

**PAJ OIL SPILL SYMPOSIUM '98
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**PREVENTION AND COMBAT OF OIL POLLUTION IN SINGAPORE
AND
THE "EVOIKOS" OIL SPILL INCIDENT ON 15 OCTOBER 1998**

By

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PREVENTION AND COMBAT OF OIL POLLUTION IN SINGAPORE

INTRODUCTION

1 Singapore is situated at the crossroads of major shipping lanes linking east and west. Hundreds of ships pass its doorstep every day. As the world's busiest port, we had more than 130,000 shipping arrivals totalling 808 million gross tons using our port last year. As the world's top bunkering port, we sold 16.94 million tonnes of bunkers last year. As one of the major oil refining centres, we had more than 14,000 tankers that accounted for about 35% of the total tonnage calling at our port every year. We therefore have greater exposure to oil pollution than many others.

2 The protection of Singapore's marine environment has always been high up on our list of functions and responsibilities. Since its formation in Feb 96, the Maritime and Port Authority of Singapore (MPA) continues to work closely with local and foreign governmental and private organizations and the shipping community to protect Singapore's marine environment from pollution of any form. In doing that, we adopt a comprehensive approach that begins with -

- (a) prevention that encompasses implementing internationally adopted regulations and strictly enforcing them; and
- (b) maintaining the highest standard of preparedness at all times which includes putting in place and in constant readiness emergency plans that comprise effective structures/organizations for quick and effective response, regular exercises and reviews.

PREVENTION

Enhance navigational safety

3 "Prevention is better than cure" and the best measure is prevention through enhancing navigational safety. For this reason, we have introduced many measures to enhance navigational safety for ships using the Malacca and Singapore Straits and our port. We work actively with the littoral states and the shipping community to ensure safe navigation in the Straits of Malacca and Singapore and in our port waters. These include:

- (a) The Tripartite Technical Experts Group (TTEG), represented by officials from the three littoral states, was established more than 2 decades ago to maintain and enhance maritime safety in the two Straits;
- (b) From 1 Dec this year, the Traffic Separation Scheme in the Straits of Malacca and Singapore will be extended from One Fathom Bank to Horsburgh;
- (c) At the same time, the "STRAITREP", a mandatory ship reporting system put together with Indonesia and Malaysia, will be implemented for ships using the TSS in both Straits;
- (d) In April this year, we launched the Singapore Electronic Navigational Chart to benefit ships using our port and the Singapore Strait. We are also studying other measures to improve navigational safety, such as the use of transponders; and
- (e) Since 1990, we employ state-of-the-art technology such as a radar-based Vessel Traffic Information System (VTIS) and in 1997, a Differential Global Positioning System (DGPS) station to help ships navigate safely.

4 On 1 Apr 98, we gave effect to the Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended in Jul 95 (STCW95) for Singapore as the Merchant Shipping (Training, Certification and Manning) Regulations. On 19 Jul 96, our National Maritime Academy was awarded the ISO 9002-1994 certificate for Maritime Education and Training. All these reinforced our commitments to higher standards of seafaring, better maritime education and training that could all go to enhancing navigational safety.

Legislation

5 Whilst improved navigational safety helps to reduce pollution of the sea by ships, legislation ensures that ships are designed, equipped, operated and managed to prevent pollution of the sea. This also adds to protect our marine environment. MPA enforces the provisions of the following Act and Regulations:

(a) **Prevention of Pollution of the Sea Act 1990**

Under the Act, any party causing the oil pollution in Singapore waters or any Singapore ship causing oil pollution elsewhere can be prosecuted. The penalty is a fine not exceeding \$500,000 or to imprisonment not exceeding 2 years or to both. The guilty party is also liable for the cost of any reasonable measures taken to reduce, remove and prevent oil pollution. Payments of cost incurred if not paid after a reasonable period of notice may cause the vessel to be detained and sold

(b) **Prevention of Pollution of the Sea (Oil) Regulations**

These regulations give effect to Annex 1 of Marpol 73178 which regulates the prevention of pollution of the sea by oil. Penalty for contravention of any of these regulations is a fine of up to S\$10,000 or up to 2 years imprisonment or to both.

(c) **Prevention of Pollution of the Sea (Reporting of Pollution Incidents) Regulations**

These Regulations give effect to Article 8 and protocol of MARPOL 73/78 which requires a report to be submitted without delay to the affected coastal states of any incidents involving oil or other harmful substances.

