

**SPILLCON 2004 – PARTNERSHIP IN PRACTICE**

**EXPERIENCES AND LESSONS LEARNED FROM MAJOR OIL SPILL  
INCIDENTS IN THAILAND**

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## **Introduction**

Like other countries in this region, millions tons of oil is imported to Thailand yearly through sea transport. One of the major routes of marine oil transport from the middle-east is passing through Malacca strait, one of the most congested sea lanes, cutting through the South China Sea to the northern hemisphere, to serve oil demand in the upper region countries, especially Japan and China. Due to its geographical shape and location, Thailand is fortunate enough that the oil movement by tankers leaves certain proximity from Thailand's beautiful coastlines. Nevertheless, the beautiful long beaches and marine resources are still potentially at risk from oil spill.

Statistically, bunker oil takes a largest proportion of all oil being reported illegal dumping or accidental spill. Spill of crude oil or light oil usually occurs during transfer operation at ports in a relatively small amount, compared to other causes.

It is not until recent that Thailand has successfully built our own capacity in coping with oil spill problem in the nation. This paper will discuss the structure of oil spill response and management in Thailand, and what we learned after having a chance to practice our tools and skills in actual accidents.

## **Milestone of Oil Spill Response and Management in Thailand**

Popularity of waterway transport never gets decreased as its great advantage of high loading capacity at low cost cannot be easily overridden by any other mean of transport commercially available nowadays. With this reason, Marine Department was founded to serve as a primary government agency responsible for waterway transport in Thailand. Our mission is not only to ensure that nationwide waterway transport is efficient and safe, but also to ensure that marine and coastal resources are not detrimentally affected by marine transport activities. Hence, oil spill response and management lines with responsibility of the Marine Department of Thailand.

Established in 1913, Navigation in Thai Waters Act is considered as "a mother law" for all waterway transport laws and regulations. In the act, similar to solid wastes, dumping of oil to public waters is illegal and prohibited. Due to a broad nature of laws in the act, management of oil spill problem could not be effectively achieved.

In 1982, the ministerial regulation on the prevention and combating of oil pollution was established to formulate a committee on the prevention and combating of oil pollution. The committee was committed to development of national contingency plan for oil spill and building country capacity.

In 1995, Thailand was able to have the national oil spill response plan and necessary oil spill response gears in place. The accomplishment was greatly contributed by substantial support from the Royal Government of Denmark which cordially granted Thailand both technical and financial assistance.

The national oil spill response plan clearly defines roles and responsibilities of all parties involved and includes line of coordination and cooperation among parties. Four Agencies, comprising Marine Department, the Royal Navy, local administration

and Oil Industry Environmental Safety Group (IESG) are involved as an operation unit and twenty two agencies, such as Pollution Control Department and Fisheries Department, are involved as a support unit. With Marine Department in a permanent role of coordinator, a location of an oil spill incident determines which agency shall be in charge of commander. If a spill occurs in a river, an estuary, and a port area, Marine Department will take charge of commander. Otherwise, the Royal Navy shall be in charge of commander. Realizing that any body which benefits from oil transport shall take responsibility in oil spill response, the national plan requires involvement of a group of oil industry companies in Thailand to actively participate in clean-up operation. This allows optimal utilization of available resources from both government and private sector in the country.

Apart from legislation and contingency plan arrangement, lots of efforts were also given to build capacity in terms of equipments and human resources. Presently, Marine Department has two sea-going anti-pollution vessels "Jaladharanuraksh" and "Densuthi". Both are equipped with oil spill response gears such as booms, weir skimmers, pump skimmers, seamops, and spray arms for dispersant. Stockpiles of gears are also available in two provinces. One of which is in Samuthprakarn, where the anti-pollution vessels normally dock, one and a half hour drive from Bangkok, and the other is in Phuket province, a tourism hot spot in the south of Thailand. Further, two vessels, owned by a group of oil industry, are also dedicated for oil spill response in the river, especially for tier one.

With respect to human resource preparedness, trainings for oil spill response are provided every year to personnel in both government and private sector by the Marine Department. The training is arranged in accordance with IMO standard. Additionally, maintenance of equipment and exercise of oil spill response are also conducted yearly to ensure good preparedness when cleanup operation is called promptly.

Followings will present experiences Marine Department gained from two major oil spills incidents in 2002.

