljivu vrstu brodovlja koje plovi brzinama manjim od 18 čv i ima nisko nadvođe. Kada uoče brod, pirati obično koordiniraju dva ili tri napada iz različitih pravaca. Naoružani su automatskim naoružanjem i prijenosnim ručnim bacačima granata.

Piratske grupe (Pirate Action Groups – PAG) vrše napade različitim konfiguracijama plovnih sredstava. Bez obzira na njihov sastav, posljednju fazu napada izvode brzim brodicama (*skiffs*). PAG se sastoji od dva *skiffa* i jedne veće brodice<sup>5</sup> koja služi za smještaj pirata, hrane i pogonskog goriva. *Whaler* u načelu služi za tegljenje *skiffa* na otvoreno more. Kao brodovne matice PAG koristi ribarske brodove ili lokalne manje teretne brodove (*dhow*s) a nerijetko se koriste i većim trgovačkim brodovima. Posadu ovih brodova tijekom svojih napadačkih akcija koriste kao taoce. Oni se na taj način nimalo ne razlikuju od lokalnih ribara i trgovačkih brodova, te takvu situaciju koriste za izvođenje iznenađenih i veoma dobro isplaniranih napada na velike trgovačke brodove i lokalne ribare [9].

<sup>5</sup> engl. whaler

dinate two or three attacks from different directions. They are armed with automatic weapons and portable grenade launchers.

Pirate Action Groups (PAGs) perpetrate their attacks using different configurations of vessels. Regardless of the type of vessels the configuration consists of, the last phase of the attack is performed using fast boats known as *skiffs*. PAGs consist of two *skiffs* and one larger ship used for accommodating the pirates and storing food and fuel. *Whaler* usually serves for transporting *skiffs* to the open sea. As mother ships, PAGs employ fishing boats or smaller local cargo ships (*dhow*s), but frequently they will use larger merchant ships as well. They use these ships' crews as hostages during the attacks. In this way, their ships are in no way distinguishable from local fishing boats and trade ships, the situation enabling them to launch unexpected and well planned attacks on large trade ships and local fishermen [9]. Pirates use this strategy to launch attacks up to 1200 NM to the east of the Somali coast.<sup>4</sup>

<sup>4</sup> In April 2010, pirates hijacked 3 Thai fishing boats (m/s Prantalay 11, 12 i 14) near Djibuti, 1200 NM east of the Somali coast, comprising a total of 77 crew members. This was evidence, in a way, of the positive effects of the coalition forces' actions as it had forced pirates to operate outside of the Gulf of Aden and the Red Sea zone. More on the subject in [12].

Pirati na ovaj način izvode napade i do 1 200 NM istočno od obala Somalije.<sup>6</sup>

Pirati sve više tijekom napada koriste vatreno oružje manjega kalibra kao i ručne bacače granata (Rocket Propelled Grenades – RPG) s ciljem prisiljavanja zapovjednika brodova na usporavanje i zaustavljanje kako bi se uspeli na brod. Uporaba oružja većinom je usmjerena prema nastambama i zapovjednom mostu. Cilj pirata je pozicionirati *skiffove* uz bok broda kako bi se jedan ili više naoružanih pirata popeo na most i zauzeo ga. Pirati često koriste lake prijenosne ljestve i užad za penjanje na napadnuti brod. Kada se popnu na brod, pirati idu do mosta kako bi ga zauzeli i preuzeli kontrolu nad cijelim brodom. Po dolasku na most odmah zahtijevaju da se brod zaustavi ili uspori kako bi se ostali pirati popeli na brod. Napadi se odvijaju većinom danju, u ranim jutarnjim satima. Napade u noćnim satima izvode samo za vrijeme mjesečine [9].

## 5. OBRANA I VRSTE

Potaknuti piratskim aktivnostima uz obale Somalije kao i učestalim napadima na brodove za prijevoz humanitarne pomoći stanovništvu Somalije, Ujedinjeni narodi donose rezolucije [8] kojima nadalje obrađuju problem piratstva. Europska unija i Sjevernoatlantski savez (North Atlantic Treaty Organizations – NATO) odobravaju angažiranje međunarodnih protupiratskih snaga. Njima se uskoro priključuju i zemlje poput Velike Britanije, Pakistana, Indije, Rusije, Danske, Nizozemske, Francuske i Sjedinjenih Američkih Država, koje u borbi protiv piratstva sudjeluju sa svojim snagama.

Vijeće sigurnosti je 19. rujna 2008. donijelo dokument “Zajednička akcija 2008/749/CFSP”. Ovim dokumentom formirano je koordinacijsko tijelo EU-a u Bruxellesu (EU NAVCO). Dužnosti tijela su potpora aktivnostima pojedinih država članica EU u provedbi nadzora i zaštite plovi- la u vodama oko Somalije te koordinacija između brodova EU-a i NATO zemalja s brodovima trgovačkih kompanija koje plove tom pomorskom rutom. Istovremeno, uspostavljen je

<sup>6</sup> U travnju 2010. godine, pirati su oteli tri ribarska tajlandska broda (m/b Prantalay 11, 12 i 14) iz Đibutija, 1200 NM istočno od obale Somalije, s ukupno 77 članova posade. To je bio ujedno i dokaz da je djelovanje pomorskih koalicijskih snaga imalo efekta i natjeralo pirate da djeluje izvan područja Adenskog zaljeva i Crvenog mora. Više o tome u [12].

With increasing frequency, pirates have been using small caliber firearms as well as Rocket Propelled Grenades (RPG), in order to force the ships’ masters to slow down and stop so they can climb onto the ship. The use of weapons is directed mainly at the living quarters and the navigating bridge. The pirates’ aim is to position the *skiffs* alongside the ship’s sides so that one or more armed pirates can climb onto the bridge and take over the control. Pirates often use light portable ladders and climbing ropes to climb onto the attacked ship. Once they climb onto the ship, pirates head for the bridge to take it over and assume control over the whole vessel. Upon reaching the bridge, they immediately demand the ship to stop or at least slow down so that the rest of the pirates can climb onto it. The attacks usually take place during the day, in the early morning hours. Attacks are launched at night only when there is moonlight [9].

