



# BLUE WATERS

## Newsletter

On Marine Environment Security

Biannual

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M.V. MIRACH ON 04.04.2011

FORWARD PORTION BENT/CRACKED/  
DETACHED SLOWLY FROM NO. 3  
HOLD FORWARD



AFT DRAFT ON 04.04.2011  
WAS ABOUT 5.80 METRES

POSITION OF FOREMAST AND  
NO.1 CRANE



M.V. MIRACH 11.04.11, LAST SHOT FOR THE DAY

ENGINE ROOM BLOWERS FORWARD OF ACCOMMODATION  
ARE SUBMERGED FULLY IN WATER



## From the Director General's Desk



I would like to draw attention to bunker-oil spills. International conventions such as 'CLC 92', 'FUND 92' and earlier avatars such as 'TOVALAP' and 'CRISTAL', apply only to tankers. Bunker spills, however, occur not only from tankers, but also from dry cargo ships and other non-tankers, which are much more numerous as compared to tankers. Bunker spills are, therefore, a common source of oil pollution from ships. The statistics of oil spill-incidents that have occurred in Indian waters clearly indicate that bunker-oil spills contribute almost eighty percent of these incidents.

Today, many bulk carriers and container ships carry large quantities of bunker fuel. MV Chitra carried about 2600 tons of Bunker fuel. Fortunately, only about 800 tons of fuel oil egressed from its tanks. Bunker oil pollution can cause considerable damage to marine environment, as it is low-grade, highly viscous and persistent. A relatively small quantity of this highly-persistent fuel, may be dis-proportionably damaging and more expensive to remove vis-à-vis light crude oil. Towards this, the Government of India has made efforts to accede to the 'IMO Bunker Convention - 2001', and to incorporate the salient aspects of the convention into the MS Act, 1958, through an amendment. In order to provide an insight into the legal and operational aspects of the Bunker Convention, this edition of 'Blue Waters' has been exclusively dedicated to Bunker Convention issues.

The energy requirements of a fast growing economy like India are immense, and accordingly large quantities of oil and other raw materials are imported. With advancements in ship building technology, transportation of large amounts of oil-cargo through sea has seen significant improvement with regards to safety and environmental protection measures. This is particularly true in the case of tankers. However, the Indian coastline has regularly been witnessing small oil spill incidents, especially by the bulk carriers and general cargo ships. This may be attributed to several factors, most important amongst them being 'unseaworthy ships'. There is, therefore, an urgent requirement for the MoS to address this issue.

The past six months have witnessed three oil spill incidents in Indian waters. All these incidents were responded to effectively and none of them caused any significant impact on our marine environment, including the shore lines.

I am happy to note that most of the decisions taken at the NOSDCP, and preparedness meetings have been or are in the process of being addressed, and I take this opportunity to compliment all stake holders for the same.

Finally, I would like to re-iterate that there is no end to preparedness, as it is a continuous evaluation of risks and the level of readiness of personnel and equipment. I earnestly request Ports, Oil companies, State Governments and other Departments to extend necessary support to the Coast Guard to put in place an effective system to respond to oil spills in the future.

Jai Hind

(Anil Chopra)  
Vice Admiral  
Director General  
Indian Coast Guard

31 Jul 11  
New Delhi

### Editorial

This edition of "Blue Waters" focuses on the 'IMO Bunker Convention' as the Bunker Oil Spill impinges very seriously on the oil spill response efforts in India. Efforts are made to provide both the operational and legal aspects of bunker oil spills.

In the last edition of 'Blue Waters', a case study on oil spill response undertaken for MV Black Rose was included, so as to provide insight into the operational, technical and legal aspects of oil spill response. Continuing the same trend, this edition of 'Blue Waters' also includes a case study on 'MV Mirach', which sank near Crocodile Rocks, Colachel (Tamil Nadu) on 12 Apr 11, and causing a minor bunker oil pollution around the area.

The conduct of oil spill response conferences, seminars and workshops benefit both the users such as shipowners/offshore platform operators, and regulators. Such conferences are conducted on a regular basis abroad, but very few are conducted in India. To fill this vacuum, 'M/s iTen Media' with support from the oil industry is conducting an International Seminar on Oil Spill, (OSI-2011), at Goa from 29 Sep – 01 Oct 11. It is the endeavour of the organisers to conduct it on regular basis, so as to create a platform for exchange of ideas and formation of strategies. I solicit the presence of all concerned, to attend the conference and benefit from it.



