

Semco's Response to the "Evoikos" Incident
and PAJ Equipment Usage

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On the evening of October 15th 1997 one of the worst oil spills in the history of Singapore occurred when the loaded tanker "Evoikos" suffered a collision with the ballasted VLCC "Orapin Global".

The collision resulted in an almost immediate spillage of more than 28000 tonnes of fuel oil only about 2 miles from Singapore's southern shore, very close to the holiday island of Sentosa and to the heavily industrialised southern islands.

Of course Singapore is an extremely busy port with hundreds of ship movements every day and many more passing vessels transiting the Strait. Given the numbers of vessels it is perhaps not surprising that accidents can and often do occur, despite the efforts taken and measures in place to maintain a high level of safety. As a result, Singapore has become well used to efficiently handling maritime incidents, not only in swiftly taking control of the situation but in being well prepared in having the skills and resources to deal with the sort of situation that arose on October 15th 1997.

This paper will look at the response to the "Evoikos" spill from the point of view of Semco Salvage and Marine Pte. Ltd., the largest marine salvage organisation east of Suez, and its subsidiary Singapore Oil Spill Response Centre. Both Semco and SOSRO are in themselves subsidiaries of Sembawang Marine and Logistics Ltd.

Very shortly after the collision occurred, Semco's permanently manned operations room was advised of what had happened, and response vessels were immediately dispatched to the scene. The first to arrive was Semco's large salvage tug SALVIGOLTR, which had been in the near vicinity and was fully equipped with salvage and oil spill

equipment. After having agreed the terms under which the response would take place, booms were laid around the stem of the "Evoikos" and in way of the enormous hole in her port side, in an effort to contain any oil remaining in her damaged tanks and prevent any further leakage. As soon as this boom was deployed, SALVJGOUIR then moved away from the casualty to deploy her remaining booms in an effort to protect sensitive shorelines in the near vicinity.

Meanwhile, SOSRC had also been mobilised and by now it was obvious that every available response resource was going to be needed to deal with the spillage. Oil was spreading rapidly westwards and was already polluting the shores of Singapore's southern islands. The decision was taken by the Port Authority that the initial strategy should be to use dispersants on the oil that was still in open water and to make every effort to protect the nearby sensitive shorelines. For its part, SOSRC was mobilising its entire stockpile of equipment, by loading it on to the L 88, one of Semco's heavy lift crane barges, and positioning her at Raffles Reserved Anchorage. This anchorage is more or less at the centre of the operational response area, and putting the L88 and her response equipment at this location would considerably reduce the time taken to deploy equipment. By this time Agreement had also been reached to mobilise the PM stockpile that is stored and maintained in Singapore by SOSRC. The four booms, four skimmers, vacuum and temporary storage equipment from this stockpile were also loaded along with the rest of SOSRC's equipment and mobilised to the operational area.

Throughout this time, dispersant spraying operations had been continuously taking place, with many of the spraying vessels in use belonging to Semco and other SML subsidiary companies.

SML'S capabilities were very much to the fore with its substantial marine logistics being heavily utilised to provide and support an ever growing demand for resources. This included arranging for the speedy delivery to Singapore of the entire PM stockpile from Port Klang,

Malaysia and even arranging for the air transportation of the similar stockpile from Jakarta, Indonesia ; no mean feat considering each of the PM stockpiles consists of nine standard containers. Finding suitably large aircraft at short notice was never going to be easy but with just this eventuality in mind SOSRC and its freight forwarding sister company Sembawang Kimtrans had long since had in place pre-prepared plans to overcome this problem. In the event, however, the Jakarta PM stockpile was not

actually brought in to Singapore but kept in reserve. SOSRC is in fact well familiar with all three of these PM stockpiles as it has been maintaining them on a regular monthly basis since long before the "Evoikos" spill occurred.

By the end of the second full day of the response operation, SOSRC had booms deployed at numerous locations on the Singapore mainland and the southern islands. These locations included two deflector booms at Sentosa, a boom at Marina Bay to prevent possible contamination of the Bay area and the Singapore River in the heart of the island, three separate booms at Kusu island just off the southern tip of Sentosa to protect that very sensitive and beautiful island and another at East Coast Lagoon to protect the well known recreational areas at that location. This last boom was the first of the PM booms to be deployed and the only one to be in a fixed location.