### **"Eastern Fortitude" Incident**

On January 15, 2002 around 19.30 hrs, the Panama - registered " Eastern Fortitude ", an unloaded chemical tanker, hit a rock at Sa Mae San Sub District, Amphoe Sattahip, Chon Buri province, located in the east of Thailand. The accident caused damages to the vessel's bow and forward bottom. There were no dead or injuries but 234 tons of low speed diesel oil was spilled into the sea and dispersed over the water surface by surging tides, waves and wind.

The Royal Navy took charge of commander in this oil spill response because the accident site was off a port area. The Marine Department as a coordinating center for the prevention and combating of oil pollution promptly took action as soon as it had received the report of the accident. Request for cooperation from various agencies i.e. the Navy, Pollution Control Department and Oil Industry Environment Safety Group (IESG) to clean up the spill, in accordance with the oil spill national contingency plan, was made instantly. The summary of actions taken is as follows.

### *Off-shore Clean-up*

The Navy's aircrafts and the Marine Department's patrol boats had tracked the movement of the oil slick in order to make a response plan. Boats from Marine Department, the Royal Thai Navy and a support unit from IESG had been deployed for the clean-up.

The main anti-pollution boat in this operation was Den Suddhi. At the initial stage, the response team used dispersant to break up the slick into small droplets that could be sunk and dissipated. This technique was used in the insensitive area where the water was deeper than 15 meters. The spill that later formed mounds was contained by booms and collected from the sea, filling 160 buckets of 200 liters capacity. Altogether about 32 tons (13.6 %) of the spills were taken from the sea. The Marine Department hired a private company to dispose the recovered oil.

### *Shoreline Clean-up*

After 4-5 days, the floating oil absorbed water and formed water - in - oil emulsions like mousse. Some became lumps of solidified oil and were washed ashore. The oil that escaped the containment and later became tar balls was found scattered on 3 locations of shoreline that were local beaches of tourism importance. The contamination of beach covered the distance of 0.1, 4 and 7 kilometers, respectively. The Marine Department in cooperation with local administration and the Royal Navy collected the tar balls in a black plastic bag and sent to a contracted company for proper disposal. Shoreline cleanup was completed on 28 January 2004.

### *Claims for compensation*

The Marine Department considered a lawsuit and claims for compensation of the clean-up cost and damage cost from P&I Britannia Steamship Insurance Association limited, the insurer of ship owner. 25 million baht of clean-up cost was paid to government and private firms who carried out the clean-up operation. The Letter of undertaking also deposited to the Marine Department for guarantee of the further environmental damage at the cost of 75 million baht. The claims were settled on 20 March 2002. 4 million baht from the monetary guarantee was later spent on the release of aquatic life to promote natural reproduction in Rayong province.

### **“Sky Ace” Incident**

Only 6 days after Marine Department officially acquired the second anti-pollution vessel “Jaladharanuraksh”, another oil spill incident took place.

On December 17, 2002 around 04.45 hrs, a Panamanian registered tanker “Sky Ace” collided with a Singapore registered container vessel “Kota Wijaya” off the coast of Sriracha district, Chon Buri province, close to the entrance of Laem Chabang Port, one of the major ports of Thailand. Damage of Sky Ace on the right side from a navigational bridge to the rear of the boat resulted in spill of bunker oil, fuel oil of the vessel, into the sea. Fortunately, the containment of product, including crude oil and MTBE (oil additives), was still intact. Only spill of around 20 tons of bunker oil was reported initially.

As the incident took place in a port area, this time the Marine Department was in charge of both coordination and commander center. Upon the receipt of the incident report, coordination with IESG, local administrations and Royal Thai Navy was made promptly for clean-up co-operation.

### *Offshore Clean-up*

The first response was to control spread of further leakage from the source by deploying booms around the damaged tanker. A thick layer of oil slicks was recovered by skimmer while slicks that escaped the containment were treated with dispersant.

After movement of fragmented oil slicks was tracked by aircrafts and later confirmed by the patrol boats of the Marine Department, two anti-pollution vessels “Den Suddhi” and “Jaladharanuraksh”, together with support boats from Marine Department and Oil Industry Environment Safety Group (IESG), conducted clean-up operation. Following the same strategy, booms were deployed for containment of oil slicks before being recovered mechanically. Dispersant was also applied in the site where the movement of oil slick was getting close to beaches in order to reduce socio-economic loss from oiled beaches. After 2-day operation, due to a small size of spill, most of oil slicks could be recovered. However, in the afternoon of December 19, another unexpected oil spill site was discovered by aerial surveillance, causing the extension of the off shore clean-up. Investigation later on revealed that, in addition to 20 tons of spilled oil reported in the first opportunity, stabilization of “Sky Ace” prior to a receipt of Marine Department approval had caused additional bunker oil spill of approximately 110 tons into the sea on December 19.