## 5. DEFENSE STRATEGY AND TYPES OF DEFENSE

Triggered by pirate activity along the Somali coast, as well as frequent attacks on ships carrying humanitarian aid to the people of Somalia, the United Nations issued resolutions [8] in order to solve the piracy problem. The European Union and the North Atlantic Treaty Organization (NATO) approved of engaging international anti-piracy forces. They are soon to be joined by countries such as Great Britain, Pakistan, India, Russia, Denmark, the Netherlands, France and the USA, which will contribute their own units to the fight against piracy.

On September 19, 2008, the Security Council released a document called ‘Joint Action 2008/749/CFSP’. This document was the basis for the formation of a coordination entity of the EU in Brussels (EU NAVCO). The entity’s tasks are to support the activities of individual member states of the EU regarding supervision and protection of vessels in the waters around Somalia and to establish coordination between EU and NATO ships and ships belonging to trading companies that use this navigation route. At the same time, the Maritime Security Centre Horn of Africa (MSC HOA) was established with headquarters in Northwood, Great Britain. MSC HOA operates in the region, providing direct support and protection to ships in high-risk areas. The center cooperates with the United Kingdom Maritime Trade Operation



ured Pomorskog sigurnosnog centra na Rogu Afrike (Maritime Security Centre Horn of Africa – MSC HOA) sa sjedištem u Northwoodu (Velika Britanija). Centar djeluje u regiji pružajući izravnu podršku i zaštitu brodovima unutar visokorizičnog područja i surađuje s Pomorskom trgovinskom organizacijom Velike Britanije (United Kingdom Maritime Trade Operation – UKMTO) sa sjedištem u Dubaiju, koji koordinira aktivnosti ratnih i trgovačkih brodova u regiji. Tijekom 2008. uspostavljena je i prva multinacionalna koalicijska vojnopomorska skupina CTF 150 (Combined Task Force 150) koja se bavila antipiratskim aktivnostima. U sklopu svoje misije CTF 150 uspostavlja pomorsku zonu patroliranja (Maritime Security Patrol Area – MSPA) u području Adenskog zaljeva koja je bila preteča današnjega međunarodnog preporučenog tranzitnog koridora (Internationally Recognized Transit Corridor – IRTC). Njihovu misiju u siječnju 2009. nastavlja skupina CTF 151.<sup>7</sup>

Vijeće EU-a 10. studenoga 2008. donijelo je odluku o provedbi mirovne operacije EU NAVFOR Somalia – ATALANTA, kojom bi se sudjelovalo u provedbi rezolucija Vijeća sigurnosti UN-a. Mandat operacije uključuje zaštitu brodova pod zastavom Svjetskog programa za hranu (WFP) i zaštitu trgovačkih brodova te poduzimanje različitih mjera uključujući uporabu sile radi okončanja piratstva i oružanih pljačka u području operacije [5]. Mandat mirovnoj operaciji EU NAVFOR je produžen do prosinca 2012. i proširen sa zadaćom nadzora ribarstva uz obale Somalije [13].

Na zahtjev generalnog tajnika UN-a Ban Ki-moon pred kraj 2008., NATO provodi zaštitu brodova Svjetskog programa hrane (World Food Programme – WFP) u sklopu operacije "Allied Provider". Ova operacija zamijenjena je operacijom "Allied Protector" koja doprinosi sigurnosti pomorskih robnih tokova i međunarodnoj plovidbi. Trenutačna operacija koju provodi NATO, "Ocean Shield", razlikuje se od prethodnih. Osim što doprinosi pomorskoj sigurnosti u regiji, ujedno pruža obuku snagama regionalnih zemalja u razvoju njihovih protupiratskih sposobnosti [18].

Otmica supertankera Sirius Star, koji je prevezio više od 2,2 milijuna barela sirove nafte za Sjedinjene Američke Države, bio je slučaj koji

<sup>7</sup> Uspostavljena u siječnju 2009. sa specifičnom protupiratskom misijom u skladu s rezolucijama UNSCR 1816, 1838, 1846, 1851 i 1897. Više o tome u [10].

(UKMTO), based in Dubai, which coordinates war ship and trade ship activities in the region. In 2008, the first multinational maritime military coalition was established - Combined Task Force 150 (CTF 150) to develop anti-piracy activity. As part of its mission, CTF 150 established the Maritime Security Patrol Area (MSPA) in the Gulf of Aden, the precursor of today's Internationally Recognized Transit Corridor (IRTC). Their mission was continued in January 2009 by CTF 151.<sup>5</sup>

On October 10, 2008, the EU Council deliberated to undertake a peace operation entitled 'EU NAVFOR Somalia - ATALANTA', thus partaking in the execution of the UN Security Council resolution. The mandate includes protection of vessels under the flag of the World Food Programme (WFP) and protection of merchant vessels, as well as undertaking various measures including the use of force in order to end piracy and armed robbery in the afflicted area [5]. The mandate of the EU NAVFOR peace operation has been extended until December 2012 and expanded to include the task of supervising fishing along the Somali coast [13].

Upon the UN Secretary General Ban Ki-moon's request, made in the late 2008, NATO was put in charge of protecting the World Food Programme's ships as part of the 'Allied Provider' operation. This operation was substituted by the 'Allied Protector' operation which contributes to the safety of maritime trade routes and international navigation in general. NATO's current operation, 'Ocean Shield', differs from the previous operations. Aside from contributing to maritime security in the region, it provides training to regional countries' forces in developing their own anti-piracy abilities [18].

The hijacking of the supertanker Sirius Star, which was transporting in excess of 2.2 million barrels of raw fuel to the USA, was the case that caught public attention globally and directed its attention to the issue.<sup>6</sup>

<sup>5</sup> Established in January 2009 with a specific anti-piracy mission in accordance with the following resolutions: UNSCR 1816, 1838, 1846, 1851 i 1897. More on the subject in [10].

