

# **NATUNA SEA INCIDENT – SINGAPORE’s EXPERIENCE**

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## **INTRODUCTION**

1 Singapore, an island nation and home to the world's busiest port, is situated at the cross-roads of major shipping lanes linking the east and west and is next to the Strait of Singapore that serves as an important route for VLCCs travelling to and from the Far East. The Port of Singapore received more than 145,000 vessel calls totalling some 910 million gross tons last year (2000). In a typical day, the Vessel Traffic Information Service (VTIS) receives calls from about 1,000 vessels, including those transiting the Strait. Singapore is also a global oil-refining centre and the world's top bunkering port. It received more than 15,000 tankers each year and sold some 18.7 million tonnes of bunker last year. As result of which, the port's exposure to oil pollution risk is very much higher than many other ports in the world.

2 Conscious of the port's vulnerability to oil pollution risk, the Maritime and Port Authority of Singapore (MPA) has proactively sought to prevent the occurrence and mitigate the consequences of any oil pollution if it occurs. Promoting a safety-conscious culture that permeates all sectors of the marine industry ranks high in MPA objectives of oil spill prevention and crisis management. We adopt a comprehensive approach that entails strict enforcement of our legislation on oil pollution prevention and those international conventions that Singapore has ratified, implementing and enhancing various navigational safety measures, and maintaining the highest state of readiness to respond at all times. Such an approach have put us in good stead when we came face to face with the tanker EVOIKOS oil spill disaster on the night of 15 October 1997.

3 The EVOIKOS spilled some 28,500 tonnes of heavy marine fuel oil and polluted a large portion of Singapore port waters. It was Singapore's largest oil spill ever. Some 80 craft and 650 personnel were deployed in the cleanup. Within 3 weeks, the port waters were cleaned. Throughout that period, we were able to keep the port completely open and operational. I have presented a paper on the

experiences and lessons learnt from the EVOIKOS incident at the 1998 Petroleum Association of Japan (PAJ) Oil Spill Symposium.

## **GROUNDING OF NATUNA SEA**

4        Nearly 3 years after the EVOIKOS oil spill, Singapore experienced another major oil spill from the grounded tanker NATUNA SEA. Let me give a brief account of the events leading to the spill.

5        It was a clear and calm morning on 3 October 2000 when the grounding took place. The 51,096 gross ton Panamanian tanker NATUNA SEA carrying some 70,000 tonnes of Nile Blend crude, was en-route from Middle East to China and was proceeding eastward in the Strait of Singapore Traffic Separation Scheme (TSS). Just before daybreak, at about 0615 hours, the tanker went aground at the Batu Berhanti Reef at Latitude 01° 11.3'N and Longitude 103° 53.1'E, in Indonesian waters. The location was about 8 km south of Singapore's popular island resort - Sentosa.

6        The grounding ruptured 4 cargo tanks of the tanker and about 7,000 tonnes of oil escaped into the sea. Fortunately, none of the 32 crew was injured and the tanker was stable. The grounding did not obstruct the traffic flow in the Strait. But the oil spread fast because of the strong tidal streams in the Strait.

## **IMMEDIATE RESPONSES**

7        Without delay, navigational warnings were broadcast to warn ships of the grounding and the oil in the Strait. MPA activated its Marine Emergency Action Procedure (MEAP)'s Oil Spill Contingency Plan. The Emergency Operations Committee (EOC) was convened to manage the spill. It was chaired by our Director-General who was assisted by MPA's Director (Port Division) and the speaker/author. As a procedure in the Standard Operating Procedures for Joint Oil Spill Combat in the Straits of Malacca and Singapore, we also informed the Indonesian and Malaysian authorities of the spill.

8        The EOC assessed the situation and determined that it was necessary to disperse the oil slick quickly. We know that Nile Blend crude oil becomes too thick

to be dispersed easily if quick action was not taken. Although the slick had not moved into the Port of Singapore, it was imminent then that the oil slick would strike Singapore shores due to the change in tidal flows. Resources were therefore immediately mobilised to safeguard the port waters from the threats of the slick in the Strait. Booms were laid to protect sensitive areas in the port, such as Sentosa and East Coast beaches, lagoon of the pink dolphins, entrance to the Marina Bay and fish farms. The Underwater Sea World and facilities using sea-water, also took preventive measures.

