



**G.K.M. COLLEGE OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF MARINE ENGINEERING**

## **“PIRACY AND ITS CONTROL MEASURES”**

- A New Solution

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Nowadays **90% of world's transportation is being served by the maritime industry** that has grown considerably since the early 90's due to the **expansion of the international trade** and the ever **increasing volume of the Asian economy**. In parallel the expansion of international organized crime coupled with the emergence of terrorist networks has reminded once again the all timely issue of piracy and its negative side effects for the maritime sector. **This paper will examine about the reasons for piracy, its effective and various methods to escape from the pirate attack**, also solution to the piracy problem.

## **INTRODUCTION**

**Piracy in Somalia and pollution at sea – are two gruesome problems** facing the world today. Pollution at sea, an extremely grave issue, has been receiving considerable attention from different parts of the world; however, it is the former one that needs immediate and aggregated help. The recent increase in piracy activities in the Somali waters has suddenly brought Somalia into the limelight. Many countries, including several international bodies are doing their best to fight against the pirates that are scaring away their merchant ships from using Somali waters. Defense ships with advanced weaponry and navigational equipment's are continuously made to patrol the Somali waters in order to deter the pirates. However, the result, though favorable, would be a temporary one for the real reason for piracy lies on a different plane. In the following article we will find answers to some of the most prevalent questions that still bother many people around the world about Somalia Piracy.

## **PIRACY BEGIN IN SOMALIA WATERS**

SOMALIAN CIVIL WAR 1990 causes UNSTABLE CENTRAL GOVERNMENT SINCE EARLY 1990s which leads to

- COLLAPSED ECONOMY & EDUCATION SYSTEM
- ABSENCE OF INDUSTRIES
- DAMAGE TO FISHING BUSINESS
- CONTINUED VIOLENCE AND CHAOS ON LAND
- NO STRONG AUTHORITY TO IMPOSE LAW
- UNEMPLOYMENT AND POVERTY

All these were forced them to **CRIMINAL ACTS – PIRACY OFF THE COAST OF SOMALIA.**



### **Pirates**

Before Somalia became famous for its piracy activities, it was an upcoming and flourishing fishing hub. However, **poverty, hunger, and unemployment thrived in the nation** because of the **continuous conflicts between the local and government troops. Somalia desperately needed help from other countries to survive.** Countries such as Great Britain and West Germany provided aid to develop Somalia's fishing industry. Because of this, **many Somali people entered the fishing business**, and most of the catch was exported to other countries, providing the fishing companies good profit. However, as the **fishing activities increased**, the civil war in the nation also increased, which **diverted** the aid coming in for the fishing industry **toward persecuting the war.**

Moreover, **Somalia still doesn't have a stable government** and thus there are **no coastal or maritime laws** plying in its waters. Other countries saw this misfortune as an opportunity and initiated fishing in Somali waters. Lack of any rules and regulations also made Somali waters a dumping ground for **many countries**, wherein they could **go and easily dump toxic waste and harmful materials** without shelling out a single penny from their pockets. As a result, both illegal fishing and waste dumping in Somali waters **drastically reduced the number of fishes** in the region. It was then that the **local fishermen decided to protect their resources** from foreign infiltration on their own. **PIRACY IN SOMALIA THUS BORN.**

When a ship is attacked by pirates the parties who have responsibilities to deal with the piracy are,

1. The Somalia government.
2. The Flag state of the vessel.
3. The government of the people on board the hijacked vessel.
4. The ship owner.
5. The cargo owner.
6. The relatives of the people on board the hijacked vessel.

## **SHIP'S CAN'T HAVE THEIR OWN DEFENCE SYSTEM**

Looking at the recent increase in piracy activities, an obvious question that comes to everyone's mind is **why can't the ships themselves fight against the skinny pirates?**

Unfortunately, there are several reasons for this. A merchant navy ship, by nature, is just a trading ship with personnel who are not trained in any kind of defensive techniques. Moreover, by law, **none of the sailing merchant ships are allowed to carry any kind of weapons onboard.** This is mainly done **to prevent any kind of mishandling or misuse of the weapons by the crew members.**

