MALAYSIA’S EMERGENCY RESPONSE IN THE STRAITS OF MALACCA

Nur Azmel Bin Awaludin
Mohd Ikmal Hisyam Bin Abu

Centre for Maritime Security & Diplomacy - CMSD

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MALAYSIA’S EMERGENCY RESPONSE IN THE STRAITS OF MALACCA

Abstract

The number of vessels navigating through the Straits of Malacca is continuously increasing. With the increase of vessel traffic, threats to the straits and coastal state increases. Threats from collision and explosion in the straits could cause traffic obstruction, environmental degradation, loss of revenues and damage to the economy. The threat from maritime terrorism is also a cause of concern to coastal states and Malaysia in particular. Any act of terrorism in the straits could damage the image of the country and the confidence of the international community towards Malaysia’s efforts in ensuring the safety and security of vessels navigating the straits. Although the security aspect of the straits lies fully under the authority of the maritime law enforcement and military agencies, the cleaning up of the incident scene still lies with maritime agencies with support from special vessels designed according to their roles and functions in emergency response. The need for a vessel having the capability of a coordination platform for search and rescue, clearing and cleaning of oil spills, salvage operations, and towing will be the basis for a newly design concept of an Emergency Response Vessel for the Straits of Malacca.
1.0 Introduction

The sea has also been a means of transportation of human and goods for centuries. From the early floating logs to sailing ships, man has travelled in search of new lands, economic growth, and expansion of power. As ships developed from oars, powered by man, to wind and machinery, the distance and duration of sea voyages became longer and further. The bigger and faster the ship, the more cargo it carries, the more profit that drives the maritime economy. The challenges that early sailors or merchants faced are as real in the present day. Piracy has always been the primary threat to ships and it is still in existence in waters around the African continent, Asia, and South America.

The aftermath of September 11 2001 brought new meaning to the threats of maritime security. Even though it has been 15 years, non-traditional acts of terrorism still exist in several countries in the Middle East and recently in Brussels, France and Germany.\(^1\) However, this act of terror has been land based in nature. There is no denying that throughout second half of the 20\(^{th}\) and early 21\(^{st}\) century, only several incidents at sea were able to get the world’s media attention that were related to acts of terrorism on passenger ferries and cruise ships such as the *Santa Maria* incident in 1961, *Achille Lauro* (1985), *City of Poros* (1998), *Our Lady of Mediatrix* (2000), and *SuperFerry 14* (2004). While attacks on non-passenger ships such as tanker *Coral Sea* in 1971, freighter *Vory* (1974) and VLCC tanker *Limburg* (2002) were also targeted. As for military vessels, the *USS Cole* (2002) and *USS Ashland* (2005) were also targeted.\(^2\)

One may argue that there has been no record of terrorist attacks on vessels in Malaysia’s waters. The fact is that in 2003, an Indonesian chemical

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tanker, the *Dewi Madrim* was hijacked by terrorists where ten armed men with automatic weapons boarded, learnt to maneuver the tanker, and fled with the Captain and First Mate with no demand of ransom.\(^3\) The report of the incident, justified the intelligence world to support earlier reports of the danger on maritime terrorism. The fear that these acts of terror on vessels with high-risk cargo such as oil, gas and chemical tankers, are that they may pose severe threats and danger to other vessels, the environment, and shipping lanes critical to the maritime economy.

Maritime security is not limited to the threat from terrorist acts, but other aspect of security should have the same weightage of consideration. Malaysia, being a maritime nation is certainly concerned with the need to ensure that the waters surrounding her are safe for maritime activities. However, among the many stretch of water surrounding Malaysia, the Straits of Malacca is the most important to the country as well as to the world.

The Straits of Malacca is among the busiest straits in the world with a growing numbers of vessels passing through it annually. The density of traffic is increasing with an average of over six thousand a month and it is expected that the number of vessels transiting will exceed 100,000 by 2020. More than 50 percent of the world’s energy and 40 percent of world trade passes through the straits.\(^4\) The straits borders Sumatera to the west and Peninsular Malaysia to the east with several narrow places along its 520-nautical-mile length. There are several major choke points with the narrowest having a maximum width of about 1,391 meters and 23.3 meters in depth.\(^5\)

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Figure 1: Straits of Malacca as a vital Sea Lane of Communication. Source: Climateadaptation Website

Figure 2: Statistic of vessels passing through the Straits of Malacca, 2000 to 2014. Source: Seatrade-Maritime Website

The demography of the straits faces many challenges in ensuring that vessels of all sizes are able to navigate safely. Efforts by the Malaysian, Indonesian and Singaporean governments, with the financial aid from developed countries such as Japan and China have contributed immensely especially in terms of navigation safety through the Tripartite Technical Expert Group (TTEG)
on the Safety of Navigation. The TTEG is in line with the littoral states’ duties and responsibility to the 1982 United Nations Convention on the Law of the Sea (UNCLOS), Article 43 on the ‘navigational and safety aids and other improvements and the prevention, reduction and control of pollution’. The responsibility also includes not limiting vessels under Article 39 of the UNCLOS from adhering to the rules and regulation in ensuring that their passage along the straits does not impede the safety of other vessels, the safety and security of the coastal state, the compliance to the international regulations for preventing collisions at sea and the international regulation for prevention, reduction and control of pollution.

