OCTOBER 2006

OCEAN ORBIT

THE NEWSLETTER OF THE INTERNATIONAL TANKER OWNERS POLLUTION FEDERATION LIMITED

What appears to be oil is actually freshwater run-off from a narrow creek meeting the turbid brackish water of Lake Maracaibo, Venezuela

Partnership and Trust

The work of ITOPF is centred on spill response, a narrow focus, but one which occupies us full time and spans the world. ITOPF is the creation of the shipping industry, yet its activities are closely linked to those of government agencies assigned the task of dealing with spills from ships. This gives us a unique perspective on a subject which continues to preoccupy the shipping world: what are the roles and responsibilities of government and industry? There are many stakeholders, but it is the principal players who are in a position to shape the way in which pollution incidents are handled. The arrangement of governments taking the lead and putting in place a national spill response capability is logical, and the basic principles of contingency planning and international co-operation are enshrined in various IMO conventions which are now widely adopted. Of particular relevance is the OPRC Convention (International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990), which sets out the respective roles of governments and industry in a spirit of partnership and trust.

However, there are occasions when political interference intrudes on rational decision-making. For example, unrealistic demands for timetables and clean-up standards are sometimes made which cannot be met, or which lead to further damage from inappropriate spill response measures. What is needed is an effective dialogue to ensure that relevant facts and changing circumstances are taken into account before decisions are made.

It clearly makes sense to co-operate when there is a pollution incident, particularly if it is a big one and exceeding the resources of the country affected. The international response to the oil pollution in Lebanon following military hostilities in July and described on page 3 is a good example of what can be achieved. Whilst the cause and source of the pollution were unrelated to shipping, the success of the response relied on mechanisms and procedures developed for dealing with spills from ships.

The OPRC Convention encourages the voluntary reporting of spills as and when they occur and heavy fines are applied by many administrations on ship owners failing to make timely notifications. From time to time incidents occur which are not clear-cut and a ship operator may be in a quandary over whether to report a problem with potential pollution implications for fear of swingeing reprisals out of all proportion to the actual risk involved. The temptation may be to lie low and hope for the best, thereby risking a greater problem developing and less time in which to respond effectively. Wielding the big stick may achieve short-term ends but erodes the trust between parties which is so necessary to make international agreements work smoothly and effectively.

ITOPF

Severe damage sustained in the collision between PEQUOT and MAERSK HOLYHEAD

Recent Incidents

Since the last issue of Ocean Orbit in October 2005, ITOPF has attended on-site at 19 incidents, seven of which involved ships other than tankers. Here we provide a brief overview of two tanker spills, the MAERSK HOLYHEAD (Venezuela) and the GRIGOROUSSA I (Egypt) and take a look at the local and international measures taken in response to the oil spill in Lebanon following hostilities in that region.

Final polishing included removal of oily scums released by wave action, which were recovered manually

MAERSK HOLYHEAD

On 6th November 2005, the Venezuelan LPG tanker MAERSK HOLYHEAD (23,272 DWT, 17,980 GT) was in collision with bulk carrier PEQUOT in the Maracaibo Channel, Venezuela, close to the entrance to Lake Maracaibo. The collision was severe, but fortunately only a starboard fuel tank of MAERSK HOLYHEAD was ruptured and an estimated 100 –300 tonnes of heavy fuel oil were spilled. Most of the spilled oil was initially in the centre of the Channel, but subsequently much came ashore along 15 km of the western shoreline. The oiled shorelines were a mixture of sandy beaches, some of which were recreational, and muddy areas dominated by saltmarsh and mangrove fringes, backed by freshwater lagoons, and interspersed with fishing villages.

Clean-up of the western shoreline suffered slight delays at the start, mainly because licensing restrictions made it difficult to find suitable contractors, and time was needed before mobilisation to put the personnel through medical tests and training. Cleaning commenced at the most frequented sites using primarily manual methods assisted by mechanical equipment where road access was possible. Some of the collected waste was transported away by road, but most was taken by fishing boats to barges located nearby, and then shipped to Maracaibo port for onward transport to a waste treatment site at Bachaquero.