Although initially the dispersants worked well, by the third day of the response it was becoming apparent that the dispersants were becoming less effective on the spilled oil, which by now was becoming much more viscous as it weathered. In response to these changing circumstances SOSRC then prepared for an extensive containment and recovery operation in and around the southern islands and West Jurong Anchorage area by setting up no less than five separate booming and skimming systems on day three of the response operation. Each of these systems consisted of a 'mother' vessel as a working platform, three of which were fiat top barges, a fourth being the SALVIGOUR and the fifth being the large tug SEA MASTIFF, also an SML vessel belonging to the tugs and ferries division. Each system was equipped with at least one 250 metre boom, two skimmers and temporary storage tanks as well as the barges being fitted with other equipment such as temporary cranes and forklift trucks to facilitate equipment handling. Most of the oil spill equipment used on this part of the response operation belonged to PAJ, as by now almost all of the rest of SOSRC's own equipment was already deployed elsewhere. Each system also had several other vessels in attendance, with the barges being controlled by a tug with at least one more tug for controlling booms. By this time over thirty SML vessels were involved with more chartered in to assist with the various operations.

From early on day four, all of these booming and skimming systems were ready for operation and were deployed to various locations as directed by the Maritime and Port Authority. Early on each morning, when daylight and the persistent haze from other

parts of S. E. Asia permitted, a survey of the whole area would be carried out by the MIPA to ascertain where the heaviest concentrations of spilled oil were located. As soon as possible, this information was then passed on to SOSRC and the vessels were moved to their new locations as required. For the first few days of this phase of the clean up operation, the heaviest patches of oil seemed to be in the area between Singapore's southern islands and the Jurong islands off Singapore's south western coast. The booms were deployed in a "F" formation, with one end attached to the stern of the barge and the other being held in position by another tug. Another formation was initially tried, with two booms being held in a 'funnel' formation ahead of a 'J' formation boom, but although this was effective it soon proved difficult to maintain in the limited sea room available. Another problem was that of the strong currents in the area, making it very difficult to hold oil once it had been collected in the boom. However, with careful vessel and boom handling, containing the oil could be achieved, making it possible to set about the task of recovering the oil. The skimmers available for recovery were the weir skimmers from the PM stockpile, plus disc skimmers and vacuum units. Other than one of the vacuum units that is fitted with a very large diameter suction hose, all the skimmers experienced some difficulty in recovering the oil, notably in being able to pump out the oil that the skimmers were collecting. This was due to the oil now having weathered considerably and consequently becoming very viscous as well as having a certain amount of debris entrained in it as well. Nevertheless, some oil was recovered which was then temporarily stored prior to ultimate disposal at a local facility.

For the next few days each of these booming and skimming systems were kept continuously busy, working at different locations almost every day as directed by the MPA and in an effort to deal with the thickest concentrations of oil. Up until then the main effort was concentrated around an area between the Jurong and Southern Islands, but it was becoming apparent that the worst patches of oil were moving more towards the West, with reports of oil in the West Jurong Anchorage area. This anchorage is very crowded but nevertheless operations were soon relocated, including by now a volunteer team from the Japanese International Co-operation Agency, who were working their own boom and skimmer system from yet another tug and barge combination supplied by SMIL.

Also located in this anchorage was SMIL's heavy deck cargo vessel SEAHORSE 1, with a clear working deck of 127 metres by 38 metres, a total of 4826 M² ideal as an equipment storage vessel for the ongoing clean up operations. It seemed sensible to

relocate to this vessel as a centre of operations, so on the 22nd October L 88 was moved from her original location to alongside the SEAHORSE 1 at West Jurong Anchorage, where the combination of the L88's crane and SEAHORSE 1 's substantial deck space proved ideal for the task in hand.

Eventually by the 24th November, it was becoming apparent that there were few significant patches of oil remaining, as by now most of the oil had either been recovered, had naturally dispersed or had been carried away by the still strong current. In addition, the overall operation was about to take a significant change of direction with the battered EVOJIKOS, still anchored in her original position very close to the main Strait, preparing to commence offloading her remaining cargo into another vessel. It must be remembered that although more than 28000 tonnes had been spilt, around 1 00,000 tonnes still remained on board the heavily damaged ship. She was also being held in this position by only one of her anchors very close to the busiest shipping lane in the world, so the threat of a further accident and even more extensive pollution was very real. Her owners had arranged for another of their vessels, the 94000 tonne tanker FRIXOS, to go alongside the EVOI(OS and take on board most of the remaining cargo. By the 24th October, the time had come to put in place the resources needed to ensure the ship-to-ship transfer operation could be carried out as safely as possible, so once again Semco Salvage was called upon for assistance. Large fenders were positioned to ensure the two ships could safely moor alongside one another and suitable flexible hoses were provided for the actual transfer. Not least of the requirements was for the provision of two more booms in addition to those still in place since the day after the collision, so again the PM booms were deployed, this time from yet another barge moored alongside the EVOIKOS, just ahead of the hole in her port side. A total of 800 metres of PM boom in two separate formations was used for this purpose, one of 350 metres and the other of 450 metres, both being positioned around the stern of the tanker. Considerable difficulty was experienced in deploying these booms, mainly due to the very strong currents and the problem of drawing the end of the boom up and securely mooring it to the side of a tanker as large as the EVOIKOS, but eventually they were successfully positioned while the smaller tanker FRIXOS was being readied to come alongside. Of course, during the actual berthing operation these booms had to be moved again, until eventually they not only encircled the stem of the EVOIKOS but the FRIXOS as well. Eventually all was secure ready for the transfer operation to commence, and the response team could at last settle down to a period of maintaining all the booms in place.