The danger that the Straits of Malacca faces in terms of emergency incidents at sea presents uncertain consequences to Malaysia and its neighboring countries. The thought of an oil tanker going aground, or collision or even an explosion would result in a grave damage to the environment. For example, the supertanker Exxon Valdez oil spill in 1989 resulted in 10.8 million gallons (257,000 barrels) of oil being spilled off the coast of Prince William Sound, Alaska. The oil spill incident effected about 28,500 square kilometers of coastal sea area, damaging 1,300 miles of coastal line which if compared is about 4 times longer than the coast of west Malaysia. The total cost of cleaning 20 percent of the oil spill was around USD2.5 billion to the company, the other 80 percent of the oil spilled is still exists in the waters column, beaches and sand along the coast of Alaska. If the same incident would occur in the straits, is Malaysia or any other neighboring states ready or capable in handling the problem.

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8 Carrie Holba, ‘Exxon Valdez Oil Spill FAQs, Links and Unique Resources at ARLIS’, Alaska Resources Library and Information Services, 2014.
9 Ibid.
On the other aspects of emergency scenarios, vessels going aground or collision at sea that might result in ships sinking within the narrow navigable waters of the straits, would hinder the safety navigations of other vessels. As an example that recently happened in Bangladesh (14 December 2016, Wednesday), a lighter class vessel, MV Labs 1 sank while at anchor at Chittagong due to collision with another vessel. In China (15 December 2016, Thursday), a container ship, the Hong Yuan 2 ran aground off the Huanglong Island, resulting a breach in its hull and due to the flooding, the ship bow was partially submerged. Although there was no loss of life on both occasion, but if it had happened in the straits, both incidents would have created safety hazard to other vessel navigating safely.\footnote{Reports by Paul Hancock for Shipwreck Log that monitors on worlds shipping incidents and can be found at <http://www.shipwrecklog.com>.} It is a serious security and safety issues that either the TTEG or at the national level itself should be considering to biff up the capability by having a dedicate platform or platforms with the suitable equipment and system, capable of fast deployment, design to manage and carrying out oil spill cleaning, wreckage clearance, towing vessels to safety within a given time or period that would not hinder the safe navigation or stop the traffic flow, and friendly to the environment.

The current capability in the Straits of Malacca are based on limited assets of the Marine Department and other private owned companies that provide services such as harbor tugs, towing, firefighting, diving supports, supply vessels, survey vessels, limited salvage and salvage supports, anchor handling and several others merchant shipping related activities. The main type of platform available is based on tugboat and ocean tug vessels design with limited maximum speed of 10 to 12 knots. The capability requires the usage of several platforms to be used due to the spread of capability on different classes of vessels. This hinders the smooth execution of an emergency response capability with problems that might arise from budgets, platforms and human resource availability, and cooperation among various agencies and organizations.
2.0 Problem Statement

Risk mitigation in the Straits of Malacca has been well discussed. Safety issues are addressed by the TTEG through the Vessel Tracking Management System (VTMS) specifically designed to manage the increasing traffic, security is handled through Maritime Security Program (MSP) while oil spills are responded to by the Oil Spill Response Action Plan (OSRAP). However, in the event of a terrorist attack, there is a need to have simultaneous response capability for salvage, oil spill, and Search and Rescue (SAR). This will not only be a deterrent but would also put in place and on-scene and coordinated response.

3.0 Area of Study

The area of study covers maritime emergency response requirements and capability, and supporting systems and services on a single platform to coordinate the following operations for the Straits of Malacca:

a. Search and Rescue
b. Clearing and cleaning of oil spill
c. Salvage of old and new wreck
d. Towing
e. Supporting Maritime Law Enforcement

4.0 Objectives of study

This study will justify and propose the need for an Emergency Response Vessel in response to the threat of terrorist attack and incident at sea in the Straits of Malacca. It will include the minimum characteristic of the vessel, the role and function and options of operation command in maximizing cost and efforts to increase he safety and security through capability deterrent, and risk management measures.
5.0 Significance of the study

Currently, there is no single maritime agency in Malaysia that has the assets to address all the needs for emergency response arising from a terrorist attack that will cover coordinated Search and Rescue, oil spill cleaning, and towing and salvage. This study will identify the gap and propose the deployment of a comprehensive emergency response vessel to address the threat of maritime terrorism.

6.0 Methodology

Several methods are used to achieve the objectives of this study. Literature reviews were used to gain knowledge of the subject matter. In addition, field visits were conducted to related agencies to gain first-hand knowledge.

7.0 Limitations

The information for this study is limited to open and secondary sources, interviews with relevant agencies, and data received on a restricted basis. This study is also constrained by corporate confidentiality policy.
8.0 Literature Review

8.1 ETV Concept Study for Straits of Malacca and Singapore (SMIT Document No. 013.11.23.008-R-001, 2011)

Emergency Towing Vessel (ETV) study was conducted by SMIT Salvage Company based in Netherlands. The company specializes in towing and salvaging. The study was prepared for TTEG with the aim to promote the concept of ETV for both Straits of Malacca and Singapore. The study was presented during the 39th TTEG Meeting by the Singaporean Maritime and Port Authority (PMA). In the study, the area of interest was from the northern area of the Straits of Malacca up to the entrance of Singapore Straits in the east.