At the peak of the activity, approximately 1,500 personnel and 100 fishing boats were involved in the clean-up and waste disposal. Cleaning of the accessible recreational, residential, fishing villages and Porto Miranda was completed by early December and the focus then shifted to the more remote and inaccessible areas of marsh and mangrove. The presence of massive quantities of debris (plastic, wood, vegetation), which became oiled all along the affected coast, greatly increased the volume of wastes which had to be processed. The final cleaning of the more remote sites was completed in February 2006.

The spill resulted in some localised interruption to fishing in the Maracaibo Channel and many claims have already been settled. Although no impact was observed on sensitive habitats like mangrove and marsh areas during the four months after the spill, concerns over longer term fate of these habitats resulted in the initiation of an environmental monitoring programme.

GRIGOROUSSA I

On 26th February 2006, whilst sailing south through the Suez Canal, the Liberian registered tanker GRIGOROUSSA I (52,997 GT, 96,967 DWT), touched bottom at the southern end of the Great Bitter Lake. Two cargo tanks were damaged, resulting in the release of an estimated 1,200 tonnes of her 33,000 tonne cargo of heavy fuel oil. Under instruction from the Suez Canal Authority (SCA), GRIGOROUSSA I continued south to an anchorage off the Port of Suez.

ITOPF staff arrived on site on 28th February. The next morning we were told that a fire had occurred overnight in the tourist village of Bonita caused by a burning oil slick drifting ashore. A visit to the village confirmed that the most serious damage had occurred to buildings and pleasure boats around the lakeside. The cause of the fire is still a mystery, but fortunately there was no loss of life.

Surveillance flights showed that the spilled oil had contaminated the north-east and south-west corners of the lake. The south-west shoreline is characterised by sandy beaches, stone walls and jetties, with numerous tourist resorts, villas and hotels, as well as an airbase.

A first response was initiated by the SCA, but it became clear after six days that assistance was required from other organisations, in particular the Egyptian Environmental Affairs Authority (EEAA). By this time, much of the oil had stranded along shorelines outside SCA's jurisdiction, so a specialist clean-up contractor (Petroleum Environmental Services; PESCo) was appointed by the EEAA.

Clean-up work initially focused on containment and collection of accumulated floating oil using booms and skimmers. Once the liquid oil was removed, work began on the removal of stranded oil on sandy beaches and high pressure washing of stone structures, in particular jetties and piers linked to tourist villas. The airbase was also affected by oiling, and was another priority area for cleaning.

Spilled oil contaminated stretches of sandy beaches

Oil Pollution in Lebanon

As a result of hostilities in Lebanon, the power station at Jieh south of Beirut sustained damage during Israeli air strikes in July 2006 and an estimated 15,000 tonnes of medium fuel oil were spilled from a tank farm adjacent to the shore. The escaping oil flowed into the sea and several satellite images have been released showing patterns consistent with a large release of oil, drifting north under the influence of prevailing currents. A characteristic pattern of land/sea breezes has caused the oil to strand along much of the Lebanese coast and oil has also reached the south Syrian coast, albeit in comparatively small amounts.

Whilst hostilities continued, little or no active steps were taken to respond to the oil pollution and the opportunities for quantifying and tracking the drifting oil were also limited. The National Oil Spill Contingency Plan for Lebanon exists in draft form and the infrastructure and resources available for dealing with a major oil spill are limited. The lead authority for pollution response in Lebanon, the Ministry of Environment, initiated a first response with the support and assistance of the UN and other international organisations.

It was agreed that a Group of Experts be formed, led by CEDRE and supervised by REMPEC, for the purpose of providing coordinated international advice and assistance to the Lebanese authorities. ITOPF agreed to join the Group following an invitation from REMPEC on 3rd August. Our input has been in the form of practical advice on clean-up strategies and appropriate response measures for different shoreline types, using teaching aids developed in the PRESTIGE incident.