(Donny Michael)  
Commandant  
Director (F&E)

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# ARTICLES

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## LEGAL ISSUES ON BUNKER CONVENTION

*Deputy Inspector General Donny Michael  
Director (FE), CGHQ, New Delhi*

### Introduction

Oil spills from dry cargo ships and other non tankers are much more numerous than tankers and bunker spills are therefore a common source of oil pollution from ships. Many bulk carriers and container ships carry bunker fuel of 10,000 tons or more and



these are larger quantities than many of the world's tankers carry as cargo. Even a small bunker spills can cause considerable damage as these oils are highly viscous and persistent. A new record for the most expensive ever oil spill in terms of dollars per barrel was set by the 43,000 dwt wood chip carrier MV KURE, when it struck the dock at a loading facility and ruptured a fuel tank in Humbolt Bay, California, USA in Nov 1997. In India, the 800 ton fuel oil spillage from MV Chitra off Mumbai in Aug 2010, caused severe economic damage

to the Port and the Coastal areas due to high persistence quality of the fuel oil carried by MV Chitra. The legal framework for oil spill response for bunker oil spills was a cause of concern across the globe as the Civil Liability Convention (CLC) and Fund Convention (Fund) apply only to spills from a "Ship" and this is defined in terms which in general are limited to oil tankers. As a result, they did not apply to bunker spills from vessels such as dry cargo ships, LNG or LPG carriers, chemical carriers, passenger ships, or other vessels not engaged in the carriage of bulk oil.



### Bunker Convention

The IMO Diplomatic conference in March 2001, adopted the International convention on Civil Liability for Bunker Oil Pollution Damage. In 2007, the necessary number of ratification was reached for the Convention to enter into force on 21 Nov 2008. The key features of the Convention have much in common with CLC, namely strict liability imposed on the owner of the ship, and limitation of Liability, coupled with a system of compulsory insurance.

By the time, the Convention was adopted, strict liability had become commonplace in the domestic legislation of many states, and limitation of liability for bunker spills was generally available under the LLMC 1976 Convention.” The principal benefit introduced by the Convention is a system of compulsory insurance, to ensure that valid claims are duly satisfied by rights of direct action against approved insurers.

### **Position in India**

India has not ratified the Bunker Convention. The oil spill compensation from Bunker oil spills is addressed through the Convention on Limitation of Liability of Maritime Claims (LLMC), 1976. The provisions of LLMC 1976 convention is incorporated under Part XA of the Merchant Shipping Act 1958. In the case of oil spill from a tanker, the oil spill damage and compensation are addressed through CLC and Fund and they are incorporated in part XB and XC of the Merchant Shipping Act 1958.

### **Bunker Oil Spill from Tankers - Position under the Civil Liability Convention 1969**

Where a CLC state is affected by a bunker spill from an oil tanker, or by a grave imminent threat of such a spill, the position differs under CLC 69 on the one hand and, on the other under the 1992 Civil Liability and Fund Conventions. CLC 69 will apply to an oil pollution incident only if the vessel concerned was “actually carrying oil in bulk as cargo”. It defines the term “Oil” as ‘any persistent hydrocarbon mineral oil’ whether carried on board a ship as cargo or in the bunkers of such a ship.

If a tanker carrying a cargo of persistent oil in bulk spills persistent oil from its bunkers, and causes damage in a CLC state, then CLC will apply irrespective of whether cargo also is spilt.” However, CLC 69 will not apply to bunker spills where (i) the tanker involved in the incident is sailing in ballast, or (ii) it is carrying a cargo of non-persistent oil (eg aviation fuel), or (iii) the oil spilt from its bunkers is non-persistent. If such spills occur in a CLC state which is a party to CLC 69 rather than CLC 92, the Convention will have no application and the incident will be governed by the Bunkers Convention or otherwise by national laws”.

### **Bunker Oil Spill from Tankers - Position under the 1992 Civil Liability and Fund Conventions**

The 1992 Conventions likewise apply only to incidents involving a ‘Ship’, but they define this term as “any seagoing vessel and sea-borne craft of any type whatsoever constructed or adapted for the carriage of oil in bulk as cargo...”. Accordingly, for the 1992 Conventions to apply, it is not a requirement that the tanker should be “actually carrying oil in bulk as cargo”, as is necessary for the purposes of CLC 69. The 1992 Convention will apply to bunker spills not only from laden tankers’ but also to those from tankers in ballast; moreover they will probably apply in most cases to



bunker spills from tankers employed for the carriage of clean oil cargoes, if the vessel concerned has been constructed or adapted to carry cargoes of persistent oil.