The study showed the necessity for an ETV in addressing emergencies within the area and identified the capability based on the ‘best-practices’ concept in the North Sea.

The study recommended that the proposed ETV have the following minimal capabilities:

a. Endurance.
b. Anti-roll tank.
c. Dynamic positioning.
d. Firefighting equipment.
e. Helicopter deck.
f. Oil recovery.
g. Salvage equipment.
h. Project deck/containers.
i. Accommodation capacity.
j. Survivor capacity.
k. Deck crane.
I. Search and Rescue.

The design should also be based on the function required. Where the primary function would be for emergency towing, while secondary function and capability comprises of search and rescue, firefighting, oil recovery, marine traffic controlling, enforcement, salvage services and anchor handling.

![Figure 3: ETV Response Map Study. Source: ETV Concept Study.](image)

The study also covered the minimal numbers of ETV platforms required in both straits. The number was based on the capability of the ETV to arrive in the vicinity of emergency within 2 to 5 hours after receiving report at a maximum speed of 18 to 19 knots. Three areas have been identified, Singapore, Port Klang and Penang.

The concept study also recommended the design and characteristic of the ETV platform best suited for the requirements in addressing emergency towing requirements in the Straits of Malacca and Singapore. The recommendation of the paper can be used as a basis for the recommendation for the design platform of this study.
8.2 Emergency Towing Vessels, Concept for a New Century of Emergency Towing

The need for Emergency Towing Vessels (ETV) has been existence since the early 20th century. The need of such capability is vital in rendering assistance to vessels in the open sea or areas with narrow and shallow waters. ETV has proven itself as the numbers of vessels increases and the numbers of emergencies increase as well.

As the size and volume of ships increases, the capability of ETV is also evolving with the changes. Newer concept influences the design and capability requirement that is required to cope with weather and condition, power of pull, nature of emergency and operation availability.

This proposal paper was to propose ETV design required to operate in the waters of South African. Having a unique sea condition around the Cape of Good Hope, strong current and wind, the ETV has to be designed with certain criteria’s required to operate in any server sea condition without any difficulties. However, this paper concentrated only on the capability of towing destress vessels at sea and did not address other emergency requirements such as oil spill, salvage and fire fighting.
8.3 Shipping Patterns in the Malacca and Singapore Straits: An Assessment of the Risks to Different Type of Vessel

The threat of maritime terrorism and piracy has not reduced the tonnage of cargos from being shipped and the Straits of Malacca is still considered an open waterway despite the risks and security threats.

There are many types of vessels that are designed to carry certain type of cargo. Tankers for oil, LNG for natural gas, containers to carry any forms of goods that can be put into a container, general cargo, dry bulk carriers to carry iron ore, coal, aluminum, rocks and grains, chemical tankers, ro-ro’s, passengers, tug and barges. These are among the few identified that are increasing its numbers in the Straits of Malacca and Singapore.

Understanding the nature of traffic is also vital to know what type and what cargo are being shipped. The pattern of the traffic, whether through in nature for vessels only transiting the straits from east to west and back to east, local traffic for local shipping industries and other traffic for smaller size vessels. According to research, 55 percent of traffic is in the category of through type traffic, ships using the straits as a navigational passage purposes.
Having understood the types of vessels and traffic, one may analyze the threat and come to a conclusion on the risk assessment. The risk assessment would allow the formation of the need of security that is required in ensuring the safety of navigation for the vessel, as well as the need for security to be employed by the shipping company in general and ship in particular.

8.4 The Threats of Piracy and Maritime Terrorism in Southeast Asia

The Straits of Malacca is a haven for non-traditional activities as the 600-mile long straits provide a shorter route from east to west and where 25 percent of the world’s trade passes through. Dangerous cargos from toxic chemical to explosive inflammable goods are carried and are of interest to terrorist groups.

Maritime boundary issues are seems to be the stumbling block for coastal states to cooperate in ensuring the safety and security of the straits. It was reported that the pirates were able to escape across the border, as hot pursuit was not possible. In 2004, the three countries launched a coordinated patrol, which according to the IMB did not reduce the number of pirate attacks as 37 incidents were reported during the same duration. Due to the increase of pirate attacks and pressure from the public, several new initiatives were executed, such as ReCAAP and Regional Cooperation and Agreement on Combating Piracy and Armed Robbery.

Pirate activity in the straits does not only creates security issues but also contributes towards the safety of navigation where there are cases when ship crews were locked in their cabins with no one controlling the ship. On the other hand, pirates in the strait are believed not to have any connections with terrorist organization. As such, if there were any act of maritime terrorism, the vessels or platform would have been owned or organized by the terrorist organization themselves.
8.5 Safety and Security in the Malacca and Singapore Straits

Risk assessment is vital in understanding the vulnerability of ships getting attacked by pirates. Detailed appreciation of the traffic flow of vessels passing through both Malacca and Singapore Straits further enhance the probability of identifying targets which can be detected earlier and stop from any incident of piracy and armed robbery from happening.