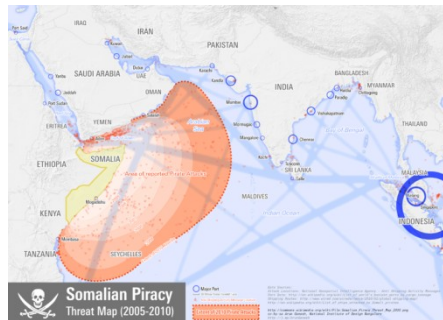
Also, the **modern pirates** are equipped with all the **latest machinery and navigational equipment.** These weapons are **not only expensive** but also **require special training to use them.** The ship owners will either have to put experienced people on board or have to train mariners to use these firearms. Both these alternatives are **not only expensive,** but also pose a certain kind of **threat to a ship's own crew members.**

## **REASON FOR PIRACY ISSUE IN SOMALIA**

**Poverty and hunger** are the root cause of every evil in the world, and that of Somali piracy is no different. People in **Somalia are poor, unemployed, devoid of even the most basic needs-** enough reasons to provoke them to undertake any kind of activity for procuring a livelihood. Apart from this, **Somalia doesn't have a stable government** and thus has **extremely weak**

**national security.** The pirates can easily thrive in this environment with additional help of weapons and high-speed boats from local and international mafia.

Moreover, the **location of Somalia**, which is **nearest to one of the busiest sea routes** in the world, makes it **easy for the pirates** to carry out their activities. These are some of the main reasons that make Somalia the hottest piracy hub.



**Piracy Map**

## **WHY CAN'T SHIPS SEE THE PIRATES?**

The question that comes to everyone's mind is **why can't the ships see the pirates coming? Are the crew member's sleeping?** Why can't the ship just speed up and escape the pirates? Though all the above mentioned questions sound valid, escaping the pirates is not as easy as it seems. Now though most of the **modern ships** have **highly advanced navigational equipment**, the **number of personnel monitoring them is very few**. With the **increase in automation**, ship owners have drastically **reduced the number of mariners** working **on board** a particular ship. A normal **cargo ship** today has **less than 25 crew members** working on it, including the Captain. Out of these, **only two of them will be at the bridge**, monitoring the radar and other navigational equipment. This makes it difficult to keep a track of each and every thing coming in the vicinity of the ship.

Moreover, the **boats** which the **pirates use are too small** and **fast** to show on the ship's radar system. Also, the **pirates generally attack at night or early morning**, when the **mist or darkness** provides them enough cover to escape notice. Apart from this, even if the pirates get detected in the ship's radar system, it is **difficult to immediately speed up and maneuver such huge ships**.

## **CONSTRAINTS OF THE SOMALIA GOVT TO FIGHT AGAINST THE PIRACY**

- Piracy off the Somali coast has been a **threat to international shipping** since the beginning of **Somalia's Civil War** in the early 1990s.
- **Somalia has no effective Government since 1991.**
- At present the **Transitional Federal Government (TFG)** is the internationally recognised govt of Somalia.
- The Govt is backed by Ethiopia, US and the UN. Somalia became a pirate state without any form of real Govt, little industry and wrecked economy for long a time.
- There is **no administrative will to put an end to this destructive business** rather **there could be possible support to or links with them.**
- What is boosting piracy to remain a problem off the coast of Somalia is the continued violence and chaos on land , as in such situations procurement of weapons becomes easy with authorities unmindful of the need to stop them on land or at sea.
- **Unemployment and poverty** due to which the **young people** in Somalia **get into** this **criminal act** which yields a huge amount as Ransom.
- The **high level of lawlessness** off the long eastern Somali coast line reflects the extent of chaos there has been on the ground in the country for more than a generation.

## **CONSTRAINTS OF THE OTHER GOVERNMENTS (FLAG STATE, GOVT OF THE PEOPLE ON BOARD**

- International Law of the sea states that **Vessels on the high seas are subject to no authority except that of the state whose flag they fly.**
- According to International law of the sea **no country shall enter or deploy their naval ships** or military air craft **into the territorial sea of any other nation**, in this case Somalia as this will violate both Somalia's Sovereignty and international law.
- All states have a duty to co-operate the fullest possible extent in the repression of piracy on the high seas or in any other place outside the jurisdiction of any state. In Somalia, vessels have been hijacked and kept anchored in Somalia's territorial waters.
- Some countries like India for instance, have vacillated on this issue.
- There are many possible reasons for such hesitation. One could be the **fear of failure.**
- The **probability of damage or sinking of a ship carrying sensitive/inflammable cargo may be quite unnerving to any policy-maker.**
- In addition are the international ramifications of the **death of a foreign national** among the multinational crew onboard.
- During a recent incident when the French Navy chased and killed Somali pirates over land, the Somali government alleged that five innocent civilians were also killed in the operation.
- **Any major intervention in the Somali piracy means a huge military action and no country is willing to undertake such an action without clearly defined legal permission to do so.**
- Other governments may have jurisdiction to arrest and extradite or try alleged offenders when they are found in their territories or onboard vessels having their nationality.
- However, the prosecution of such offenders will not be easy as a result of the inadequate extra territorial scope of the state's criminal jurisdiction, the absence or **inadequacy of extradition agreements or the lack of political will to act decisively against terrorist or pirates.**