<sup>6</sup> m/s Sirius Star was hijacked on November 15, 2008. The ship's route led from Saudi Arabia to the USA via the Cape of Good Hope. At the time of the attack she was around 450 NM SE from the coast of Kenya with 25 crew members. The estimated value of the ship was US\$ 150 million, whereas the value of the cargo was US\$ 100 million. The ship was freed on January 9, 2009 after a ransom of US\$ 3 million was paid. In this instance the pirates demonstrated their ability to attack ships at larger distances from the coast, far from the area patrolled by the allied forces' ships. A British security expert

je probudio svjetsku javnost i usmjerio njenu pažnju k tome problemu.<sup>8</sup>

Međunarodne vojnopomorske snage nadziru IRTC i organiziraju grupni tranzit (Group Transit – GT) na način da brodovi različitih brzina prolaze kroz točke “A” i “B”<sup>9</sup> u različito vrijeme. Osim ovih mjera sigurnosti, brodovi za prolaz rizičnim područjima poduzimaju i druge sigurnosne mjere<sup>10</sup> propisane od strane međunarodne pomorske organizacije.

Hidrografski ured Velike Britanije (United Kingdom Hydrographic Office – UKHO) proizveo je protupiratsku kartu, slika 3, za planiranje putovanja, kao dio inicijative od strane pomorskih snaga Europske unije.

Označena pod brojem Q6099, karta pokriva područje Adenskog zaljeva, južno od Roga Afrike s prikazom koridora u Adenskom zaljevu, a namijenjena je zbirnom prikazu svih relevantnih podataka kao i podizanju razine pozornosti pomoraca. Ima ucrtane prolaze, geografske koordinate zona javljanja prema uredu UKMTO<sup>11</sup>, upute za izbjegavanje otmice od strane pirata i

<sup>8</sup> m/b Sirius Star otet je 15. 11. 2008. Brod je bio na ruti iz Saudijske Arabije za SAD preko Rta Dobre Nade. U vrijeme napada nalazio se otprilike 450 NM SE od obala Kenije s 25 članova posade. Procijenjena vrijednost broda bila je 150 milijuna dok je vrijednost tereta bila 100 milijuna US \$. Brod je oslobođen 09. 01. 2009. nakon što je za njega plaćena otkupnina u iznosu od 3 milijuna US \$. Ovime su pirati pokazali sposobnost napada na brodove na većim udaljenostima od obale, dalje od područja patroliranja brodova savezničkih snaga. Britanski obavještajni ekspert izjavio je kako događaj samoukazuje na činjenicu da vjerojatno nikada neće biti dovoljno vojnih brodova kako bi patrolama pokrili cijelo područje Indijskog oceana i Adenskog zaljeva. Više o tome u [11].

<sup>9</sup> IRTC je dug 500 NM s početnom točkom “A” južno od Adena i s točkom “B” jugozapadno od luke Salalah u Omanu. Koridor je širok 12 NM, po 5 NM istočno i zapadno, sa separacijom od 2 NM.

<sup>10</sup> Primjena Međunarodnog pravilnika o sigurnosnoj zaštiti brodova i lučkih područja (International Ship and Port Facility Security Code – ISPS Code) propisana je u poglavlju XI-2, Posebne mjere za povećanje pomorske sigurnosti, Konvencije SOLAS 1974, obvezna za sve teretne brodove veće od 500 BRT i sve putničke brodove u međunarodnoj plovidbi te luke otvorene za međunarodni promet. Sastoji se od dva dijela, obaveznog i preporučenog. Svrha Koda je pružiti odgovarajući obrazac za stalnu procjenu rizika kako bi se poduzele odgovarajuće zaštitne mjere brodova i lučkih područja. Više o tome u [16].

<sup>11</sup> Ured UKMTO-a u Dubajui ima ulogu primarnog kontakta sa svim trgovačkim brodovima i ujedno je njihova veza sa ratnim brodovima u regiji. UKMTO Dubai vodi i administracijsku listu dobrovoljnog javljanja. Trgovački brodovi potiču se na slanje redovnih izvješća, u kojima daju podatke o svojim pozicijama, brzinama, kursovima i vremenima dolaska u sljedeće luke ticanja za vrijeme plovidbe kroz područje omeđeno spojnicom Suez, 78°E i 10°S. UKMTO Dubai povremeno šalje podatke o kretanju brodova zapovjedništvu EU snaga. Sve važnije informacije koje utječu na trgovački promet šalju direktno brodovima, te se na taj način štedi na vremenu i poboljšava se sama reakcija na bilo koji incident. Više o tome u [17].

International maritime military forces monitor IRTC and have organized Group Transit (GT) so that vessels of different speeds pass through points ‘A’ and ‘B’<sup>9</sup> at different times. Aside from these security measures, ships undertake other<sup>8</sup> security measures prescribed by the international maritime organization when passing through high risk areas.

The United Kingdom Hydrographic Office (UKHO) produced an anti-piracy map for voyage planning, as part of the initiative of the EU’s maritime forces.

Figure 3 Map with the piracy area defined for use together with other navigational charts [UKHO]

Numbered Q6099, the map covers the area of the Gulf of Aden south of the Horn of Africa, charting the corridor in the Gulf of Aden, and is aimed as a comprehensive display of all relevant data as well as raising sailors’ attention. It contains all the passages, geographical coordinates of afflicted zones according to the UKMTO<sup>9</sup> office, directions to avoid hijacking by pirates and telephone numbers in case the ship is attacked. The map is given free of charge to every merchant ship to ensure there is a copy on every ship that passes through the area.

During its 89th session, the Maritime Safety Committee (MSC) issued and approved Resolu-

declared that this incident was a proof of the fact that there would probably never be enough ships to patrol the entire area of the Indian Ocean and the Gulf of Aden. More on the subject in [11].

