



**SINGAPORE OIL SPILL
RESPONSE CENTRE**
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ISO CERT. NO. 907724

“Natuna Sea” Incident and the Response to the Spill

Case History

Early in the morning of Tuesday 3rd October 2000 the 81,000 tonne tanker “Natuna Sea” was sailing eastbound through the Singapore Straits, preparing to make a stop in Singapore for taking on fuel oil bunkers. She had loaded her cargo of around 70,000 tonnes of Nile Blend crude oil at Al Bashayer Marine Terminal in Sudan and her ultimate destination was a port in China, where the full cargo was to be discharged.

The ship is one of a large fleet of Tankers operated by a Singapore based Ship Management Company and had been in service for some 20 years under various different Companies and names. Despite her age, she was in good condition, having been well looked after by her present owners and her mainly Indian officers and crew.

The cargo she was carrying, Nile Blend crude oil, is unusual in several respects. It was one of the first exports of oil from a new oil field in Sudan and is a particularly heavy and waxy crude, with a pour point of around 33⁰ Celcius. This would mean that if it spilled into the sea it would most likely nearly solidify,



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because in most places around the world the sea temperature is cooler than the pour point of the oil. This oil is also unusual in that it also has a high sediment content and needs to be carried in Tankers at quite a high temperature in order to prevent the sediments from settling out.

As the Natuna Sea was approaching the narrowest point of the Singapore Strait she was having to make alterations of her course in order to pass clear of other vessels and these alterations had taken her to the south side of the eastbound traffic lane. Unfortunately, in this area there are often very strong currents of up to 5 knots and these currents left very little time for the vessel to be manoeuvred clear of the rocks of Batu Berhanti. This is an area of very shallow water on the Indonesian side of the channel, opposite Singapore's Sentosa Island, which is notorious for catching out unwary navigators and has become the graveyard of numerous vessels. On the 3rd October 2000 during her fateful passage through the Straits, the Natuna Sea also became caught by the currents and ran hard aground on to the rocks, causing serious damage to the Ship's cargo tanks and resulting in an immediate and major oil spill. On the bottom of the Ship's hull, many of the centre



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and starboard side cargo tanks had been torn open and an estimate was later made that some 7000 tonnes of oil had spilled out into the sea.

Immediately the response swung into action in an effort to deal with the oil as effectively as possible, as well as minimise the possibility of any further leakage from the ship. Extensive chemical dispersant spraying operations were carried out, including the use of an airborne dispersant delivery system, and oil booms were deployed around the ship to try and contain the oil that was still leaking out of the damaged cargo tanks. Chemical dispersant spraying was also carried out from numerous vessels, including four belonging to Semco Salvage & Marine, the parent company of Singapore Oil Spill Response Centre (SOSRC), although it was quickly found that the dispersant was only really effective where the oil was still fresh. Oil recovery operations were also mounted, again close by to the ship where they could be most effective, although by the end of the first day of the incident there were several large patches of oil moving up and down the Singapore Strait with each change of tide, threatening both the Indonesian and Singapore shorelines with major pollution.



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It was quickly becoming obvious this was a major oil spill incident and substantial resources were urgently needed, so the ship's owner contacted Petroleum Association of Japan, with a request to utilise PAJ's stockpile of equipment stored and maintained in Singapore by SOSRC. The lending Agreement was quickly signed and the stockpile was rapidly sent to location, adding substantially to the large quantity of equipment already deployed by SOSRC and various other organisations.

The spilled oil was by now rapidly forming large patches of semi solidified oil, many of them concentrated in the waters to the south east of Singapore. Although there were many oil patches, it proved relatively easy to contain them in booms by manoeuvring the boom deployment vessels in the same direction as the current and slowly overtaking the slicks. However, keeping the slicks contained and in one position was far more difficult due to the strong currents, and on several occasions oil was successfully boomed, only to be lost again when the tide changed and the current became strong. It is difficult to be certain, because one patch of oil looks very much the same as another, but it is very likely that some oil slicks lost to the current after being contained in booms were caught again when they returned at



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the next change of tide! Eventually it was found that the only option was to capture a patch of oil in a boom and then allow the whole formation of boom, vessels and patch of oil to drift with the tide, only manoeuvring when necessary to avoid the shipping lanes or shallow water areas.

Of course, having perfected the technique of containing and keeping the oil, it then became a matter of urgency to recover and temporarily store it, before it would be lost again. As always, this brought with it a whole range of problems, not least of which was how to recover the by now very viscous oil, and how to temporarily store it nearby to the operational area. Eventually the oil patches were successfully brought up to crane and storage barges for recovery operations to get under way, although this also proved to be very difficult with many types of skimmer being tried before an effective solution was found. In addition to being very thick, the oil had also collected large amounts of debris during its time in the water, including tree branches, seaweed, coconut husks, garbage, oil drums and even an old refrigerator on one occasion! Many skimmers rely on oil flowing into them as they operate, but these slicks would not flow at all, having formed an almost solid mass. The only solution was to use mechanical grab type skimmers



and, although slow, the oil was slowly but surely recovered over several days for each slick contained in booms.

The problem of storage was eventually solved by using sand barges, with their side panels sealed to prevent leakage, and the oil being recovered and dumped directly on to the barge's deck, together with all the other garbage. Once safely stored on these barges, a small army of Indonesian labourers set to work to transfer all of what had been recovered into leak-proof plastic bags, for eventual disposal ashore into approved landfill sites. In all, it is estimated that around 500 to 700 tonnes was eventually recovered, or approximately 7% to 10% of what was spilled. The rest mostly stranded on the shorelines of the nearby Indonesian islands and Singapore's Sentosa island.

Although these shores were impacted by quite a large quantity of oil, it proved to be relatively easy to remove, due to the viscosity of the oil being so high that it stayed on the top of the sand, rather than penetrating into it. Again, PAJ played its part and made a substantial contribution to the clean up effort, with the delegates of the annual PAJ training course that had been scheduled for the same time getting to work with shovels and waste bags. As always on such a course, there



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were to have been a series of practical exercises included in the schedule, so instead of postponing the course it was decided to hold it anyway. Of course, if there is the opportunity to participate in the real thing it is much more beneficial than having to imagine exercise scenarios, so full advantage of the situation was taken with the delegates carrying out real boom and skimmer deployments at the spill clean up location. In the true spirit of International co-operation, the delegates from Japan worked alongside the local Malays and Singaporeans and between them managed to completely clean up one of the worst contaminated beaches, all in one afternoon!

The gratitude of the people of Singapore is once again extended to Petroleum Association of Japan for its assistance in minimising the damage from what could have easily been a major environmental disaster.

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