- The legal confusion extends to what happens once pirates have been caught. In theory, any nation can shoulder the burden of prosecution. In fact, few are eager or ready to do so. **Prosecuting pirates puts enormous strain on a country's legal system.**
- The swath of piracy – affected area adjoining the **Somali sea** front is **too large to be kept under surveillance by dozen war ships with their integral Helicopter.**
- The high density of shipping and other maritime activity in the Aden would make it extremely difficult for the war ship to distinguish pirate vessels from benign shipping activity.
- Furthermore, the victim vessels do not remain in international waters for long. The pirates force the crew to dock or anchor the vessels in Somali territorial waters.

## **THE MAIN CONSTRAINTS ARE**

- **The huge military action** required to fight against the Somali pirates as they are equipped with **latest and heavy ammunition.**
- The cooperation and consent required from all interested and capable nations as this **operation cannot be single handily conducted due to large area of Somalia coast and Gulf of Aden.**
- The **inadequacy of the government's domestic criminal law to try these pirates.** The law of the country has to be changed to try the pirates who were captured in the territorial waters of Somalia.
- The **political will of the country.** For Example in case of Stolt Valor the plea made by maritime industries to the Indian Govt was turned down initially as the Vessel is a Japanese owned vessel and registered in Hong Kong and hijacked in Somalian waters. So their question was how does the Indian Govt come in to picture?

## **CONSTRAINTS OF THE SHIP OWNER TO DEAL WITH THE PIRACY**

- **The ship owners have to pay more insurance premium for the ships transiting through the piracy affected area of Gulf of Aden.**
- The crew on board may not be willing to sail along the Gulf of Aden. So the **owner has to pay extra allowance for people on board or divert the ship around the Cape of Good Hope.**
- This will eventually **increase the fuel consumption and transport costs.**
- The ship owner has to **train the people on board** transiting through Gulf of Aden about, preventing pirates gaining access to the ship, how to make it difficult for pirates to enter accommodation and to maintain control over navigation.
- The ship owner may have to employ **additional trained crew** for the lookout while sailing in that area.
- As in the case of Stolt Valor the ship owner is Japanese but the vessel is registered and technically managed from Hong Kong and the recruitment agency is in India.
- The people working on board were from four different nations.
- The cargo carried on board may be owned by some other person other than the ship owner and may be a national of some other country.
- The fact is that the Governments are not ready to swing into action by the kidnapping of foreign interests or if the vessel is owned locally, flagged with another state.
- **Due to the fragmented nature of the shipping industry the ship owners could not strongly urge the UN or developed countries to take immediate action against the piracy in Somalia and off the Somalia coast.**
- The shipping business involves multi nationals and the ship owner and the flag state may be of different countries. So that in **dealing with matters like piracy in Somalia needs the inter governmental cooperation and the political will of the concerned countries.**

## **CONSTRAINTS OF A CARGO OWNER TO DEAL WITH PIRACY**

- The **cargo owner** may be forced to **take additional insurance** cover for his cargo carried along the Somali coast.
- The **cargo owner** may **have to pay increased premium for his cargo**, carried through Gulf of Aden.
- He **can avoid carrying cargo through the piracy affected area and divert it around Cape of Good Hope.**
- This will eventually **make the cargo owner's cost of transporting more.**

### **CONSTRAINTS OF A RELATIVE OF A PERSON ON BOARD THE VESSEL TO DEAL WITH PIRACY**

- The shipping business involves multinational interests.
- As the multinational interests are involved in ships the **inter governmental cooperation is very important.**
- As the ransom is demanded against the life of people on board **the relatives have to appeal and bring the seriousness of the issue to all the countries to save their interest.**
- In the Stolt Valor case, there were 22 crew members onboard among them 18 Indians, 1 Russian, 2 Phillipinos and 1 Bangladesi.
- The vessel is owned by Japanese owner. The technical management is done by a Hong Kong company-Fleet management. The vessel is on charter to Stolt tankers B.V.
- Ebony ship management, in India is the recruitment agency.
- The relatives of the on board people have to make efforts to bring the attention of the government ,flag state, ship owner , the agency and the media for the positive relief of people.
- The relatives of the crew onboard and the agency appealed to the govt of India through D.G.shipping and all possible channels. Then active participation in the various peace/torch marches at Delhi/Mumbai along with families and unions to raise awareness about the incident in the eyes of Indian government, media and people.