Traditionally, the IMO only focuses on the aspect of ships safety, while security is the duty and responsibility of the coastal states. This perception has changed, as realization of the inter-relationship between maritime safety and maritime security does co-exist and requires a balance consideration. The integration is evidently clear, as an example, the IMO has changed its motto from ‘safer ships, cleaner seas’ to ‘safe, secure and efficient shipping on clean oceans’. 11

The need to address different interest, priorities, threat perceptions and expectation between the coastal states along the Malacca and Singapore Straits is vital towards a cooperative approach. The importance of the cooperative approach is to ensure that the coastal states are able to come to a consensus in sharing the burden to ensure the safety, security and environment protection. Through Article 43 of the 1982 UNCLOS, clearly state the responsibility of coastal state to provide the necessary services required such as patrols and surveillance to prevent illegal activities, SAR coordination, navigational aids, hydrographic survey and pollution cleanup arrangements.

There are 4 major areas with recommendations in enhancing the safety and security requirements of the straits. The areas of interest are:

a. Institutional arrangement and capacity building - the adoption and establishment an inclusive approach towards maritime security, safety and environment protection. Assisting port authorities to build confidence in providing and enhancing security requirements.

b. Risk assessment and reduction - continuous monitoring and surveillance, gathering of information and data for analysis for risk assessment to develop cooperative arrangement and guidelines for measures taken when required.

c. Regime building - to establish a community of burden sharing of cost required in the maintenance of security and safety, and joint cooperation zones. Strengthen and encourage maritime security cooperation arrangement, and search and rescue.

d. Operational cooperation - to improve cooperation between maritime security forces, develop inter-operability SOP and guidelines, foster multilateral programs and improve surveillance capability.

9.0 Emergency Responses Vessel

Emergencies incidents at sea will continue along the narrow Straits of Malacca. The Malaysian Maritime Department is responsible to monitor and coordinate the necessary response. From the statistic in Figure 6, the number of emergencies in the past 6 years has no indication of an increase or reduction in the number of cases. The area of concern is emergency cases that are related to collisions, grounding, sinking and fire. These types of emergencies are similar or the same to the effect of terrorist attack with unimaginable consequences that can endanger the country in terms of economy, general wellbeing of the community, shipping industry and the marine environment. The loss of revenue due to economy, loss of livelihood in terms of job and food security, and the cost
recovery would put the country in a financial crisis. The differences between normal incidents and terrorist attack will be on the scale of destruction that the terrorist would like to demonstrate.

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*Figure 6: Statistic of Emergency Reports 2010 to 2015. Source: Malaysia’s Marine Department.*

The consequences of a terrorist attack would not only affect Malaysia, but also to Indonesia and Singapore, as littoral states along the Straits of Malacca. The need to address through the development of a capability in emergency response is essential and a necessity.

9.1 The Straits of Malacca - Significance and Threats

The Straits of Malacca is vital to the country as well as to the world economy. The strait also generate income to the country through revenue collected from taxes, port fees, light dues, sales of maritime capture, tourism and navigation aids maintenance funds, and others. Figure 7 illustrate how active transshipment activities in the Straits. If a disaster would occur due to terrorist attack in the strait, the source of revenue would surely influences the country’s
While the cost of clearing the destruction would further burden the country financially.

Figure 7: Transport and Flow in Straits of Malacca. Source: French Network for Asian Study Website.

A study conducted by International Risk Governance Council (IRGC) in 2011, predicted that if any big disaster in the Straits of Malacca such as explosion of a vessel or refinery, collision and even cyber-attack on the VTMS were to happen, the outcome would have a grave consequence to the shipping and production industry. Which would result in the strait being closed, which then will cause a reduction in output for the production sector. This reduction in the production sector is due to the strong connection between inter-industries with the maritime transportation sector. In the 2011 study, it was also predicted that, for a year closure of the strait, a total loss of more than USD 18 billion a year would incur to the littoral states.\textsuperscript{12} Figure 8 shows the relationship between production output in relation to the sea shipping sector for littoral states involved in domestic and international transport of goods by sea.

There are many kinds of threats that exist in the Straits of Malacca, the threats can be in the form of natural environment disaster, right up to manmade related disaster. Whatever form of disaster that might occur, the devastation is what Malaysia does not want to face. And even, if required to face, the action taken should be swiftly dealt to ensure the straits is kept open for navigation.
9.1.1 The category of threat.

Threats in the Straits of Malacca varies in nature of its aftermath but for an easy understanding, it can be generalized into 3 main categories as follows:

a. Safety - safety of navigation for ships to safely navigate along the straits. The need for continuous monitoring and surveillance of ships (Figure 9 shows the area coverage for monitoring and surveillance), to give warning on weather condition, traffic density and communicate when there is doubt of a ships movement. Safety also covers the navigational infrastructure and aids, the establishment and implementation of Traffic Separation Scheme (TSS), placing beacons and buoys as a guidance, and indicating danger position, light houses and navigational charts, and references documentations. The implementation of STRAITREP in accordance with IMO resolution no. A.858(20) (Mandatory Ship Reporting System in the Straits of Malacca and Singapore) for ships transiting through the strait should report to the Malaysian VTS. The failure of ships adhering to the safety requirements may result in collision and grounding. Which dependent on the location of the collision and grounding, would hinder in the safety navigation of other ships.

b. Security - threats from piracy and armed robbery, and maritime terrorism activities. Piracy and armed robbery activity is profit driven, the aim is to get money through stealing of cargo and valuable belongings to kidnapping for ransom. Latest statistic by ReCAAP as per Figure 10. However, piracy and armed robbery activities does not result in damage or danger to other vessels. As for terrorist attack, the aim is not profit driven, but more towards political gain to show for publicity in transmitting their

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13 IMO Resolution can be found at <http://www.marine.gov.my/jlm/pic/article/SN%20Circ.201%20STRAITREP.pdf>.
objective. The threat from terrorist attack is more severe and damaging with higher consequences.