(d) **Prevention of Pollution of the Sea (Reception Facilities) Regulations**

These Regulations require preventive measures to be taken by shipyards and terminals. They are to provide facilities for reception of oily residues so as not to cause undue delay to ships. A reasonable fee can be charged and they can specify reasonable conditions for using facilities. Facilities have been built for receiving, treating and disposing oily spills, sludge, oily waste, dirty ballast and tank washing. This is managed by Singapore Cleanseas Pte Ltd, a subsidiary company of the PSA in partnership with local shipyards.

(e) Prevention of Pollution of the Sea (Detergents and Equipment) Regulations

These Regulations require:

- (i) Oil companies in Singapore (BP, Caltex, Esso, Mobil, Shell and SPO) to assist the MPA in dealing with oil pollution in Singapore; and
- (ii) All steel constructed tugs licensed under the MPA (Harbour Craft) Regulations, 1997, with an engine power of 750 kilowatts or more must have onboard not less than 400 litres of an approved dispersant with means of spraying the dispersant. It must also have a pump capable of delivering 250 litres of water per minute.

(f) Merchant Shipping (Civil Liability and Compensation for Oil Pollution) Act

This Act gives effect to the 1992 Protocol to the International Convention on Civil Liability for Oil Pollution Damage, 1996. This Protocol, commonly known as CLO 92, came into force on 18 Sep 98. Under the Act, the owners of ships will be liable for:

- (i) any damage or contamination caused by discharge or escape of oil into Singapore waters from a ship;
- (ii) the cost of any measures reasonably taken to prevent or reduce any such damages caused by the discharge or escape of oil; and
- (iii) any damage caused by any measures taken.

The Act also empowers MPA to detain a ship which caused an oil pollution in Singapore waters and sell the ship if situation warrants. The master, owner or the person-in-charge of the ship that commits an offence under the Act can be arrested.

Under the Act, ships carrying more than 2,000 tonnes of persistent oil in bulk as cargo are required to have a certificate evidencing a valid contract of insurance or security to cover the civil liability against oil pollution before they are permitted to enter or leave Singapore. The penalty for not complying with the requirements is a fine not exceeding S\$1,000,000.

Surveillance

6 We watch our port for any sign of oil pollution very closely. This surveillance is maintained as follows:

- (a) 24 hours patrol by our Port Inspectors;

- (b) vigilant watch for sign of spill by all harbour pilots and crew members of marine craft;
- (c) 24 hours patrols by the Singapore Police Coast Guard and the Republic of Singapore Navy; and
- (d) with the assistance from passing ships and ships and harbour craft in port.

PREPAREDNESS

Contingency Plan

7 MPA has the Marine Emergency Action Procedure (MEAP) to handle oil spills and other marine incidents. The MEAP contains detailed procedures on reporting, control, co-ordination and rescue in a marine incident. The Oil Spill Contingency Plan is part of the MEAP. It comprises 2 parts i.e. STRATEGY AND OPERATIONAL PLAN, as follows:

(a) **Strategy**

- * High spill risk areas and resources at risk from oil spills are identified and charted
- * Oil sensitive areas are identified and prioritised for protection
- * Types of resources and equipment available for clean up are identified by organisation and location
- * Manpower for deployment and clean up operations
- * Response organisation structure and the parties to the plan
- * Responsibilities of oil spill control, the spiller, oil terminal operators & oil spill response companies
- * Emergency Operations Committee
- * Communication centres, Information Collection and Dissemination centres
- * Standard Operating Procedures (SOP) for Combatting Oil Spill in the Straits of Malacca and Singapore

(b) **Operational Plan**

- * Notification Procedures
- * Oil Spill Notification Form

- * Alerting Procedures
- * Guidance for determining response
- * Activating List
- * Mobilisation procedures in accordance with the Tier Response
- * Deployment of manpower and equipment for oil spill
- * Clean up operation procedures

8 The objective of any oil spill contingency plan is to respond effectively in the shortest possible time. The discharge of oil is to be stopped and the spill contained so as to prevent it from being washed ashore or extending over a large area.

Resources

9 MPA, as the national maritime authority, co-ordinates the spill clean-up operation, monitors and enforces measures to prevent oil pollution in Singapore waters.

10 At MPA's request, the PSA Corporation and oil majors will deploy their resources for controlling and cleaning-up oil spills. Each organisation is equipped with the following:

- (a) Dedicated anti-pollution craft fitted with spray booms;
- (b) Oil skimmers
- (c) Storage, fast tanks;
- (d) Oil booms;
- (e) Portable dispersant sprayers; and
- (f) Sufficient stock of dispersant.