After 6 days of offshore clean-up, recovery of weathered oil slicks using skimmers was unlikely because they had trapped lots of sea junks, like plastic bags and bamboo sticks used for near-shore farms, and carried along with them. Therefore, a clean-up strategy shifted from mechanical recovery to manual recovery. Some weathered oil slicks formed a 10 meter diameter solidified lump, with 40 cm thickness and approximate weight of 100 tons, which made manually picking-up by men impossible. Therefore, the lump was relocated in containment of boom to a haven for further action. Finally, Marine Department could manage to rent a barge and a small backhoe to remove this lump from the water on December 28.

In the afternoon of December 23, the offshore clean-up was terminated after vessel patrol showed that satisfactory clean-up had achieved, leaving only scattered oil films that could be naturally degraded at sea. However, one anti-pollution vessel still stood by at sea until December 31 for surveillance of any unexpected spill. A total of approximately 232 tons of recovered oil and oily debris was delivered in a container to Laem Chabang Port for transport to a proper disposal site.

Transfer of products from the damaged tanker “Sky Ace” was carried out on December 27, after permission from the Marine Department was granted. Transfer process was carefully performed, by strictly following related laws and regulations to ensure safety during transfer of hazardous substances.

### *Shoreline Clean-up*

Oil slicks in a small ball shape were found at Chomchan Beach at Chon Buri province, covering about 2.5 km of shoreline. Shoreline cleanup by cadet of the Navy was completed in one day.

### *Claims for compensation*

35 million baht claim for compensation of cleanup cost and damage cost was made against P&I Britannia Steamship Insurance Association Ltd by Marine Department. A claim made for all costs in association with clean-up response that was incurred to government agencies, which included Marine Department, the Royal Thai Navy, Pollution Control Department, and all disposal cost of recovered oil and oily debris were admissible, accounting for about 50 % of the total claim. The pending costs and environment restoration cost was still bound to the liability of the insurer under the letter of undertaking in the amount of 40 million baht. The pending costs comprised all clean-up cost from IESG, anti-pollution vessel cleaning cost, mussel farm damage claim and cost of barge and backhoe rent. Further negotiation for pending cost took almost 6 months to settle down.

### **Challenges and lessons**

Clear identification of roles and responsibilities of operation units and support units in the national oil spill response plan resulted in good coordination and cooperation among parties involved, which greatly contributed to success of oil spill response in both accidents. However, there is always a room for improvement. The best way to find areas to be improved is learning from failures and lessons in the past oil spill incidents.

### *Verification of oil movement*

Verification of oil slick location is of paramount importance for response plan making. In the first incident, substantial confidence and hope was initially given to the oil spill trajectory model. Respecting that reliability of the predicted trajectory heavily depends on precision of data input, a transient nature of wind and current resulted in a predicted result that did not reflect an actual location, causing a waste of resource mobilization and delay of clean up operation. It is, therefore, necessary that oil slick movement shall be verified by aerial surveillance prior to mobilizing resource to the response site. In view of this, Marine department contracted a company for helicopter rent to monitor oil spill along the main rivers and the eastern part of Thailand, where major ports are located, on a regular basis. More importantly, this will ensure that aerial surveillance would be readily available when the oil spill incident occurred.

### *Equipment and manpower*

Because of limited resources, our offshore strategy cannot solely depend on mechanical recovery using booms and skimmers. If a spill response site is not close to sensitive areas, which have been determined by Pollution Control Department, and at least 10 meters deep, dispersant can be applied without approval from Pollution Control Department. Nevertheless, testing was done to find a proper treatment ratio and see if dispersant treatment was justified prior to application.

After 5-6 days of operation, offshore cleanup team had encountered difficulties recovering and handling weathered oil slicks in solidified lumps. Additional burden also arose when weathered oil slicks had swept sea junks along with them, resulting in lots of oily contaminated solid wastes. Solidified lumps of weathered oil slicks and oily contaminated solid wastes needed to be recovered manually. More boats, manpower, containers or even a heavy machine, such as backhoe, were required to handle this problem. Hence, it is important that coordination with a local administration be well maintained for a timely support in terms of manpower and equipment.