![Figure 10: Number of Incidents in the Straits of Malacca (Nov 2015 - Nov 2016). Source: ReCAAP Website.](image)

c. Environmental disaster - damage to the marine life and environment of the straits caused by oil spill or contamination from dangerous substances. The degree of the environmental disaster along the coast and within the straits will further be based on the amount and type of oil or chemical that are spill due to collision, grounding, fire or explosion.

9.1.2 The possible causes. Emergencies causes for the 3 threat categories varies, among the common or known causes are:

a. Safety - threat to navigation are related human base negligence such as non-observance to the rules and regulations, and inadequate use of collision prevention aids. Other causes such as navigational hazards

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14 Above n 2.
that are not reported or recorded, mechanical problem and the traffic in the straits.\textsuperscript{15}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Figure_11.png}
\caption{A Liberian registered tanker on fire after colliding with a cargo ship in the Straits of Malacca, off the coast of Port Dickson, 9 seamen missing, August 2009. Source: Xinhua News Website.}
\end{figure}

b. Security - piracy and armed robbery are profit motivated. Pirates are forced to piracy activity as a means of survival as an income or as part of a crime syndicate. Maritime terrorism is based on political ideology where terrorist attack is to gain attention and publicity in their course.\textsuperscript{16}

c. Environmental disaster - are caused by oil and chemical spill from tankers that are involve in a collision at sea or grounding at shallow areas, where the integrity of the ship hull is breeched allowing the cargo to spill out into the sea.


\textsuperscript{16} Above n 2. Hans Tino Hansen - Piracy activities with financial gain for organized crime syndicate or insurgency groups and A type of struggle through the act of violence to create fear.
9.2 Area of Interest

The Straits of Malacca is a critical area about 180 nautical miles long from One Fathom Bank off the coast of Port Klang to Tanjung Piai in the south and west entrance to the Straits of Singapore. Figure 12 illustrate some of the critical choke points along the straits. There are two major choke points with limited depth safe for navigation, the first is only about 3582 meters wide around the area of One Fathom Bank, and the other is about 2965 meters wide is off the Port Tanjung Pelepas, near to Tanjung Piai.

Figure 12: Major Choke Points along the Straits of Malacca and Singapore. Source: International Risk Governance Council 2011 Report.

The critical aspect of this choke point area is the vulnerability to be attacked. Taking a super tanker class ship or a large container ship as an example, any of the two type of ship is targeted and sink in the vicinity of the two area of interest, the traffic flow of the straits will be severely affected and could cause a ‘shut down’. With the current emergency capability, it will take several months for the strait to be open for navigation.
Figure 13: STRAITREP Reporting Point and TSS.
Source: National Archive of Singapore’s Website.

Other critical areas along the straits will be the Traffic Separation Scheme (TSS) that was enforced 1981. Figure 13 illustrate the TSS sectors and reporting point for STRAITREP. Any incident at or along the TSS would certainly affect the safety of vessels navigating safely. The route of the TSS will have to be diverted, as not to disrupt the flow of the traffic and in certain areas, ships with extreme draught would not be able to use the straits.

9.3 Current Response Capability Availability

For emergency response, the capability required is the rapid response to towing, salvage a wreck, clearing of oil spill and conduct Search and Rescue within a time period without jeopardizing the traffic in the Straits of Malacca. Currently, Malaysia has to rely on minimal government asset and supporting shipping industries in responding to emergency incidents. The Malaysian Marine Department is overall responsible for the safety of navigation. Yet the assets that are available under the department is limited to the function of maintenance of navigation aids and towing.
For Search and Rescue, the task was initially under the responsibility of the Royal Malaysian Navy (RMN). The establishment of the Malaysian Maritime Enforcement Agencies (MMEA) under the Malaysian Act 633 in 2004 was to have a single agency that can perform enforcement role, Search and Rescue within Malaysia’s territorial waters and the Exclusive Economic Zone (ZEE). However, due to the limitation of assets, MMEA is only capable of addressing maritime law enforcement issues, Search and Rescue and limited towing. The MMEA was operating older boats and ships from other maritime agencies. Although new procurements are being made, the future assets are still limited in its capability to address the full range of emergency response. The capability of emergency response by agencies are:

a. The RMN assets are military designed with very limited emergency response capability:

(1) Search and Rescue.
(2) Limited towing of vessel of similar size and smaller.
(3) Limited firefighting assistance capability.
(4) Asset capability:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Towing</th>
<th>Salvage</th>
<th>Diving Support</th>
<th>Oil Spill</th>
<th>SAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frigate 23rd SQN</td>
<td>LIMITED</td>
<td>x</td>
<td>√</td>
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<td>√</td>
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<tr>
<td>Corvette 22nd SQN</td>
<td>LIMITED</td>
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<tr>
<td>NGPV 17th SQN</td>
<td>LIMITED</td>
<td>x</td>
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<td>√</td>
</tr>
<tr>
<td>MPCSS 31st SQN</td>
<td>LIMITED</td>
<td>x</td>
<td>√</td>
<td>x</td>
<td>√</td>
</tr>
<tr>
<td>MCMV 26th SQN</td>
<td>LIMITED</td>
<td>x</td>
<td>√</td>
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<tr>
<td>FAC SQN</td>
<td>LIMITED</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>√</td>
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<tr>
<td>Tug Boat</td>
<td>√</td>
<td>x</td>
<td>√</td>
<td>x</td>
<td>√</td>
</tr>
</tbody>
</table>

b. The MMEA comprises of old, secondhand and new assets with intermediate response capability:

(1) Search and Rescue.
(2) Limited towing of vessel of similar size and smaller.
(3) Limited firefighting assistance capability.

(4) Asset capability:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Towing</th>
<th>Salvage</th>
<th>Diving Support</th>
<th>Oil Spill</th>
<th>SAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Langkawi Class (OPV)</td>
<td>√</td>
<td>×</td>
<td>√</td>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>Marlin Class</td>
<td>LIMITED</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>√</td>
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<tr>
<td>NGPC</td>
<td>LIMITED</td>
<td>×</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Gagah Class PC</td>
<td>LIMITED</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>Ramunia Class PC</td>
<td>LIMITED</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>Sipadan Class PB</td>
<td>LIMITED</td>
<td>×</td>
<td>×</td>
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Figure 14: Langkawi class KM Langkawi, was built using the Ocean Tug design, capable of towing and firefighting. Source: MMEA Website.

c. The Marine Department comprises old, secondhand and new assets with limited response capability:

   (1) Search and Rescue.
   (2) Limited towing of small vessel.
   (3) Limited firefighting assistance capability.

d. Other maritime agency assets are small boats that can only support enforcement activities and Search and Rescue only.
Other emergency response such as salvage, oil spill cleanup and firefighting are relied heavily on the shipping industries. For oil spill, Petronas established a subsidiary company called PIMMAG to offer oil spill services. The company provide services in terms of equipment and specialize personnel. In an event of oil spill, the recovery and cleaning oil spill equipment are transported by own vessel or any vessel organized for the tasking.

There are several other companies that provide tug boat services with capability of conducting towing, limited salvage, diving support, ship firefighting and oil spill cleaning. Among the capable companies are such as Y&Y Maritime Management and Consultancy Sdn. Bhd., Lunar Shipping Sdn. Bhd., Synergy Marine Sdn. Bhd., Alam Marine (M) Sdn. Bhd. and others that are based along the straits from Penang to Tanjung Pelepas.

![Sample Ocean Tug Boat - MV Interpid (left) and Tug Boat - AHTS Confidence (right).](source: Y&Y Maritime Website.)

However, currently there does not exist any vessel or platform that is capable to conduct full salvage operation. The nearest salvage vessel or platform is stationed in Hong Kong. Any requirements for salvage, local company will act as intermediary with Hong Kong Company to bring down the salvage vessel with a minimum sailing period of 14 days.\(^\text{17}\)

\(^{17}\) Discussion and interview with representative from Alam Maritime (M) Sdn. Bhd. and Department of Marine Malaysia on their experiences in carrying out salvage operation in the Straits of Malacca, 25 October 2016.
9.4 Propose Platform and Technological Enablers

To address the emergency response requirements, it is proposed that Malaysia has its own Emergency Response Vessel (ERV). The ERV platform proposed will have the basic designed from the current designed Emergency Towing Vessel (ETV) that several countries have been using (see Figure 5). The ETV designed is based on the Ocean Tug that is found to be very stable in any sea state condition, making the design suitable for the ERV. However, due to the requirements for ‘quick response’, the hull design and main machinery for the ERV will require special modification to cater the need to increase speed with a maximum speed of at least 20 knots. This will allow the ERV to be deployed and arrived at the distress or emergency location in the Straits of Malacca within 2 to 5 hours.

The proposed ERV will require to be fitted with the latest technology in emergency response onboard. The 3 main technology will cover the requirements for towing, oil spill and salvage operation. The specific minimal recommended technology requirements but not limited to as follows:
a. Towing arrangements:

(1) To have both forward and stern towing capability.

(2) Towing winching power and bollard pull of at least 300 tons.

(3) Towing capability in weather of at least 8 Beaufort (Bft).

b. Oil spills equipment and arrangement:

(1) Standard conventional containment package with minimum 300 meters offshore recovery boom capable for onboard storage and off loading transfer pump.

(2) High speed containment response capable of being deployed up to 5 knots in strong current condition.

(3) Temporary offshore storage options with minimal capacity of 50 cubic inflatable storage barges can be carried onboard.

c. Salvage operations.

(1) Divers arrangements (equipment and machinery) with compressor chamber facilities.

(2) Dredging and de-silting equipment and machinery.

(3) Onboard deck crane with minimal 450 tons lifting capacity.