- The M.D of fleet management along with the govt delegation had a meeting with the ship owner and his representatives at the Indian embassy in Tokyo.
- The ship was released after a sum ransom was paid by the Japanese owner.

## **VARIOUS METHODS TO DEFEND THE SHIPS**

The following methods can be used in ships to defend themselves from pirates by

1. Providing cameras on the deck.
2. Providing barbed wire around the ships.
3. Increasing the speed of the vessel.
4. Providing Flir video/camera.
5. Armed force on board.
6. Increasing the free board length of the ship.
7. Establishing Fire House.
8. Non-Lethal Slippery Foam.
9. Secure Ship Electric Fence.
10. Vessel Transit corridor and Group Transportation.
11. Active Denial System.
12. Crowd Control Munitions.
13. Long Range Acoustic Device.
14. Unmanned Air Vehicle.
15. Providing dummies on main deck.
16. A New proven Technology to Control Piracy is LASER SYSTEM.

## FLIR CAMERA CATCH UP



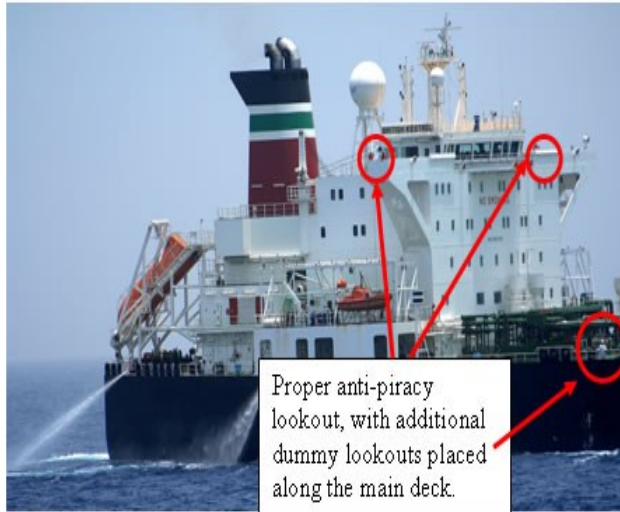
## AUTOMATED FIRE MONITOR/ WATER CANON



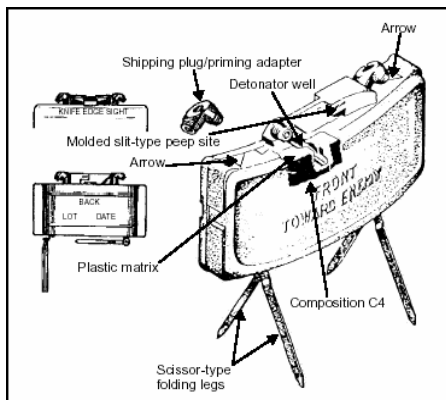
## TYPES OF WATER CANONS

- **Pressure washers** generally **produce an extremely high pressure stream** where the power of the stream drops off significantly over a very short distance.
- Ultra high pressure water jet cutters can be used. One such cutter **delivers 55,000 psi (380 MPa) through a nozzle 0.003 inch (8 micrometers) in diameter at 1 kilometer per second. This can cut a person in half at close range.**