Whilst Lebanon is a party to the Civil Liability Convention (CLC 92) since March 2006, this convention is not applicable to the pollution event in Lebanon since the spill was not from a tanker and falls outside the international liability and compensation mechanisms. The issue of funding was addressed at an international summit held in Athens on 17 August, attended by the Secretary-General of IMO and the Executive Director of UNEP, the EC Environment Commissioner and representatives of the affected or potentially affected states (Lebanon, Syria, Cyprus, Turkey and Greece). Participants agreed to set 50 million euros as an initial target for funding this year, with possibly more funds needed in 2007. The meeting drew up an Action Plan to assist the authorities in the Lebanon with the clean-up and to prevent any damage to neighbouring countries.

▲ *A limpet on oiled rocks*

Effects of Oil Spills on the Marine Environment

Oil spills can have serious effects on marine life, as highlighted by the photos of dead birds which immediately appear in the news after any spill. Such images fuel the perception of widespread and permanent environmental damage after every spill, and an inevitable loss of marine resources. A science-based appraisal of the effects reveals that whilst damage occurs and may be profound at the level of individual organisms, populations are more resilient and natural recovery processes are capable of repairing the damage and returning the system to normal functions. In all cases, the first stage on the road to recovery is a well conducted clean-up operation.

The marine ecosystem is highly complex and natural fluctuations in species composition, abundance and distribution are a basic feature of its normal function. The extent of damage can therefore be difficult to detect against this background variability. Nevertheless, the key to understanding damage and its importance is whether spill effects result in a downturn in breeding success, productivity, diversity and the overall functioning of the system.

Typical effects on marine organisms range across a spectrum from toxicity (especially for light oils and products) to smothering (heavier oils and weathered residues). The presence of toxic components does not always cause mortality, but may induce temporary effects like narcosis and tainting of tissues, which usually subsides over time. Some typical oil impacts are described below.

Plankton Laboratory studies have demonstrated toxic and sub-lethal effects on the plankton caused by oil, and there is little doubt that there is potential for widespread impact. Unfortunately, the plankton is extremely difficult to study reliably because they are amongst the most variable of communities in space and in time. The presence of oil on open water is also patchy and often short-term. Whilst the possibility of long-term effects can not be excluded, there is no indication that oil-induced losses of eggs and larval stages cause a significant decline in adult populations.

Seabirds are amongst the most vulnerable inhabitants of open waters since they are easily harmed by floating oil. Species that dive for their food or which congregate on the sea surface are particularly at risk. Although oil ingested by birds during attempts to clean themselves by preening may be lethal, the most common cause of death is from drowning, starvation and loss of body heat following fouling of plumage by oil.

Bird mortality occurs during most spills and in some major spills breeding colonies have been seriously depleted. Some birds react to colony depletion by laying more eggs or breeding more frequently, and these processes can assist recovery, although recovery may take several years and will also depend on other factors like food supply. Whilst it is common for short and medium term loss to occur in populations, there is scant evidence of spills causing long-term harm to populations, or of a spill tipping a marginal colony into permanent decline.

Shallow coastal waters Spill damage in shallow waters is most often caused by oil becoming mixed into the sea by wave action or by dispersant chemicals used inappropriately. In many circumstances the dilution capacity is sufficient to keep oil concentrations in the water below harmful levels, but in cases where light, toxic products have become dispersed, or in major incidents where heavy wave action has dispersed oil close inshore, large kills of marine organisms, such as shellfish, have occurred. Post-spill studies reveal that recovery has taken place in a relatively short timescale through natural processes, and impacts are rarely detectable beyond a few years. In one instance, the BRAER spill in Shetland, UK, oil became incorporated into sea bed sediments and has caused long-term tainting of some commercial species.

Shorelines, more than any other part of the marine environment, are exposed to the effects of oil as this is where it naturally tends to accumulate. However, many of the animals and plants on the shore are inherently tough since they must be able to tolerate periodic exposure to pounding waves, drying winds, high temperatures, rainfall and other severe stresses. This tolerance also gives many shoreline organisms the ability to withstand and recover from oil spill effects.