9 Very shortly after the Singapore Port Operations Control Centre was informed of the grounding and spill, the EOC was already meeting the tanker's Singapore manager – Tanker Pacific Management (Singapore) Private Limited. Decisions were quickly reached to stop the gush and disperse the oil in the Strait. A salvage company was promptly engaged by the tanker manager. Salvage tugs were deployed to salve the tanker and to disperse the oil slick in the Strait. Apart from surface clean up operations and close monitoring, the MPA started plans to conduct an aerial dispersant spraying.

10 In the same afternoon of 3 Oct 2000 at about 1600 hours, some 15,000 litres of dispersants were sprayed from a C-130 aircraft in the Singapore Strait but clear of vessels navigating in the TSS. This boosted the spraying of dispersants which until then was only carried out from surface craft. Another aerial dispersant spraying was planned for the morning of 4 Oct. Unfortunately, this second aerial dispersant spraying could not be conducted because ITOFF advisers had wanted to go on an aerial recce and conduct an oil sampling analysis before endorsing the aerial spraying. In our view, this delay caused a loss of opportunity to make use of dispersant whilst it was still effective.

11 On 4 Oct 2000, at about 2300 hours, some of the treated oil was sighted in Singapore port waters. Thereafter, strong south-westerly winds and tidal changes pushed more treated oil to the shores of the southern islands. A part of the beaches at Sentosa Island and a few other islands in the south were polluted. Subsequently, the East Coast beaches and anchorages in the east were also polluted. During the next few days, more treated oil and 'tar-balls' (hardened lumps of the untreated spilled oil) drifted into the port.

12 While cleaning up progressed in the port and in the Strait, the salvage company, in consultation with MPA, started planning on refloating the tanker. The

tanker's remaining cargo was transferred to other tankers and measures taken to prevent any further pollution. It was re-floated on 12 Oct 2000 and towed to a safe anchorage off Pulau Sambu in Indonesia. Six (6) tugs were engaged in the towing, nine (9) other vessels on standby and as many as 100 technicians, were involved in the re-floating and towing operation which was carefully co-ordinated by the EOC and our Port Operations Control Centre. Traffic in the Singapore Strait was not impeded and no further spillage had resulted in the process of re-floating and towing away the tanker to safety.

13 The Strait and the port waters were cleaned and operations stood down at 1700 hours on 19 Oct 2000. Beach and shore cleaning, however, continued until 22 Nov 2000.

## **EQUIPMENT AND LOGISTICS**

14 The clean up operation for the NATUNA SEA was laborious as the spilled oil thickened and became lumpy with dispersants having little or no effect on them after 2 days. The strategy of the clean up operations had to be changed to recovery through scooping and grabbing by cranes. Oil booms were used to corral the oil and, subsequently, they were removed by grab cranes. The clean up action was round-the-clock in order to contain the damage and prevent further spreading of the oil.

15 At the height of the operation, additional oil booms totalling some 1300 metres had been laid to protect oil spill sensitive areas. Many more booms and equipment were used in rounding up and scooping up of 'tar balls'. A total of some 72,000 litres of dispersants were used. Some 920 tonnes of oily waste were collected and disposed at reception facilities in the port. Seventeen (17) organisations including ministries, agencies, oil terminals, salvage and response companies were involved in the clean up operations. Some 60 craft and 400 personnel were deployed. PAJ's equipment was also deployed by its contractors. For that, we wish to thank PAJ for their continual support. Once again, like the EVOIKOS incident, PAJ had offered their assistance without hesitation. Despite the rapid thickening of the oil, we managed to localise the oil pollution and clean up the oil spill in our waters in 2 weeks. There was no disruption to port and terminal operations and ships navigating in the Strait of Singapore.