## BY PROVIDING DUMMY ON MAIN DECK



## CROWD CONTROL MUNITION



**NON-LETHAL SLIPPERY  
FOAM**



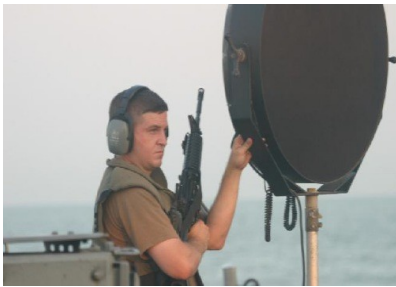
**LESS LETHAL LAUNCHER**



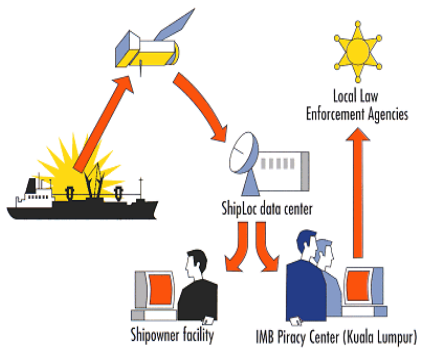
**ROBOT ANTI-PIRATE BOATS**



## LONG RANGE ACOUSTIC DEVICE



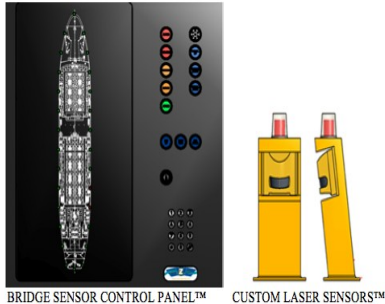
## SHIP LOC SYSTEM



## SECURE SHIP ELECTRIC FENCE

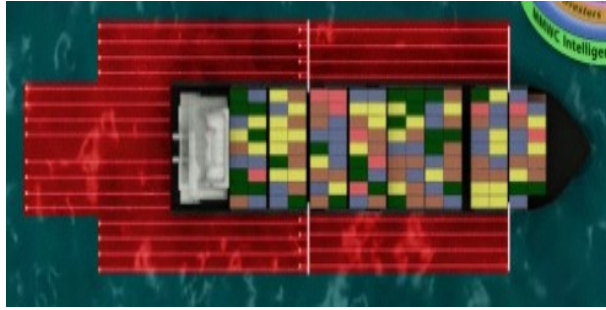
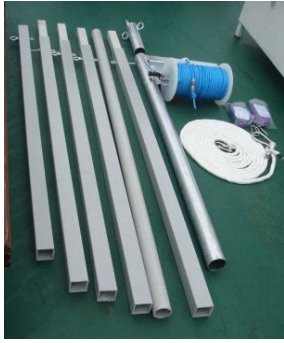


## MARITIME EARLY DETECTION SYSTEM



## PROPELLER ARRESTOR SYSTEM

This is a **non-lethal countermeasure to protect vessels underway** regardless of vessel type, speed, cargo, flag state registration and weather conditions. The Propeller Arresters have been developed as an integral component of a layered defense system advocated by MMWC but unlike traditional countermeasures used in this method, their onboard deployment creates an on- water impenetrable security perimeter around a vessel. **When crossed the Propeller Arrestor causes failure of the attacking vessel's propulsion**, rendering it disabled and no longer a threat. Rigged to heavy duty booms and deployed prior to entry of high risk area, the Propeller Arresters release lines of strong buoyant rope that float on the surface of the water. The forward movement of the deploying vessel maintains their extension without interference to the vessel's own propeller and is unaffected by the vortex's created. Their specialist design enables them to be deployed in approximately 30 seconds with **minimal man power and remain effective when left unattended regardless of vessel speed, design, cargo and weather conditions**. When the vessel arrives in safe waters, the Propeller Arresters can be wound back onto the drums and stored onboard ready for use again when required.



*Components of a propeller arrestor system and Propeller arrestor system around ship will look like this*

## **BY PROVIDING CITADEL**

A Citadel is a **designated pre-planned area** specifically built into the ship where; in the event of imminent boarding by pirates, all crew will seek refuge and protection with the objective of preventing the pirates from gaining control of the vessel. Such a space would probably have, but not be limited to:

- command and control capability of the vessel,
- its own self-contained air-conditioning;
- emergency rations;
- water supply;
- good external communications;
- emergency shutdown capability for the main and auxiliary engines;
- remotely operated TV cameras
- Also the owners should be aware that unless all passengers/crew are securely locked in the Citadel, otherwise the advantage of the Citadel concept will be lost, as persons left outside may be used as hostages.

## **A NEW LASER SYSTEM**

The pirate menace in the seas may soon come to a halt if the British engineers at BAE systems have anything to say about it. Having developed a new kind of defense system which uses lasers to immobilize pirates by dazzling them on approach, this is the first non-lethal form of attack against the pirates. The **laser has proven its efficacy against moving targets more than a mile away.**

Developed in response to growing pirate threats and hijackings, this device literally hides the vessel carrying it behind the blinding green glare that is the laser.