11 There are also 2 oil response centres namely; EARL and SOSRC, that are fully equipped to respond to any oil pollution incident in Singapore and in the region. PAJ equipment stored in Singapore can also be deployed.

Training

12 MPA personnel are trained in-house as well as by external parties as part of the Oil Spill Contingency Plan. The training cover the following areas:

- (a) Oil causes, fates & strategies;
- (b) Use of Chemical Dispersant;
- (c) Surveillance Tracking;
- (d) Contingency Planning;
- (e) Boom Deployments Media Management; and
- (e) Claims and Compensation.

CONCLUSION

13 MPA is committed to an effective and prompt response to assist in any maritime emergencies. It is only through training and continuous exercising of contingency plans that MPA with the concerted efforts of all other parties, can effectively deal with a real life incident.

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"EVOIKOS" OIL SPILL - THE SINGAPORE EXPERIENCE

BACKGROUND

1 On 15 Oct 97, at about 2054 hours, a collision between two oil tankers occurred in the Singapore Strait. This collision resulted in about 28,500 tonnes of heavy marine fuel oil to be spilled in our waters. The 'ORAPIN GLOBAL' was transiting the Singapore Strait from the east towards the west. The 'EVOIKOS' was sailing in a eastward-bound direction for Singapore. The vessels collided off Singapore's port limits at approximately latitude 010 10.5'N and longitude 103° 48.5'E, which is about 5 km south of Pulau Sebarok in Singapore waters. At the time of the collision, visibility was good. Before the collision, MPA's Vessel Traffic Information Service (VTIS) warned the 'ORAPIN GLOBAL' that she was in the wrong lane and of the presence of other approaching vessels. The VTIS also warned the 'EVOIKOS' of the approaching 'ORAPIN GLOBAL'. Both vessels acknowledged receipt of the warnings.

2 As a result of the collision, the 'EVOIKOS' suffered severe damage to 3 of its cargo tanks, while the bow of the 'ORAPIN GLOBAL' was also damaged. There was no injury to any of the crew of the two ships. Neither ship was in danger of sinking. 'EVOIKOS' was anchored inside the port, south of Pulau Bukom, while 'ORAPIN GLOBAL' was anchored just off Johor after the collision.

IMMEDIATE ACTION TO MANAGE THE INCIDENT

3 Navigational warnings were broadcast to warn shipping of the collision immediately after the collision. Both ships were moved clear of the traffic lanes. Subsequently, the 'EVOIKOS' anchored north of the traffic lane, away from shipping traffic. The 'ORAPIN GLOBAL' was able to proceed on its own power with guidance from the Vessel Traffic Information Service (VTIS) and cleared the Southern Islands to a safe anchorage in the west. Shipping traffic in the Singapore Strait was not disrupted and the Strait remained open. PSA Corporation and the oil/petrochemical complexes were able to continue their operations without interruption. Apart from some of the Southern Islands which are largely uninhabited, such as Pulau Sudong, our coast and beaches along East Coast and Sentosa were unscathed. In accordance with our Marine Emergency Action Procedure (MEAP), all the parties in the MEAP were immediately activated and took swift action to combat an impending massive oil spill.

MANAGEMENT OF OIL SPILL

4 This incident caused the worst oil spill in our history. The previous serious incident occurred in 1975, when the super tanker "Showa Maru" ran aground south of Pulau Sebarok and spilled 3,000 tonnes of light crude oil.

5 The massive "EVOIKOS" oil spillage was well contained within the Southern Islands.

The sensitive areas including the sea water intakes to Sentosa Underwater World Aquarium were promptly protected and international shipping was unaffected in the busy Singapore Strait. This was due to the swift response by the MPA in activating and co-ordinating the MPA's oil spill response plan.

6 A total of 16 ministries/agencies, oil terminals, salvage companies, oil spill response companies and 1 foreign agency were led by MPA in the clean-up operation. Some 80 craft and 650 personnel were involved in the operations and at the height of the operations, 57 craft were deployed.

SUCCESS FACTORS

7 We believe in PREVENTION, PREPAREDNESS and RESPONSE in order to tackle any crisis. Having a contingency plan in place as well as regular annual exercises contributed positively to the success of the operation. The plan enabled quick response and prompt actions to be taken to minimise economic losses and minimised the ecological effects of this marine disaster. The key factors that contributed to the successful cleaning up operation were as follows:

Marine Emergency Action Procedure (MEAP)

8 All key officers were familiar with the MEAP and adhered closely to the procedures as laid down for the cleaning up operation. Procedures for the Control and Co-ordination, Seaward Operations, Shallow Water Operations and Air Reconnaissance in the MEAP have been very practical and most useful.