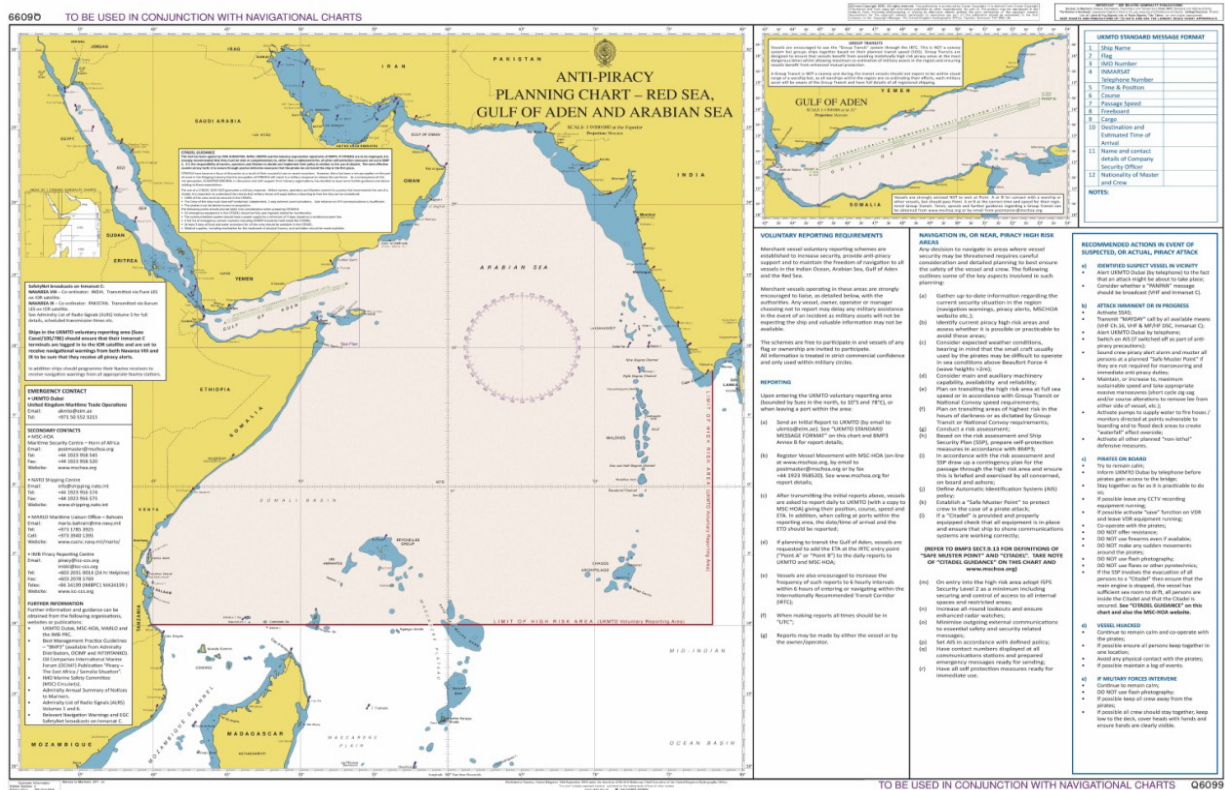
<sup>7</sup> IRTC is 500 NM long with the starting point ‘A’ south of Aden and point ‘B’ southwest of the port of Salalah in Oman. The corridor is 12 NM wide, 5 NM to the east and west, with a separation of 2 NM.

<sup>8</sup> The implementation of the International Ship and Port Facility Security Code (ISPS Code) was prescribed in chapter XI-2 of the Special measures for increasing maritime security, SOLAS Convention of 1974, compulsory for all cargo ships larger than 500 BRT and all passenger ships involved in international sailing, as well as ports open to international traffic. It consists of two parts, one compulsory and one recommended. The aim of the code is to provide a suitable norm for continual risk assessment in order to undertake necessary security measures for the ships and port areas. More on the subject in [16].

<sup>9</sup> The UKMTO office in Dubai has the role of a primary contact for all merchant vessels and is at the same time their connection with war ships in the region. UKMTO Dubai also keeps an administrative list for voluntary reporting. Merchant ships are encouraged to send in regular reports, in which they provide information about their positions, speeds, courses and times of arrival to ports, while sailing through the area limited by the Suez boundary line, 78°E and 10°S. UKMTO Dubai occasionally sends data regarding ship movements to the EU forces. They send all relevant information affecting merchant traffic directly to the ships, thus saving time and improving reaction to potential incidents. More on the subject in [17].



**Slika 3.** Navigacijske karte s prikazima područja piratskog djelovanja (UKHO)  
**Figure 3** Map with the piracy area defined for use together with other navigational charts [UKHO]



brojeve telefona u slučaju napada na brod. Karta se dodjeljuje besplatno svakome trgovačkome brodu kako bi se osigurao primjerak na svakome brodu koji plovi tim područjem.

Pomorski sigurnosni odbor (Maritime Safety Committee – MSC) na svojoj 89. sjednici donio je i prihvatio Rezoluciju MSC 324(89), u kojoj prepoznaje važnost implementacije publikacije Best Management Practices – BMP 12 (Najbolja upravljačka praksa) te izražava razumijevanje za potrebom stalnog ažuriranja BMP-a relevantnim podacima. Publikacija predstavlja najbolju preporučenu praksu postupanja trgovačkih brodova za vrijeme plovidbe rizičnim područjima s ciljem odvratanja ili vremenskog odgađanja piratskih napada do dolaska međunarodnih vojnopomorskih i zračnih snaga.

U mnogim slučajevima, trgovački brodovi uspješni su se obraniti od takvih piratskih napada koristeći pasivne mjere obrane poput povećanog motrenja, noćnog tranzita opasnim predjelima, uporabe vatrogasnih mlaznica i otvora, povećanja

MSC 324(89), which recognizes the importance of implementation of the publication entitled Best Management Practices (BMP)<sup>10</sup>, and expresses understanding of the need of constant updating of the BMP with relevant data. The publication represents the best recommended course of action for merchant ships while sailing through high risk zones with the goal of diverting or delaying pirate attacks until the arrival of international maritime military and air forces.