Rocky and sandy shores exposed to wave action and the scouring effects of tidal currents tend to be resilient to the effects of a spill as they usually self-clean quite rapidly. Rocky shores exposed to wave action are often quoted as those which recover most rapidly, and there have been many cases in which this was true. However, in some circumstances, subtle changes to rocky shore communities can be triggered by a spill, which can subsequently be detected for ten or more years. Although the functioning, diversity and productivity of the ecosystem is restored, the detailed distribution of particular species present may alter.

Soft sediment shores consisting of fine sands and mud are found in areas which are sheltered from wave action, including estuaries, and tend to be highly biologically productive. They often support large populations of migrating birds, indigenous populations of specialist sediment dwellers and shellfisheries. They also act as nursery areas for some species. If oil penetrates into fine sediments it can persist for many years, increasing the likelihood of longer-term effects. The upper fringe of 'soft' shores is often dominated by saltmarsh which, although generally only temporarily harmed by a single oiling, can take more than 10 years to recover if damaged through repeated contamination or through ill-advised and damaging attempts at clean up.

▲ *Seabirds are particularly vulnerable to oil spills*

In tropical regions, mangrove swamps replace saltmarshes. The trees which provide the structure of this extremely rich and diverse habitat can be killed if oil smothers their breathing roots or if toxic oils penetrate the sediments in which they grow. Where oiling is heavy and high mortality of trees occurs, in some cases including trees which are 50 or more years old, natural recovery to a diverse and productive structure can take decades. An important function of both saltmarsh and mangrove habitats is that they provide organic inputs to coastal waters which in turn enrich the communities living there. It is in these marsh and mangrove areas where damage has been recorded that reinstatement measures have real potential to speed up recovery.

In conclusion, pollution incidents can, and do, cause a wide range of effects in the marine environment. The short-term impact is invariably severe in a major incident, but it is reassuring that natural processes can provide a positive recovery, assisted by an appropriate clean-up and sometimes accelerated by restoration measures.

▼ *Mangrove breathing roots contaminated by oil*

Oil in Tenby Harbour, Pembrokeshire

10 Years after the SEA EMPRESS

To mark the 10th anniversary of the grounding of the SEA EMPRESS, the Countryside Council for Wales published a report* reviewing what is known of the long-term impact of the spill on wildlife and natural habitats.

On 15th February 1996, the oil tanker SEA EMPRESS grounded in the entrance to Milford Haven, Pembrokeshire, UK spilling 72,000 tonnes of Forties Blend crude oil and almost 500 tonnes of heavy fuel oil into the marine environment. The spill resulted in the deaths of over 7,000 seabirds, disruptions to fisheries, contamination of around 200 km of coastline and acute impacts to inter-tidal and some seabed fauna. Some 10 years later, no significant residues of SEA EMPRESS oil remain and the study found very little evidence of long-term impacts. Some exceptions are outlined below:

After detailed inspection of seabird monitoring data some localised long-term effects were observed. For example, one small breeding colony of guillemots was apparently decimated and the site has not been reoccupied since. This might be because first time breeders are not attracted to empty cliff sites and older birds habitually return to the same nests. However the effect of this on the overall population and ecosystem dynamics is unclear.

Splash zone lichens of rocky shores are very slow-growing and long-term impacts to some well developed colonies were identified following the spill. At some sites impacts are still evident ten years later, with the abundance of dominant species and productivity greatly reduced. However reductions in overall species richness were not found.

Overall, the impact of the oil spilled from the SEA EMPRESS was significant locally, but short-lived when put in the context of both natural and man-made changes in the environment.

* Moore J (2006) '*State of the marine environment in SW Wales, 10 years after the Sea Empress oil spill* ', Countryside Council for Wales Marine Monitoring Report No. 21.

Oil Spills in Ports

Whilst large oil spills arising from shipping accidents often make dramatic news, most oil spills are small and originate in or near ports. ITOPF oil spill statistics for tankers reveal that 80% of all tanker spills are less than seven tonnes and that 80% of these arise from operational accidents such as those that might occur during loading, discharging, and bunkering.