Under the 1992 Conventions compensation is payable for the cost of preventive measures taken in response to a grave and imminent threat of pollution, without an actual spill of oil being required; however, the bunker oil which causes, or, threatens to cause, pollution damage must be persistent for the Convention to apply”.

### **Spills during Bunkering Operation**

Whilst the more significant cases of bunker pollution normally result from casualties such as collisions or stranding, a number of bunker oil spills have occurred during pumping operations in port. Though the quantity spilled has usually been relatively small, there have been several incidents of this type in which considerable damage has been caused.

Where bunkers are supplied by another seagoing vessel such as an oil barge or supply tanker, it may be relevant to examine whether the escape or discharge of oil occurred from the ship taking the bunkers, or from the vessel supplying them. In the latter case the spill

will involve an escape of cargo from a laden tanker, and the Civil Liability Convention will apply to the incident in respect of any damage sustained in a contracting state.

A spill during bunkering operations may result from the joint blame both of the supply vessel and the ship taking bunkering operations may result from the joint blame both of the supply vessel and the ship taking bunkering on board. Assuming that the circumstances indicate an escape or discharge from the supply vessel, this vessel will bear full responsibility for the incident under the strict liability provisions of CLC, without prejudice to a right of course for a contribution from the owners of the other vessel.

### **Legal Aspects of Bunker Convention**

Despite its similarities with the Civil Liability Conventions, and the fact that several of its provisions are modeled on those in CLC, the Bunkers Convention does differ from CLC in certain important respects discussed below.

### **Geographical scope**

The geographical scope of the Bunkers Convention is the same as that of CLC 1992. It embraces damage occurring within the territory, including the territorial sea, of a contracting state, and also within the exclusive economic zone of a contracting state as determined in accordance with international law. The Convention also applies to preventive measures, wherever taken, to avoid or minimize oil pollution damage within these areas”.



### Scope of Liability

The Bunker Convention provides that:

“... the shipowner at the time of an incident shall be liable for pollution damage caused by any bunker oil or board or originating from ship ...” The scope of the shipowner’s liability is couched in terms which are also found in CLC, and which are defined by the Convention in language which is the same in CLC in some cases, but not in others. As in the case of CLC, the shipowner’s liability is subject to certain limited exemptions, and is otherwise in the nature of strict liability, imposed regardless of fault.

The term “**Ship**” is defined as ‘any seagoing vessel and seaborne craft, or any type whatsoever.’ This embraces a much wider class of vessels than that embraced by the definition of ‘Ship’ in the Civil Liability Convention (which in principal apply only to oil tankers), and it is likely to be interpreted as applying to various types of offshore units as well as conventional ships of all kinds.

The term “**bunker oil**” means “any hydrocarbon mineral oil, including lubricating oil, used or intended to be used for the operation of propulsion of the ship, and any residues of such oil”. For these purposes, unlike the position under CLC, it is not necessary for the oil to be persistent. The inclusion of residues results in liability attaching for any pollution damage resulting from discharge of effluents including oily wastes from bunker fuel, whether by accident or by operations discharge.”

The term ‘**incident**’ is the same as in CLC 92, and the same applies to the term ‘pollution damage’. With the sole change that the term “Oil” in CLC is replaced

by the term “bunker oil”.

The shipowner will be exonerated from any liability for pollution damage resulting from an incident if he can show that the damage resulted from war, hostilities, civil war, insurrection or a natural phenomenon of an exceptional inevitable and irresistible character, or that it was wholly caused by an act of omission of a third party done with intent to cause damage, or was wholly caused by a negligent or wrongful act of any governmental authority responsible for the maintenance of lights or other navigational aids”.

The shipowner is also exonerated wholly or partially from liability to claimants in respect of pollution damage which is shown to have resulted wholly or partially from an act of omission of the claimant done with intent to cause damage or from the claimant’s negligence. Those exonerations also are couched in identical language to that used in CLC, and they may give rise to similar issues.