There is also a requirement that the ERV be fitted with fire-fighting equipment and system with dual purposes, internal safety as well as external
support to fight vessels or oil platform on fire. For external fire fighting, the power pump should have the minimal pressure to spray water at a distance of 450 meters and height of at least 300 meters.

The ERV platform has to also be fitted with the necessary equipment and systems for communication, highly accurate navigation systems, surveillances capability and operation center to be used as the on scene command and control. The design should also cater the accommodation for crew (25 minimal) and additional personnel from Law Enforcement agencies. Other required facilities onboard such as medical center and helicopter landing pad should be considered for transportation of severe cases that cannot be treated on board.

The ERV in carrying out it role and function should also consider the requirement for being able to operate away from home base. A minimal duration of 2 weeks at sea with provision storing availability and rooms for extended operation.

The ERV platform design should also accommodate the need for a stern open deck that can be used for carrying equipment, wreckage dismantler location before transferring to other vessel or barges, and as an area for preparation to conduct towing and oil spill operation.

9.5 Role and Function

The ERV primary role is to risk mitigate incidents at sea from terrorist attack. The ERV will be able to conduct emergencies response management and coordinating. The platform is also designed with the function capabilities to coordinate and conduct Search and Rescue, saving lives and vessel, to execute towing, oil spill cleaning and salvage operations.
The secondary role is supporting maritime law enforcement. The role is further divided during peace and war time. During peace time, the ERV role is to assist and support Law Enforcement agencies to uphold the Malaysia’s maritime laws operation, including rendering assistance during an anti smuggling operation and HADR. In times of war, the ERV role will be as on scene coordination to clear important waterways from damaged or sink vessels vital to the war efforts, especially the safe passage of military vessels in and out of ports and along the straits. Summary of the role and function:

<table>
<thead>
<tr>
<th>PRIMARY</th>
<th>SECONDARY</th>
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<tbody>
<tr>
<td>Role:</td>
<td>Role:</td>
</tr>
<tr>
<td>· On scene coordinating emergency response center</td>
<td>· Supporting Maritime Agencies</td>
</tr>
<tr>
<td>Function:</td>
<td>Function:</td>
</tr>
<tr>
<td>· Towing</td>
<td>· Maritime Law Enforcement activities</td>
</tr>
<tr>
<td>· Firefighting</td>
<td>· Humanitarian Assistance and Disaster Relief (HADR) Operation</td>
</tr>
<tr>
<td>· Salvage</td>
<td>· Clearance of critical channels</td>
</tr>
<tr>
<td>· Oil Spill</td>
<td></td>
</tr>
<tr>
<td>· Search and Rescue</td>
<td></td>
</tr>
</tbody>
</table>

The role and function of the ERV in the Straits of Malacca is vital to the safety and security of Malaysia’s interest. The role and function would have a major impact towards the countries efforts in ensuring the interest of the nation, other regional and international maritime stakeholders as a deterrent and risk mitigation efforts in making the Straits of Malacca safe and secured.

9.6 Operation Organizational Structure

The need to have ERV is without a doubt an important investment that the Malaysian government should be considering. The need for such asset is vital for the continuous efforts of maintaining the Straits of Malacca as a vital shipping lane. The need for the appropriate organization is important as to ensure the continuity efforts and maintenance of the ERV itself.
There are several options that can be considered for the development of ERV for Malaysia. The options are either a fully Government-funded (Gf), semi government-funded or Public Private Partnership (PPP) and fully privatization by the local and international shipping industry. The cause and need for these options is to give flexibility in addressing the best financial requirement. Taking the experiences of the United Kingdom (UK) and Australia. The UK for example operated 4 Gf ETV since 1994, and was placed under the Maritime and Coastguard Agency (MCA). However, due to the high cost of operating the 4 ETVs, the UK government reduced the Gf ETV from 4 to one in 2010. In 2011, the British government re-evaluated the requirement for ETV and came to a conclusion that it was the responsibility of the shipping industry and insurance company in providing the services.\(^\text{18}\) Nevertheless, the UK government decided that it was still the responsibility of the state to fund such requirement in ensuring that the service provided can and could at least contribute to the protection of the environment.\(^\text{19}\)

Another example that should be considered and evaluated is the Australian ETV. The Australian ETV is placed under the responsibility of the Australian Maritime Safety Authority (AMSA) which operates one ETV based in Cairns. The ETV covers the area of Torres Straits and the North of Queensland. The concept of operation is divided into 3 levels, the first level comprises of the ETV operated by AMSA, while the second and third level, depending on the seriousness and location of the incidents is the usage of ETV assets availability in the maritime industry. The funds for the Australian ETV is funded through the


\(^{19}\) Letter by the Minister of State, Robert Goodwill MP on issues of Government-funded Emergency Towing Vessel, 13 July 2016.
collection for Protection of the Sea Levy (PSL) which supposing is for pollution prevention, response, and mitigation measures.\textsuperscript{20}

Taking the UK and Australian ETV concept as an example, clearly the issue of who should bear the cost of building, maintaining and to operate will hamper the development of ERV. The options that are recommended for Malaysia are as follows:

a. **Option 1:**

Fully Gf ETV. It is proposed that for the first ERV for Malaysia should be fully funded and operated by the government. The organization that is most suitable is the Marine Department (MD) under the Ministry of Transport (MOT) Malaysia. This is similar to the UK ETV organization concept. This is because safety of navigation in Malaysia’s waters and especially the Straits of Malacca is the responsibility of the MD.