The first response in a port is the same as at any other location, namely to contain the spillage using booms and skimmers. The sheltered conditions offered in many ports, which are protected from wind and heavy wave action, can provide an ideal opportunity for effective recovery. It is also usually the case that response equipment is close at hand, which allows rapid deployment and a real chance of getting a spill under control.

More specific to industrial ports is the problem of oil becoming trapped under long wharves. Unless addressed, this can prove to be a continual source of oil contamination, especially when the prop wash and water movement from berthing operations pulls the oil out into open water. Containing and recovering oil under wharves using traditional booming techniques is difficult given the numerous obstructions often present. Depending on the oil type and the wharf structure, it is sometimes feasible to force the oil out using ships propellers or fire hoses, and sometimes access can be gained for vacuum units to deploy hoses and recover the oil.

Ventilation, headroom and accessibility are key health and safety issues for clean-up personnel in the semi-enclosed spaces under wharfs and other port structures. In some cases, the wharfs are built with such short piles that it is difficult and dangerous for clean-up crews to get underneath the structures at all states of the tide. In other cases, the long access routes for working deep under some wharfs make work impractical because of the danger of being trapped

Oil contained by boom around a damaged ship in port

▲ *Cleaning work under a wharf at low tide*

under the wharf by a rising tide. This is especially true for commercially active wharfs where the quickest escape routes may be blocked by berthed vessels.

Once floating oil has been addressed, response operations can then shift towards removing oil stranded on shorelines and facilities. Sometimes it may be possible to remove the bulk layer of oil by manually scraping or wiping with rags. This is often very easy where contaminated surfaces like concrete, steel and wood are smooth and easily accessible and it is sometimes possible to return these areas to their original condition quite quickly. The presence of marine growths such as algal films can make the oil removal process easier. Sometimes stains are left, but aesthetic concerns are often minimal in industrial areas. With the ever-increasing availability of small, efficient hot and cold water pressure cleaners a good standard of cleaning can often be achieved relatively easy.

Porous surfaces such as crumbling or rough cement, rusty steel or hard natural surfaces can be more time-consuming to clean, even with hot water high pressure units, and there is the added complication that aggressive cleaning techniques may cause structural damage. Common sense needs to be applied, perhaps using less aggressive cleaning (eg lower pressure "flushing") and accepting lower standards of cleanliness.

The shapes of port structures can also affect the strategy and operational level of effort. By far the easiest shapes to deal with are long, flat walls which make it easy to fix hard and sorbent booms in the water to collect the oil freed by cleaning. Pilings are much more troublesome to clean because the operator must continually change the angle of attack and because movement is often hampered by the presence of other pilings or obstructions. Especially time consuming are round pilings that are surrounded by water. In this case the workers must continually manoeuvre a small boat around so as to be able to access all sides of the structure. If there are tidal currents or swell in the area, safety concerns arise and oily spray is less controlled, risking re-contamination of cleaned areas. Booming around the immediate work area is also more difficult than with flat walls. Multi-faceted shapes, such as small tetrapods, boulders, rubble, or other various objects can be very time-consuming to clean for the same reasons. Another problem posed by these objects is that they may be oiled underneath making clean-up more difficult and dangerous.

The "floor" or substrate under a wharf can have a major influence on the efficiency of work carried out below. Commonly observed under wharves are flat cement stone or gravel floors, mud banks, sloped boulder shorelines, wooden walkways over water, or just water. In most cases there is a combination of these types along the length of the wharf. All else being equal, solid substrates or ones with a hard, compact base are safer and easier to work on than sloped ones and those made up of boulders. Further, the difference between any fixed floor and water can be significant in determining the required level of effort because boat-based operations are much more time-consuming, risky and labour intensive.