A personal protective gear should also be taken into consideration as it influences operation performance. Working at sea in an oil-smell environment for long time caused manpower exhaustion and tension, especially for crew on the anti-pollution vessel who stayed on board day and night. Therefore, other than enhancement of oil spill equipment capacity, protective equipment should be sufficiently arranged to prevent health deterioration of a response team.

### *Public Relations*

Cleanup information dissemination is another element that should not be ignored. Oil spill incident always makes a headline in newspaper. And in such an urgent and busy time of operation, many media and reporters kept calling a coordinating center for news updates, causing interruption to operation and blocking line of communication with other agencies responsible for oil spill response. Moreover, information may be distorted during a passing-on process. For example, in "Sky Ace" case, a local newspaper posted a big picture of Marine Department's spill response team and claimed that they were hired by a private company to take action in the spill response. To alleviate this problem, situation updates shall be communicated with media by the director of the command center or the coordinating center in a duly manner to ensure conformity of information and an official press shall be released as frequently as possible.

### *Compensation claims*

In terms of compensation claim for cleanup cost, respecting that Thailand has not yet been a member state to CLC or FUND convention, we have encountered challenges during the process. Lack of a concrete guideline or a procedure for claim recovery of clean-up cost caused us sometime to reach agreement on manpower rate and equipment depreciation rate with P&I Club. However, experience gained from the first claim recovery greatly expedited the recovery process of the second incident, as various issues had been agreed in the first claims.

Generally, clean-up cost incurred to the government side was found reasonable while other claims were likely to subject to negotiation and verification. In the second incident, many claims were received from the mussel farm owners in the affected area. P&I club sent a survey team to verify the damage before accepting a claim. There were some claims submitted from mussel farms even three months after the initiation of claim recovery process. Marine department, as agency acting for claimants, found it difficult to justify if the damage was a direct consequence of the spill incident, and then requested the damage-suffering claimants to make a claim against the insurer directly. Thus, it is advised that a temporary setup of a claim center should be provided in an affected area and communication with potential damage suffers should be promoted and maintained after the incident occurs to prevent delayed notification of claims from local affected people.

In addition to defining a justified manpower cost especially for risky tasks, and equipment depreciation cost, a procedure for claim recovery should also clearly identify a party responsible for natural resource damage assessment (NRDA), task and its implementation mechanism. At present Pollution Control Department is carrying out the project of NRDA to enhance claim recover process for ecological and fishery damage, in collaboration with "Partnerships on Environmental Management in Seas of East Asia, PEMSEA" programme.

Thailand attempt to protect marine resources is not confined to a national level only. Besides having a bilateral agreement with Philippines for oil spill response cooperation, Thailand has currently joined a "Gulf of Thailand" project, which is also a part of PEMSEA programme. The Gulf of Thailand project focuses on prevention and combating sea-based pollution source by building oil spill response partnerships among Thailand, Cambodia and Vietnam. The expected outcome is to build a regional framework for regional oil spill response and to strengthen partnerships and cooperation in oil spill combating, including exchange of technical assistance and information, in the Gulf of Thailand.

With realization of the importance of oil spill response capacity of the country in response to economic growth and national policy of promoting Thailand as another energy hub in this region, Thailand is planning to establish three more oil spill response centers, one in the east and two in the south. Further, a vessel traffic control system with integration of search and rescue system that will be established at Laem Chabang Port will be advantageous to marine pollution combating operation.

## Conclusion

A good national oil spill response plan is a critical tool to the success of oil spill response. Satisfactory results obtained from oil spill incidents indicated that we are moving to a right direction. Lessons learned from the two major incidents induced further action of the government to fill the gap or sort out problems, particularly with respect to improvement of response practice, strengthening equipment capacity and refining claim recovery procedure. Additionally, Thailand's effort to enhance preparedness is not limited to national level but also expands to regional level. Every effort, including employing new technology in a vessel traffic management system, has been given to ensure that Thailand is well prepared for any potential oil spill size and can proudly join the world community in conserving marine environment as well as maintain our reputation as a country with enriched marine resources.

## References:

1. An official report on "Eastern Fortitude" case, Marine Department, January 2002.
2. An official report on "Sky Ace" case, Marine Department, December 2002.
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