The ERV will be placed under the Safety of Navigation Section (SNS) of the MD. This section will be responsible in ensuring that the ERV is properly administered and has the full operational control in carrying out its primary role. The SNS is also responsible in ensuring that the ERV is maintained at the highest level of operational requirement.

However, in line with the role and task, the secondary role, the ERV will also be under the supervision of the National Maritime Centre (NMC), National Security Council (NSC). This is especially when it involved in law enforcement related activities and supported by other maritime agencies from the Malaysian Maritime

Enforcement Agency (MMEA), Police Marine, the Department of Environment (DOE), Fisheries Department, Malaysian Custom and Immigration that would have enforcement officers onboard as enforcer and advisor to the Captain of the ERV on matters pertaining to Malaysia’s Law Enforcement Acts.

Figure 17: Propose Structure Organization

b. **Option 2:**

Semi Gf or PPP. A good example of a PPP is the Petronas sponsored Off Shore Patrol Vessel (OPV), KD MUSYTARI and KD MARIKH in 1984 (now KM Langkawi and KM Bangi after being handed over to the MMEA in 2008). Both ships were based on offshore tug boats that was modified with naval designed. The OPV had the responsibility of conducting patrols in the Malaysia’s Exclusive Economic Zone (EEZ), especially around the Petronas oil rig platform off the coast of Terengganu. Although after handing over the newly build ships to the RMN, Petronas stop funding on the ships. Another example of PPP is during the problem of piracy in the Gulf of Eden, where the Malaysian International Shipping Corporation (MISC), fully funded a naval operation in ensuring the safety of navigation of MISC ships in the affected area.
The concept of PPP can be tailored according to the ERV requirements. It is expected that a cost of building, maintaining and operating of ERV is costly. Through the PPP concept, local and international shipping can be invited to support in either of this condition:

(1) Building - Government
Operate - Shipping Industry

(2) Building - Private companies
Operate - Government

In either ways, taking the example by UK government. It was reported that an average of £32 million pounds (RM160 million @ £1 = RM5) constituted the operating costs for 4 ETV for 5 years.\textsuperscript{21} An average of RM8 million is required for the operating cost for a year, for fuel, crew and maintenance. The construction cost of the ERV is estimated at about RM180m to RM250m depending on the machinery, equipment, and systems required.

The organization structure as proposed in Figure 17 can still be adopted for this option.

c. Option 3:

The third option will be fully privatization concept. This concept will require the shipping industry to wholly procure the ERV platform and bear the cost of its operation. The usage of the ERV will be based on contract where interested parties would either pre-

\textsuperscript{21} Above n18, the budget was based on 2010 where the equivalent value in 2016 would have increased from RM8 million to RM10 to RM12 million a year.
paid the services or pay on usage whenever there is a requirements.

The contract concept is similar to several examples that can be found in Malaysia. For example is the Submarine Escape and Recue - Intervention (SMER-I) that the RMN has contracted for the safety in operating its submarine. The 12-year contract is estimated at RM696 million.\textsuperscript{22} The services that the SMER-I provides is limited to providing Emergency Life Support Stores (ELSS) assistance, SAR, HADR as well as other naval exercise support.

\textbf{Figure 18:} MV Mega Bakti, SMER-I platform Malaysia’s Submarine rescue
Source: Defense-Studies Blogspot Website.

Another example that the RMN has signed is the recent hydrographic survey contract for MV Aishah Aims 4, which is a 3-year contract valued at roughly RM34 million. The contract provides for a platform for naval hydrographic survey operations provided by Aims Global Holding Sdn. Bhd. Through this contract it is reported that the RMN will be able to save costs in contrast with operating

\textsuperscript{22} Through discussion with RMN Submarine Force Personnel on the 2009 RMN SMER-I Contract, awarded to Target Resources Sdn Bhd.
the current hydrographic assets which is estimated at about RM16 million a year.\textsuperscript{23}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{image1.png}
\caption{MV Aishah Aims 4, Source: Sinar Online Website.}
\end{figure}

As for the service providing concept, similar services are already in existence in Malaysia but with less capability. A new ERV services in the country will further enhance Malaysia’s capability in providing maritime emergency response services to the local and international shipping industries as well as for the other maritime agencies.

\section*{10.0 Recommendation}

Taking into considerations the real threats and risks posed by terrorism in Malaysian waters, it is important that the Malaysian government evaluate seriously the need to have an ERV capability to address any eventuality especially in the Straits of Malacca and even for the east coast of Peninsular

Malaysia and Sabah and Sarawak. The ERV should also be able to offer emergency response services to other Asian countries, if there is a request.

Although three options are proposed for the government to evaluate in the establishment of the ERV, Options 2 and 3 are the most suitable. In complying with the proposed role and function of the ERV, Option 2 allows the government to have full control of the ERV, while Option 3 will be limited to the agreement of the service provider in allowing for the secondary role.

The establishment of such vessel would be the first of its kind in the world where a single platform, any types of emergency incidents at sea can be addressed, either addressing incidents caused by terrorist attack or normal navigation safety related, making the Straits of Malacca a safest and secured international water way.
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