## SUCCESS FACTORS

16 Having a contingency plan in place as well as an annual oil spill exercise (known as the Joint Oil Spill Exercise - JOSE) contributed positively to the success of the operation. The plan had enabled us to respond quickly. Actions were taken promptly and effectively. We were able to minimise marine environmental damage and economic losses. Some of the key factors that contributed to the successful cleaning up operation are as follows:

(a) Marine Emergency Action Procedures (MEAP)

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

(b) Command and Control

With the good support and sound decisions from MPA top management, the seaward and landward clean-up operations were well controlled and co-ordinated. Responses of the tanker manager and other response organisations were well co-ordinated and the results were commendable. The chain of command and line of communication between EOC and On-Scene Commanders were effective. The delegation of various tasks to officers and teamwork ensured the successful execution of various strategies as planned to combat the oil spill and manage the crisis.

(c) Quick Initial Response and 24-hour Operations

The MPA EOC was promptly convened to manage the incident. The EOC was maintained round-the-clock. The initial management of marine traffic in the Strait and navigational broadcast ensured that the

shipping lanes were safe and vessel movements in the Singapore Strait and port were not hampered by the clean up vessels.

(d) Multi-prong Action Plan

Implementation of a multi-prong action plan to localise and clean up the oil was very effective. This included utilising MPA's OilMap (Computerised Oil Spill Model) with hourly updated wind direction, aerial and ground recce inputs to track the movement of oil. Aerial recce was conducted twice a day. MPA's network of closed-circuit television (CCTV) provided pictures of the exact locations of oil slicks. Based on such predictions, surveillance reports and CCTV images, anti-pollution craft and personnel were deployed effectively round-the-clock to expedite clean up operations. The ability to combine and adopt appropriate clean up strategies in the various phases reflected MPA's ability to respond effectively. The response strategies were adopted in sequence as follows:

- (1) isolating the spill source - by transferring the remaining oil in the breached tanks of the tanker to other tanks while carrying out lightening and laying of oil booms around the tanker;
- (2) protecting sensitive areas - by booming areas such as recreational beaches and water in-takes;
- (3) dispersing the oil - by dispersants during the period when the spilled oil can still be dispersed;
- (4) conducting the aerial dispersant spraying to complement spraying from surface craft;
- (5) containing and recovering (when dispersants were no longer effective on the spilled oil) as follows:
  - (i) by flotsam retrieving craft to recover the oil when dispersants were no longer effective on the spilled oil;

- (ii) by retrofitting low-freeboard bumboats to trawl 'lumpy oil and tar-balls' and deployed with workers on board to manually scoop up the weathered oil which had turned lumpy and waxy;
- (iii) by trawl nets and snare booms to entrap the oil patches and the soiled nets/booms were placed on the craft for disposal at oily waste reception facilities; and
- (iv) by using oil booms to corral and contain the oil slick for subsequent removal and disposal.

(e) Communication

Response craft, fitted with communication equipment, have direct access to the EOC and other response agencies and information exchange was good. The EOC met external agencies to co-ordinate the operation and to keep them updated of the cleanup progress. Meetings were also held to update the tanker managers, P&I Club and ITOPF representatives on the cleanup progress and to discuss future action plans. This ensured the successful execution of overall response plan. The EOC also kept our Indonesian and Malaysian counterparts informed of the situation. Good communication was therefore another success factor.

(f) Media Management

The promptness in our response to local and foreign media queries and the regular updates issued to them have 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. Mutual consultation between MPA and Tanker Pacific was well co-ordinated.

## **LESSONS LEARNT**

17 The EVOIKOS incident had generated some lessons to be learnt such as the need for quick response by the shipowners and their decision to appoint the oil spill response company and salvage company as soon as possible. For example, shipowners' response has improved after our meetings with the shipping community and oil industry as a result of the EVOIKOS. The NATUNA SEA incident tested our responses and measured our progress in oil spill management. The NATUNA SEA's managers responded very promptly and probably it was because they are located in Singapore. With the managers' prompt and active involvement, we were able to decide and implement the response strategy and actions at a very early stage.