While industrial port areas are among the locations most at risk from oil spills, they are also among the least environmentally sensitive and are often well prepared for clean-up. Response equipment and clean-up personnel can be on site within hours of the incident and operations guided by practical principles are usually laid down in long-term contingency plans. When defining the standard of clean-up required, consideration should be given to minimising the impact on the environment and matching the final level of cleanliness with the use and priority of the location. However, the health and safety of responders as well as the efficiency of the available clean-up techniques dictate what might be achievable in practice. As a rule, higher, more stringent, clean-up end-points are assigned for amenity areas (eg bathing beaches, marinas, fishing harbours) than for industrial areas, except for example, where water intakes or cruise ship terminals are located.

ITOPF Seminars

During the year ITOPF has conducted a series of seminars for P&I Club managers and case handlers in order to raise awareness of our role in spill response and claims handling. Drawing on case studies and examples, the seminars covered topics such as fate and behaviour of oil in the marine environment, environmental damage and claims assessment. In addition to three events in London, the seminar took to the road with visits to Oslo and Piraeus. Future seminars are planned for Hong Kong and other parts of the People's Republic of China.

▲ *The ITOPF team setting off on the charity bike ride 'Tour Pour la Mer' in May 2006*

▲ *The presentation during an ITOPF dinner on 5th October 2006 hosted by ITOPF Chairman Dr Helmut Sohmen in honour of Mr Måns Jacobsson, retiring Director of the International Oil Pollution Compensation Funds*

New Emergency No 07623 984 606

With effect from 1st November 2006, ITOPF's 24 hour emergency number will change to 07623 984 606.

▲ *Chris Pavey, Natasha Lippens, Franck Laruelle, Lisa Woolgar, Helen Chapman and Genine da Cruz Harvey*

Staff Changes

Dr **Brian Dicks** retired from ITOPF in August after almost 19 years' service. A marine biologist by training, Brian joined ITOPF as a Technical Adviser in 1987 and attended 62 spills in over 30 countries. He was appointed a Technical Team Manager in 1998 and decided to take early retirement to devote his full time and energies to his many interests, particularly wildlife conservation and photography.

Richard Johnson, previously a Senior Technical Adviser, has filled the vacant position of Technical Team Manager. Richard has been with ITOPF for over 12 years and brings extensive all-round experience to his new role. A marine biologist with a Masters degree in Radiation and Environmental Protection, his previous employment included investigation of fallout from the Chernobyl accident and assessing radioactive contamination of the marine environment.

Since the last issue of *Ocean Orbit*, there have been a number of other staff changes. **Natasha Lippens** and **Helen Chapman** joined ITOPF as Technical Advisers in February 2006. Natasha has a degree in Zoology and an MSc in Environmental Technology. She has previously worked as an international relations officer and research diver on a coral conservation expedition in the Comoros Islands. Helen has a degree in Environmental Chemistry and a Masters degree in Environmental Management. Before joining ITOPF, she worked in waste and process industry regulation for the Environment Agency in Wales.

In May, **Dr Franck Laruelle** joined ITOPF from the French research organisation CEDRE. He has previously acted as a technical adviser on behalf of the French government on a number of spills, including ERIKA and PRESTIGE.

Colleen O'Hagan, formerly a Technical Support Coordinator, became a Technical Adviser in August. She replaces **Dr Natalia Martini**, who left ITOPF at the end of her maternity leave in April 2006 to take up a post with the International Maritime Organization.

Lisa Woolgar has been appointed to take over Colleen's former role and will be responsible for maintaining and developing ITOPF's Geographic Information System. Lisa has a physics degree and was previously employed as a research scientist at a defence technology company working on their satellite programme and information mapping service.

As from 1st September **Tim Wadsworth** assumed a new position of Technical Support Manager, responsible for all our technical support functions.

On the administration side, we have been joined by **Chris Pavey**. He replaces **Grant Carter** as IT Support Technician, responsible for the day-to-day running of ITOPF's IT systems. We also have a new Membership Secretary in **Genine da Cruz Harvey**. Genine has nine years' experience in business/membership administration roles within the voluntary and private sectors, and is now responsible for all matters relating to Membership, including the issuance of Membership Record Forms.

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