Of course, every time the tide changed the whole operation, including both tankers and the booms, would swing through 180 ° , causing many problems with the booms fouling the damaged metal on each occasion despite the effort to prevent this from happening. During the transfer one of Semco's other salvage tugs, the SALVENUS, was moored to the bows of the EVOLKOS in an effort to take the strain off the one anchor holding both tankers in position.

The changes of tide and the strong currents also caused the SALVENUS many problems, not least with trying to turn around whilst maintaining her pull on the bows of the EVOIKOS during the changes of tide. The SALVIGOUR was also still involved as she had been throughout the response, this time acting as guard ship and trying to ensure that passing vessels did not come too close to the delicate transfer operation. Despite her strenuous efforts, some passing vessels still strayed very close, with an LPG tanker at one time so near that a marker buoy laid by the MIPA very close to the two tankers was run down and had to be replaced. Other Semco vessels were also involved, with the two smaller tugs SALVICTOR 6 and SALVICTOR 7 being equipped with dispersant spraying equipment to deal with the small quantities of oil still occasionally leaking out. Another operation with the booms around the two tankers also had to be carried out, because when the FRIXOS was fully loaded, there was still some cargo remaining on board the EVOIKOS and another ship, the small tanker JINLI, had to be brought alongside to take off the remainder. This meant that the booms had to be repositioned yet again but this was successfully achieved without too much problem.

It must also be remembered that the booms at the ship were by no means the only ones deployed at this time, for although the at sea booming and skimming operations had by then ceased, all the booms that were deployed to protect sensitive areas were still in place, and each needed constant attention to ensure their security. To recap, there were still three booms at Kusu Island, two at Sentosa, one at Marina Bay and another at East Coast Lagoon to attend to, and some of these were bringing problems of their own. One of those at Sentosa had been damaged by a bunker vessel and had to be replaced, this time by one of the MPA's own booms which was drawn from the OSPAR stockpile of equipment. Again, Semco and SOSRC were called upon to assist, by supplying a tug and barge to deploy from and a deployment team. Unfortunately, some days later this boom suffered a similar fate, this time by being run down by a passing fast ferry despite navigational warnings.

Eventually in early November, the remaining cargo from the EVOIKOS had all been offloaded and the task of demobilising everything could commence. All the booms were recovered from the various different locations and brought back to Semco's base for cleaning and repair. The task of cleaning the skimmers that had been demobilised earlier was not too difficult despite them being very heavily oiled, and this was completed within a week or two. On completion they were returned to their original bases, those from the Port Klang PM stockpile being delivered by Sembawang Kimtrans in late November. The task of cleaning the booms proved far more difficult however, with the large quantity of oil that was adhering to them having become virtually solidified. Each had to be treated with liberal doses of degreaser and even then the oil had to be scraped off using wooden and plastic scrapers, and altogether it was not until early February 1998 that they were all eventually cleaned. Finally they were all inspected by in mid February by PM, the original manufacturers of the booms and a surveyor from the insurers prior to report being prepared and decisions made as to how the boom repairs should take place.

In conclusion, it can be appreciated that this was a very major response operation to try and effectively deal with the worst incident of its kind ever to happen in Singapore. Of course there were many problems to overcome and many difficulties experienced, but overall all the parties involved worked very well together with the ultimate result of not one drop of oil from the EVOIKOS impacting the shorelines of mainland Singapore. A debt of gratitude is owed to the Petroleum Association of Japan, without whose equipment many of the operations could not have been carried out, and this was expressed on Friday 14th November with the presentation of an award to PM for its invaluable assistance during this response operation.

For its part, Semco Salvage and Marine and its sister company Singapore Oil Spill Response Centre would also like to thank PM, and we look forward to providing the best of service to PM for many years to come.