These in **turn lead pirates off- course with weapons losing aim.** The three foot **wide beam of light temporarily dazzles anyone who lays eyes on it.** Having been tested at trials conducted at the Pershore Laser Trials Range in Worcester, U.K, the laser works both in day light as well as in the night. Its design also allows it to be mounted on smaller yachts to protect them against the pirates.



*Laser Light fitted in Research Ship*

The laser is being developed to be used in conjunction with high frequency surface radar that is to pin point the location of the faster, smaller type of vessels used by pirates like the Somalian pirates. This enables the system to automate the laser directly on the target and also fire beams rapidly at multiple targets, producing a profound flickering which exemplifies the **“dazzle- effect”** further.

The modus operandi of the pirates usually includes the element of surprise which help in over- powering a ship. The early detection of the pirates therefore not only acts as a signal to them, but also incapacitates them as they move closer in. Used within the safety limits, **the device is not thought to cause blindness.** “We have started to look at the piracy issue over the past 18 months due to the increasing threats to vessels around the Gulf of Aden and the Arabian Sea. The laser provides a secondary capability over larger distances as it can act like a warning. The world witnessed **440 piracy incidents and 51 hijackings worldwide in 2010 alone.** Presently, some 600 sailors are thought to be held hostage by the Somalian pirates. To them, the **development of the laser rings in hope.** This development in the field emerged with the alleged closure plans of the British military command post that runs operations against the Somalian pirates.

## **THE PERMANENT SOLUTION TO BRING AN END TO THE PIRACY OFF SOMALIA COULD BE**

- The immediate solution would be the **coordinated international action** is the only mechanism likely to bring any lasting relief to this troubled and lawless area.

- **U.N must take measures to form a strong and stable govt in Somalia which can enforce the law strictly to bring an end for the violence and chaos on the land and piracy at sea.**
- Measures to be taken towards politico –**economic stabilization of Somalia**, which would also create greater employment opportunities for its people.
- Measures to be taken to develop **better education opportunities which in turn will provide employment opportunities.**
- Assistance to be provided to Somalia for **building up its maritime zones**, which is currently nonexistent.
- Such capacity building assistance for maritime law enforcement would also need to be extended to the adjoining countries.
- However, owing to the considerable lead time involved in bringing up a strong govt, economy, employment and peace, involving capable naval forces of major powers would be indispensable in dealing with piracy.

#### **WHAT TO DO WHEN THERE IS A PIRATE ATTACK:**

- **Activate Ship Security Alert System (SSAS)**
- **Maintain maximum sustainable speed**
- Consider evasive manoeuvres (short cycle **zig-zags**) while maintaining maximum speed.
- Manoeuvre to remove any lee from either side of the vessel (sea state dependent)
- **Activate fire pumps** to use fire hoses and/or monitors to cover areas of the vessel vulnerable to boarding
- Employ any other **(non-lethal) defensive measures**

- If AIS has been switched off, ensure it is switched on and operating on highest power setting
- Sound crew piracy alert and muster persons at either their designated Safe
  - **Muster Point or Citadel** in accordance with the ships security plan.
  - **Conduct a roll call** to ensure that all crew members are accounted for.

#### **WHAT TO DO WHEN PIRATES CAME ONBOARD:**

- Try to **stay calm**
- **Stay together** as far as it is practicable to do so
- Any crew member not on bridge or within Citadel to remain in constant
- **communication with bridge or Citadel**
- Offer no resistance
- Co-operate with pirates
- Leave any **CCTV equipment running**
- If the Ship Security Plan involves the evacuation of all persons to the Citadel, ensure that the **main engine is stopped**, the vessel has adequate sea room to drift and the Citadel space is properly secured.
- **DO NOT Use firearms**, even if available
- **DO NOT make any sudden movements around pirates**
- DO NOT use flash photography
- DO NOT use flares of other pyrotechnics as weapons.

#### **CONCLUSION**

Piracy is an **old aged practiced** that is equivalent to the mountaineering bandits as some may draw the comparison. Last but not least the

involvement of **terrorist networks** with organized crime as far as transgression in the sea is a new phenomenon that **must be addressed by the international community in the same respect as air travel and railway infrastructure**, the other two life-lines of world's commerce. Also **Piracy in Somali waters thus seems unavoidable unless some drastic steps are taken by International bodies to fight piracy at the grass root level.**

## ACKNOWLEDGEMENTS

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