18 Some other noteworthy findings and feedback from the NATUNA SEA incident are as follows:

(a) Expert Advice

In the EVOIKOS incident, ITOPF experts advised that it was futile to continue spraying dispersants after the initial few days and that it was best to let the oil hit the beaches. Contrary to their advice, we managed to achieve good results from dispersants applied even beyond the recommended and very conservative deadlines given by ITOPF. For the NATUNA SEA incident, the need for a second run of aerial dispersant spraying on 4 Oct 2000 was delayed and finally aborted. This was because the ITOPF representative who had just arrived on 4 Oct from London had demanded an aerial recce on the afternoon of 4 Oct as well as a laboratory test of the effectiveness of dispersants on the spilled oil before deciding whether to have a second aerial spraying. We were fully conscious of the fact that by the time samples could be collected and brought back for testing, it would already be dark thereby making it impossible to conduct the aerial spraying which had to be done at very low level. So the spraying was aborted.

(b) Weathered Oil

As we did not disperse the oil slick in the Strait sufficiently for the above reason, we were faced with a substantial amount of waxy and

hardened oil wastes and lumps ie 'tar balls'. This prolonged our cleanup operations as the oil lumps were difficult to be recovered from the water. A large specialised oil recovery vessel had its suction pumps choked with 'tar balls and wastes glued to the oil'. It was demobilised as it became ineffective. Garbage retrieval craft were found to be most effective to recover lumpy oil and wastes.

(c) Oil Booms - Fixed Securing Points

The fixed oil booms protecting the swimming lagoons and other sensitive facilities should have pre-prepared fixed points for additional oil booms to be connected. In this way, the craft and tugs holding these booms could be re-deployed for other useful clean up work.

(d) Craft and Equipment for Waxy and Lumpy Oil

MPA's garbage retrieving craft were found to be very effective to remove such waxy and lumpy oil. More such craft would be modified for this purpose. Apart from using the conveyor belt system on our garbage craft to remove the waxy and lumpy oil and waste, there would be a need to have scoops for manual removal. Such scoops were needed to be fabricated during the NATUNA SEA clean up operations. These scooping equipment should be made ready and stored for quick deployment. There was also a need to pre-identify low-freeboard craft for such manual clean up operations.

(e) Spill Response Companies

NATUNA SEA ship managers were quick in engaging the services of an oil spill response company. They even employed the services of oil spill clean up consultants to support MPA's overall command and control for the operations. However, we cannot confidently say that all tanker owners and managers are of similar dedication and act responsibly. It may be timely that all tankers should subscribe to a spill response company when navigating in the Strait and Port of Singapore.

## **CONCLUSION**

19 Our pollution risk management approach has worked well for us in the EVOIKOS and NATUNA SEA incidents. MPA maintains the philosophy of Prevention, Preparedness and Response for any crisis management. Stringent flag and port State inspections, reliable aids to navigation, state-of-the-art VTIS, ratification, enforcement and compliance of international conventions, national legislation, exercises and good co-operation with neighbouring States have helped us to minimise oil pollution in our waters and the Strait. We are also prepared to combat a large oil spill, if it occurs. However, ultimately, it must be the shipmaster who must play a more important role to safeguard our marine environment from oil pollution by ships. Human error has been a key culprit for such disasters.

20 Pollution has no respect for national boundaries. Greater co-operation amongst all affected by the spill is one essential step forward in effective management of oil pollution risk. Quick effective use of the right strategy and methods of clean up operations must be executed immediately especially in the waters of the Singapore Strait as the oil slick will move quickly to the shores of Indonesia, Malaysia and Singapore. We do not have the luxury of time on our side.

21 Two weeks were spent on cleaning up the oil pollution caused by the NATUNA SEA. It was costly. Another painful wait is when the parties would be compensated for their contribution to the successful operations. Thankfully, for this incident, the NATUNA SEA owners and the P&I Club have assured us of quick compensation.

22 We must co-operate and make all efforts to prevent any incident and oil pollution. Prevention is definitely less costly than having an accident. And, in many cases, it will cost money to save money.

Thank you.

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