In many instances, merchant ships have succeeded in defending themselves from pirate attacks by employing passive measures of defense such as increased monitoring, transit through dangerous areas by night, increasing the speed of the ship, launching evasive ship maneuvers and using the ship's citadels.<sup>11</sup>

<sup>10</sup> To date, the association of shipping companies and civil and military organizations has produced 4 versions of this publication which are regularly updated with new findings in the field of anti-piracy fight in the areas in front of the Somali coast and the Arab Sea. The latest version - BMP4, was published in August 2011.

<sup>11</sup> Citadel – an enclosed space on a ship with a secured door. Aside from an independent ventilation system, it needs to secure a sufficient amount of food and water for the crew in case of emergency, a communication system (portable VHF



nja brzine broda i izvođenja upravljačkih manevara brodom te korištenjem brodskih citadela<sup>12</sup>.

## 6. ANALIZA USPJEŠNOSTI NAPADA

S obzirom na statistička izvješća IMB-a u posljednje tri godine diljem svijeta zabilježeno je ukupno 1 290 incidenata vezano uz piratske napade od čega je 673 povezano sa somalskim piratima. Iako je zabilježen blagi pad ukupnog broja piratskih napada diljem svijeta, broj napada somalskih pirata bio je u porastu. Na ozbiljnost situacije u području Somalije ukazuje podatak da je u posljednje tri godine ukupno oteto 2 363 pomoraca, od čega je bilo 26 ozlijeđenih i 20 ubijenih članova posada otetih brodova [6].

U daljnjemu radu autori stoga vrše analizu uspješnosti napada somalskih pirata na području omeđenome spojnica južnog dijela Crvenog mora na zapadu do 76°E geografske dužine, omeđeno na sjeveru obalama Omana do 22°S geografske širine, na kojima su zabilježeni incidenti povezani sa somalskim piratima u posljednje tri godine.

Nadalje, analizirat će se manevarske sposobnosti i mogućnosti izbjegavanja piratskih napada u ovisnosti o maksimalnoj brzini ovakvih vrsta brodova. U tablici 1 može se vidjeti pregled vrsta napadnutih i otetih brodova u navedenom području.

Iz tablice 2. je vidljivo da su se svi pokušaji napada i stvarni napadi na brodove, ukoliko izuzmemo ovaj posljednji slučaj koji se dogodio pokraj obala Omana<sup>13</sup>, dogodili za vrijeme dok su brodovi bili u plovidbi. Različite vrste napadnutih brodova upućuju na zaključak da se radi o oportunističkoj prirodi samih napada somalskih pirata.

<sup>12</sup> Citadela – zatvorena brodska prostorija sa sigurnosnim vratima. Osim zasebnog sustava ventilacije treba imati osiguranu dovoljnu količinu hrane i vode za posadu u nuždi, komunikacijski sustav (prijenosne VHF stanice i satelitski telefon) s rezervnim napajanjima, sredstva za pružanje prve pomoći i po mogućnosti opciju daljinskog upravljanja radom glavnih motora. Više o tome u [9].

<sup>13</sup> MT Fairchem Bogey otet je 20. 8. 2011. od strane somalskih pirata dok je bio na sidrištu ispred luke Salalah, Oman. Naoružani pirati su se popeli na brod i oteli ga zajedno s 21 članom posade kao taocima. Omanska obalna straža je presrela brod ali zbog talačke situacije odustala je od daljnjega progona. Brod je odveden na sidrište ispred obala Somalije. Više o tome u [6].

## 6. ANALYSIS OF THE SUCCESS RATE OF THE ATTACKS

According to the IBM's statistics reports, in the last three years, a total of 1290 incidents related to pirate attacks was recorded, 673 out of those linked to Somali pirates. Despite a mild fall in the overall number of pirate attacks in the world, the number of attacks by Somali pirates rose. The seriousness of the situation concerning the area of Somalia is underlined by the fact that, in the last three years, 2363 sailors were abducted, out of which 26 injured and 20 murdered crew members of hijacked ships [6].

In the following study the authors have analyzed the success rate of the attacks perpetrated by Somali pirates in the area stretching from the southern part of the Red Sea in the west up to 76°E longitude, and the Omani coast in the north up to 22°S latitude, where incidents involving Somali pirates have been recorded in the past three years.

Furthermore, the analysis is conducted regarding maneuvering abilities and possibilities of avoiding pirate attacks in relation to maximum speeds of this type of ships. Table 1 presents an overview of the types of attacked and hijacked ships in the area of concern.

Table 2 shows an overview of the attacked ships' status in the area of concern in the time period of observation.

Table 2 shows that all attempted and actual attacks on ships occurred, exempting the last case that happened near the Omani coast<sup>12</sup>, while the ships were moving. Different types of ships indicate that this is a part of the opportunistic nature of the attacks perpetrated by Somali pirates.

Table 1 shows that the highest number of attacks targeted the following types of ships: bulk carrier, tanker, general cargo, container, chemical tanker and fishing boat. The latter were mainly attacked so as to be used as mother ships. The reason for that is the possibility of attaining more autonomy at sea, in addition to

stations and satellite telephone) with reserve power supply, a first aid kit and, if possible, the option of running the main engines by remote control. More on the subject in [9].

<sup>12</sup> M/T Fairchem Bogey was hijacked on August 20, 2011 by Somali pirates while she was anchored in front of the port of Salalah, Oman. Armed pirates climbed onto the ship and hijacked it together with 21 crew members as hostages. The Omani coast guard intercepted the ship, but gave up pursuit due to the hostage situation. The ship was led to an anchorage site in front of the Somali coast. More on the subject in [6].