Command and Control

9 Led by the MPA top management, the seaward and landward clean-up operation was well controlled and co-ordinated e.g. involvement of MINDEF, ENV and SCDF. The chain of command and line of communication between the Emergency Operations Committee (EOC) and On-Scene Commanders were short and effective. The delegation of various tasks to officers and teamwork ensured the successful execution of various strategies as planned to combat spill and manage the crisis.

Quick Initial Response

10 The MPA Emergency Operations Committee (EOC) under the Director-General of the MPA was promptly activated to manage the crisis. Situation "RED" was declared and all parties were activated. All essential agencies, personnel and resources were mobilised i.e. Police Coast Guard, Republic of Singapore Navy, PSA Corporation and private salvage companies. As an added contingency, we alerted the U.S., Australia and Japan for information regarding oil combat resources, if required. The EOC was maintained round-the-clock. The initial management of marine traffic to clear casualties and navigational broadcast ensured that the shipping lanes were safe and had no adverse impact on port operations. The port operated normally without any stoppage.

Multi-prong Action Plan

11 Implementation of a multi-prong action plan to localise and clean up the oil was very effective. This included utilising MPA's Oil Spill Model with hourly updated wind direction as well as, aerial and ground recce inputs to track the movement of oil. Based on such predictions, anti-pollution craft and personnel were then deployed effectively round-the-clock to expedite clean up operations. The strategy to combine and adopt different methods of combating oil pollution at correct phases reflected MPA's ability to respond effectively. The different strategies used were as follows:

- (a) Use of dispersant to break up the oil;
- (b) Laying of oil booms around casualty vessel and sensitive areas such as recreational beaches and water in-takes;
- (c) Use of skimmers to recover the oil which could not be dispersed by dispersant; and
- (d) Beach cleaning to remove oil on the shorelines of the Southern Islands.

Communication

12 The close communication through regular meetings with external agencies, to coordinate the operation and to keep them updated of the cleaning up progress, was another success factor. During the 1st phase of the operations (i.e. thick oil during the 1st ~days), 3 meetings were convened daily to discuss the status of operations, review the work carried out and to formulate strategies and plan to enhance effective clean-up. Subsequently, meetings were reduced to twice a day after the situation improved. This ensured successful execution of the operational plan.

13 We also kept our Indonesian and Malaysian counterparts regularly informed about the situation.

Media Management

14 The promptness in our response to local and foreign media queries and the regular updates issued to the media minimised media speculation. The smooth and transparent information flow to the media, the factual status reports and reassurance to the public that the situation was under control, demonstrated MPA's effective media management.

LESSONS LEARNT

15 No other oil spill of this magnitude had been brought under control within such a short span of time. To improve any future response, MPA conducted an internal review. Also, we had discussions with external government agencies, Singapore International Chamber of Commerce (SICC), oil majors and other marine facilities. Some of the lessons learnt as a result of this post-mortem are as follows:

Response

16 There was slow response by the shipowners and P&I Club to engage an oil spill response company to clean up the oil spill. It took some 6 hours before the shipowners agreed to engage an oil spill response company. Fortunately, MPA had deployed other resources in the meantime. We understand that some overseas parties were involved in the decision-making process. We cannot accept such delays in future.

17 Arising from this problem, the oil industry was in agreement that quick response was a key factor for a successful operation. In general, feedback from the oil majors indicated that if they have cargo onboard the tanker, they would turn out oil spill response companies to combat and minimise damages caused by the oil spill. But more importantly, shipowners and P&I Clubs must carry out their obligations responsibly. There cannot be any delay in engaging a oil spill response company to combat the pollution.

Techniques and Methods

18 The supporting agencies should have personnel who are trained to deploy appropriate equipment and to spray dispersants effectively. Also booms at certain strategic locations ought to have permanent securing arrangements thereby obviating the need to use work boats. These shortcomings are being redressed.

CONCLUSION

19 The oil spill clean up operations was a success in averting what would otherwise be a major economic and ecological disaster. This worst oil spill in the history of Singapore was cleaned up in a record of 3 weeks. Although, we had done well, we cannot sit back and rest on our laurels. We must continue to improve on our preparedness and response. Many important lessons were learnt. We need to work closely with the industry, the shipowners and shipmasters in their responsibilities to ensure safety of navigation and prevention of oil pollution. With the implementation of the above recommendations, MPA would be in a better position to effectively manage and combat any future oil spill incident to avert a potential catastrophe.