**Tablica 1.** Prikaz napadnutih i oteatih brodova od strane somalskih pirata u razdoblju od 2009. do 2011. [6]  
**Table 1** Overview of attacked and hijacked ships by Somali pirates in the period from 2009 to 2011 [6]

Vrste napadnutih brodova <i>Types of attacked ships</i>	2009.		2010.		2011.	
	Napadnuti <i>Attacked</i>	Oteti <i>Hijacked</i>	Napadnuti <i>Attacked</i>	Oteti <i>Hijacked</i>	Napadnuti <i>Attacked</i>	Oteti <i>Hijacked</i>
Bulk Carrier	56	11	34	6	53	7
Tanker	36	3	39	3	47	4
General Cargo	26	9	17	9	20	3
Container	20	3	33	2	30	0
Chemical tanker	12	4	28	9	30	5
Fishing	3	10	5	10	5	5
Ro-Ro	7	0	1	2	1	0
LPG	1	1	2	1	5	0
Yachts, Catamaran	1	4	0	1	1	3
Navy ship	1	0	4	0	0	0
Cement carrier	0	0	1	0	0	0
VLCC	0	0	0	1	0	0
Refrigerated	0	0	0	1	0	0
Vehicle carrier	2	0	2	0	5	0
Tug	0	1	0	0	6	0
Dhow	1	1	1	4	0	1
OBO carrier	1	0	0	0	0	0
Explorer	1	0	1	0	2	0
Passenger	1	0	1	0	1	0
Live stock carrier	0	0	0	0	1	0
LNG	1	0	0	0	0	0
Heavy load carrier	0	0	1	0	2	0
Ukupno	170	47	170	49	209	28
Ukupno incidenata	217		219		237	

Iz tablice 1. vidljivo je da se najveći broj napada dogodio na brodovima tipa bulk carrier, tanker, general cargo, container, chemical tanker i ribarski. Ovi posljednji napadani su iz razloga što su u većini slučajeva korišteni kao brodovi maticе. Razlog tome je njihova mogućnost postizanja veće autonomije na moru, te samo maskiranje pirata u cilju iznenađenja trgovačkih brodova. S obzirom da se za njih ne mogu dobiti veći iznosi otkupnina, kao što je slučaj sa velikim trgovačkim brodovima, ovakvi brodovi se duže vrijeme drže u zatočeništvu.

Analizom sustava obrana navedenih brodova ustanovljeno je kako je najveći dio obrana ostvaren upravo poduzimanjem upravljačkih manevara brodovima tijekom samih piratskih napada,

masking the pirates so as to surprise merchant ships. Given that they are not eligible for large ransoms, as is the case with big merchant ships, these ships are hijacked for longer periods of time.

By analyzing the defense systems of the above mentioned ships, it was established that the principal part of defenses employed evasive maneuvers with their ships during the actual pirate attacks (table 3). The maximum speed achieved by the ships was the principal factor of defense in the majority of the cases. Apart from evasive maneuvers and other passive measures employed by the ships, it was noted that a large number of additional defenses was realized with the help of international maritime military

**Tablica 2.** Prikaz stanja brodova za vrijeme napada i pokušaja napada od strane somalskih pirata u razdoblju od 2009. do 2011. [6]*Table 2 Overview of the ship's status during the time of attack and attempted attack in the period from 2009 to 2011 [6].*

Stanja brodova <i>Ship status</i>	2009.		2010.		2011.		Ukupno <i>Total</i>
	Napad <i>Attack</i>	Pokušaj napada <i>Attempted attack</i>	Napad <i>Attack</i>	Pokušaj napada <i>Attempted attack</i>	Napad <i>Attack</i>	Pokušaj napada <i>Attempted attack</i>	
Plovidba <i>Steaming</i>	48	169	65	154	47	189	672
Sidro <i>Anchor</i>	0	0	0	0	1	0	1
Vež <i>Berthed</i>	0	0	0	0	0	0	0
Nepoznato <i>Not stated</i>	0	0	0	0	0	0	0

tablica 3. Maksimalna brzina koju su brodovi postizali bila je u većini slučajeva presudan čimbenik obrane. Osim upravljačkih manevara kao i ostalih pasivnih mjera obrane koje brodovi poduzimaju, zamijećen je i veliki broj obrana dodatno ostvaren zahvaljujući pomoći pruženoj od strane međunarodnih vojnopomorskih snaga. Naime, zbog velikog područja djelovanja somalskih pirata gotovo je nemoguće pokriti svaki dio područja djelovanja pirata brodovima međunarodnih vojnopomorskih snaga. Stoga je jako bitno i presudno za obranu, da trgovački brodovi posjeduju sposobnost neko vrijeme odolijevati samome napadu, dok brodovi, odnosno, helikopteri vojnopomorskih snaga ne priteknu u pomoć.

Poduzimanje upravljačkih manevara u većini slučajeva bilo je dovoljno za uspješno izbjegavanje piratskih napada. Međutim, pojedini slučajevi otmica brodova poput slučaja m/b Voc Daisy<sup>14</sup>, natjerali su brodovlasnike na poduzimanje drugačijih mjera zaštite. Naime, u tijeku napada na brod zapovjednik broda je poduzevši prerano invazivni manevar izgubio na brzini broda, što je u rezultanti ionako malom brzinom ovakvog tipa broda rezultiralo otmicom.

Nakon oslobađanja broda, koji je bio u vlasništvu grčke brodovlasničke kompanije JP Samartzis Maritime Enterprises, direktor kompanije gospodin George Shinitis izjavio je kako

forces. Given the size of the area afflicted by Somali pirates' activity, it is almost impossible to cover every part of the area of pirate activity with international maritime military ships. Therefore, it is essential for their defense that merchant vessels have the ability to resist the attack for the period of time it takes the maritime military forces' ships and helicopters to arrive and help.

In most cases, employment of evasive maneuvers was sufficient to successfully avoid pirate attacks. However, certain cases of hijacked ships, for instance m/s Voc Daisy<sup>13</sup>, have urged ship owners to employ different security measures. In the above case, the ship master had lost speed by employing the invasive maneuver too early during the attack, which, combined with the already insufficient speed of this type of ship, resulted in hijacking.

Following the freeing of the ship, owned by the Greek shipping company Samartzis Maritime Enterprises, the company's CEO George Shinitis declared that bulk carriers owned by his company would no longer sail through that area. The decision was made taking into consideration insufficient speeds and low freeboards of these ships, which makes them vulnerable to pirates. Other ships belonging to the company, for instance container ships with tall

<sup>14</sup> m/b Voc Daisy otet je 21. 04. 2010. godine 120 NM SE od luke Salalah, Oman, zajedno s 21 članom posade. Brod je oslobođen 18. listopada, gotovo 6 mjeseci poslije otmice, nakon što je za njega plaćena otkupnina. Više o tome u [14].

<sup>13</sup> m/s Voc Daisy was hijacked on April 4th 2010 120 NM SE from the port of Salalah, Oman, together with 21 crew members. The ship was freed on October 18, almost 6 months after the hijacking, after a ransom was paid. More on the subject in [14].



bulck carrieri njegove kompanije više neće prolaziti ovim područjem. Odluka je donesena upravo iz razloga malih brzina i nadvođa ovakvih vrsta brodova, što ih čini fragilnima prema piratima. Ostali brodovi kompanije, poput kontejnerskih brodova sa velikim nadvođem i velikim brzinama i dalje će nastaviti ploviti ovim područjem [7].

Analizom je ustanovljeno kako se broj brodova koji su za obranu koristili pripadnike zaštitarskih službi povećao u posljednje dvije godine. Ovo je jedan od učinkovitijih oblika obrane trgovačkih brodova tijekom plovidbe opasnim područjima. Odbor za pomorsku sigurnost IMO-a prepustio je krajem svibnja 2011. državama članicama, među kojima je i Hrvatska, da same odluče o mogućem uvođenju oružane pratnje na brodovima. Budući da posada radi sigurnosnih razloga ne smije rukovati oružjem, brodari angažiraju već uhodane i certificirane agencije [19]. Sindikat pomoraca Hrvatske načelno nije protiv oružane pratnje brodova pod hrvatskom zastavom, kao ni ukrcaju naoružane pratnje, ali smatra da se, ukoliko taj zadatak preuzmu privatne zaštitarske tvrtke, povećava rizik nasilja [20]. U rujnu 2011. pripremljene su izmjene i dopune Zakona o sigurnosnoj zaštiti brodova i luka kojima se brodarima daje mogućnost ukrcaja oružane pratnje za vrijeme plovidbe brodom kroz područja gdje postoji opasnost od piratskih napada, a suglasnost za to izdavat će Ministarstvo mora, prometa i infrastrukture [21].

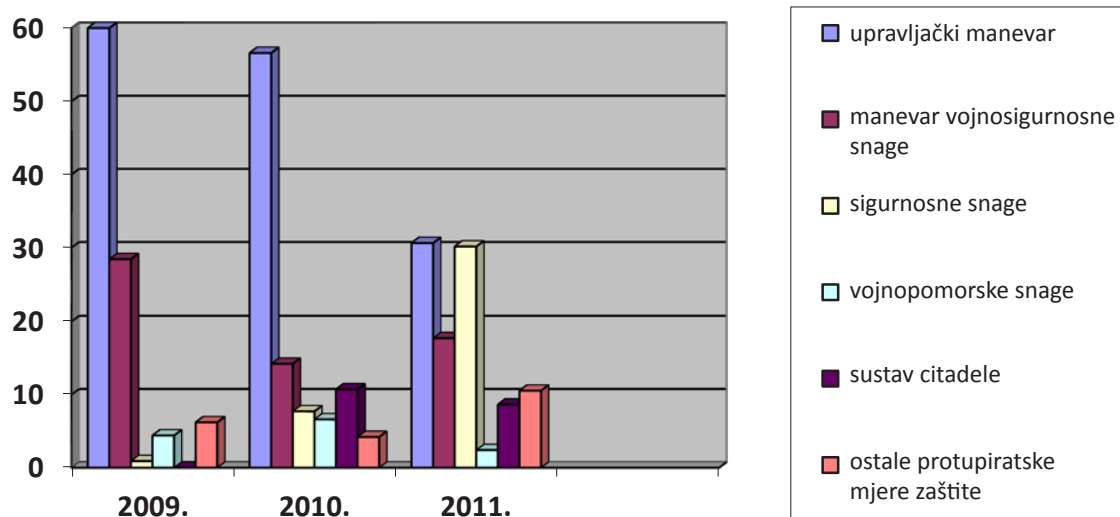
freeboards and higher speeds, will continue to sail through these areas [7].

The analysis has established that the number of ships which used members of security services for protection has increased in the last two years. This is one of the most efficient forms of defense of merchant ships while sailing through dangerous areas. In late May 2011, the IMO's Committee for Maritime Security allowed its member states, including Croatia, to decide autonomously about potentially introducing armed escort on board ships. Given that the crew are not permitted to carry arms for safety reasons, ship owners hire experienced and certified agencies [19]. The Croatian Sailors Union is in principal not opposing armed escort of ships under the Croatian flag, nor boarding armed escort, but they retain that the risk of violence increases if private security services take over that task [20]. In September 2011, changes and amendments to the law regulating security and protection of ships and ports were prepared, allowing ship owners to board armed escort during the periods of time when the ship is sailing through areas at risk from pirate attacks, in concordance with the Ministry of Maritime Affairs, Transport and Infrastructure [21].

Aside from the discussed defense methods, analysis of the recent years shows an increase in cases of ship defense by using ship citadels. Ships equipped with citadels hide the entire crew in a sealed room in case of an attack and

**Tablica 3.** Prikaz načina obrane brodova za vrijeme napada i pokušaja napada od strane somalskih pirata u razdoblju od 2009. do 2011. [7]

**Table 3** Overview of the types of the ships defenses during attacks and attempted attacks by Somalian in the period from 2009 to 2011 [7]



Osim ovih navedenih metoda obrane, u posljednje dvije godine, analizom je utvrđen i porast slučajeva obrane brodova korištenjem brodskih citadela. Naime, brodovi opremljeni citadelama, u slučaju napada svu posadu sklanjaju u zatvorenu prostoriju i obavještavaju UKMTO o napadu na brod. UKMTO obavještava međunarodne vojnopomorske snage, te se brodovi ili helikopteri snaga upućuju na mjesto događaja, uz prethodno izviđanje situacije s oplovnim zrakoplovima. U slučaju da je sva posada na sigurnom zaključana u citadeli, pristupa se spašavanju i oslobađanju posade broda od pirata. Ukoliko postoji sumnja da je netko od članova posade otet, odustaje se od akcije oslobađanja nasilnim putem. U posljednje vrijeme, sve se više potiče brodovlasnike na ugradnju ovakvih prostorija, preinakom već postojeće odgovarajuće prostorije ili planiranjem ugradnje citadele prilikom gradnje novoga broda. Ovakvim sustavnim planiranjem omogućila bi se ugradnja sustava daljinskog upravljanja glavnim motorima iz citadele. Ovo je jako bitno iz razloga što se brodovi tijekom napada mogu nalaziti stotinama milja od najbližih koalicijskih brodova, a na taj način omogućilo bi se kontrolirano približavanje koalicijskim brodovima u cilju smanjenja vremena potrebnog za spašavanje.

## 7. ZAKLJUČAK

Analizom sustava obrana trgovačkih brodova u posljednje tri godine, ustanovljeno je kako je najveći dio obrana ostvaren upravo poduzimanjem upravljačkih manevara brodovima, uz maksimalno povećanje brzina brodova tijekom samih piratskih napada. Poduzimanje pasivnih mjera obrane brodova od piratskih napada doprinosi samoj obrani brodova. Ostale mjere zaštite poput ukrcanja privatnih zaštitara i pomoći međunarodnih vojnopomorskih snaga, uspijevaju u jednoj određenoj mjeri otkloniti prijetnju koju svakodnevno predstavljaju pirati u navedenim područjima. Stalna nazočnost vojnopomorskih snaga u području Adenskog zaljeva zasigurno doprinosi odvratanju pirata od čestih napada u tome području.

S privatnim zaštitarima na brodu, nameće se još jedna nepotrebna odgovornost zapovjednicima brodova, a to je mogućnost da budu kazneno gonjeni. Naime, u prijedlogu izmjene Zakona o sigurnosnoj zaštiti pomorskih brodova i luka stoji da bi zaštitari mogli upotrijebiti oružje isključivo

then notify the UKMTO. The UKMTO notifies the international maritime military forces, prompting their ships or helicopters to head to the area of the attack, after preliminary reconnaissance using patrol airplanes. If the entire crew is safely locked away inside the citadel, they proceed to rescue and liberate the ship's crew from the pirates. If there are suspicions that some of the crew members might be kidnapped, liberation by force is aborted. In recent times, ship owners are being urged to build in these safe rooms onto their ships by modifying adequate rooms already part of the ship, as well as to include a citadel when building a new ship. The suggested systematic planning would allow for building in a remote control system for running engines from the citadel. This is very important given that ships can be located hundreds of miles from the nearest coalition ships at the time of the attack, and in this manner they would be enabled to get closer to the coalition ships with the aim of reducing time necessary for rescue.

## 7. CONCLUSION

Based upon the analysis of merchant vessels' defense systems in the past 3 years, it is established that most defenses have been achieved by employing evasive maneuvers with ships, with a maximum speed increase during the actual pirate attacks. Employing passive defense measures against pirate attacks contributes to the ship's defenses. Other security measures, such as having private security forces on board and help from international maritime military forces, are in a certain manner successful in removing the threat posed by pirates on a daily basis in the afflicted areas. A permanent presence of the international maritime military forces in the Gulf of Aden certainly contributes to deter pirates from frequent attacks in that area.

Having private security forces on board imposes an additional unnecessary responsibility upon the ships' masters in the form of the possibility of criminal charges against them. The proposed amendment to the law regulating security and protection of ships and ports states that security forces can employ arms exclusively when ordered by or in agreement with the ship's master. This is just another case of allowing potential criminalization of masters. In many instances, piracy could not be proven by courts, so the arrested were released.

vo po naredbi ili uz suglasnost zapovjednika broda što je samo još jedno otvaranje vrata kriminalizaciji zapovjednika. U mnogim slučajevima događalo se da sudovi nisu uspijevali dokazati piratstvo, pa su uhićenici bili puštani.

Dio brodara izabrao je možda najsigurniji, ali sigurno najskuplji oblik zaštite od napada somalskih pirata u Indijskom oceanu, a to je obilaženje rizičnih zona. Zbog plovidbe izvan planiranog kursa povećavaju se troškovi prijevoza, a kompanijama ostaje manja zarada.

Premije osiguranja trgovačkih brodova znatno s obzirom da je opasnost za pomorske robne tokove očita. Situacija je u potpunosti neprihvatljiva i potrebno je pronaći trajno rješenje problema. Uloga IMO-a u osiguranju i razvoju pomorskog sektora Somalije, u suradnji s ostalim relevantnim UN partnerima, mogla bi igrati bitnu ulogu u izmjeni uvjeta koji potiču stanovništvo prema piratstvu.

Može se zaključiti kako je piratstvo problem koji nastaje na kopnu i rješenja ovakvih vrsta problema treba tamo i tražiti. Sve mjere koje se poduzimaju na moru ograničenog su karaktera i ne predstavljaju trajno rješenje problema piratstva na moru.

Some shipowners have chosen possibly the most effective, but surely the most costly form of defense against Somali pirate attacks - bypassing the high risk zones. Sailing outside the planned course increases transportation costs and leaves companies with significantly lower profits.

Insurance premiums of merchant vessels are experiencing a significant rise. The danger maritime trade routes are facing is obvious. The state of affairs is completely unacceptable and finding a permanent solution to the problem is crucial. The role of IMO, securing and developing the maritime sector in Somalia in cooperation with other relevant UN partners, could be significant in changing conditions which entice the population to turn to piracy.

In conclusion, it can be stated that piracy is a problem created on the mainland, so the solution for it should be sought there as well. All the measures undertaken at sea have a limited character and do not represent a permanent solution to the problem of piracy at sea.

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