### Dissimilarities with CLC

There are certain respects in which the liability provisions of the Bunkers Convention differ significantly



from those of CLC. The difference owes its origin to the fact that the Convention establishes a **single – tier** liability regime, in contrast with the two-tier scheme applicable to such vessels in member states of the Supplementary Fund. There is no international Fund financed by cargo receivers from which compensation may be obtained if adequate recompense cannot be obtained from the owner of the ship involved in a bunker spill. In these circumstances scope is persevered in the Bunker Convention for claimants to pursue remedies against a wider range of potential defendants than would be possible under CLC. This is reflected in a relatively wide definition of the ‘Shipowner’ on whom strict liability is imposed, and in the absence of channeling provisions excluding the liability of other parties.

### **Parties liable under the Convention**

The Bunkers Convention imposes liability on the ‘Ship owner’ defined as ‘the owner, including the registered owner, bareboat charterer, manager and operation of the ship.’ This means that there is a broader range of parties potentially liable under the Convention than under CLC, where liability is imposed on the “owner” of the ship, defined in the case of registered ship as the registered owner”.

A further difference from other regimes lies in the fact that the Bunkers Convention does not contain any channeling provisions to exclude the liability of parties other than the owner. Far from excluding the liability of the bareboat charterer, manager or operator of the ship, as does CLC 92, it imposes liability upon the jointly and severally with the owner. However, the Convention does provide, in common with CLC, that nothing in it shall prejudice any rights of recourse which the

shipowner may have.

In practice this may result in proceedings, being brought against two or more ‘shipowner’ defendants, but in general this should not affect the amount recoverable. Only the registered owner is required to maintain approved insurance against liability under the Convention, and nothing in the Convention affects the right of any ‘shipowner’ defendant or of the ship’s insurer to limit liability in accordance with the applicable limitation regime.

In states where the 1976 Limitation Convention (LLMC) is in force as it is in India, the right of limitation is available to the charterer, manager and operator of the ship as well as the owner, and their aggregate liabilities are subject to a single liability limit”. Assuming that insurance is in place as required by the Bunkers Convention, it is likely in practice that the liability of the registered owner will be satisfied by the insurer, thereby relieving other potential defendants of liability under the Convention, but subject to any rights of recourse which the registered owner may have against them.





The joint and several liability of different shipowner may nonetheless prove significant if, for example, the ship is one to which the compulsory insurance provisions do not apply, with the result that there are no rights of direct action against the ship's insurer, if any; if the liability of the registered owner are not satisfied, claimants may benefit from exercising rights of recovery against a bareboat charterer, manager or operator of the ship with assets against which a claim be enforced.

Joint and several liability may also be significant where one of the potential defendant is guilty of conduct barring the right of limitation under the applicable limitation regime, and where that party has asset against which a claim can be enforced. Possibly its greatest significant may be in cases where pollution damage is caused in a state which is not a party significance may be in cases where pollution damage is caused in a state which is not a party to LLMC; where the applicable national limitation regime, if any, does not extend the right of limitation to the bareboat charterer, manager or operator of the ship; and where a defendant unable to limit liability has been against which a claim can be enforced.

### **Limitation of liability**

As with CLC, the corollary of the strict liability imposed by the Bunker Convention on the shipowner, and of the rights which it creates of direct action against the insurer of the registered owner, is that their liability under the Convention are subject to limitation.

Nothing in the Convention affects the right of the shipowner and insurer to limit liability under any applicable national or international regime, such as the



Convention on Limitation of Liability for Maritime Claims, 1976 as amended.

Unlike the limitation regime in CLC, the Convention does not provide for a free-standing limitation fund dedicated to pollution claims, and instead the liability limit is linked to that applying under the national or international limitation regime, if any, in force in the state where the damage is suffered. Accordingly, a limitation fund established for claims under the Convention **may need to be available also for non-pollution claims arising from the same incident**. A further consequence of the approach taken to limitation is that the Bunkers Convention does not contain provisions comparable to those in CLC with respect to limitation procedure and release of security. Similar provisions are contained, however, in LLMC.

### **Claims subject to limitation under LLMC**

Linkage to LLMC in the Bunker Convention reflects a widely held assumption that claims for bunker oil pollution fall within the categories of maritime claim for which liability may be limited under the 1976 Convention. However, this is by no means free from doubt.

In its list of limitable claims LLMC makes no reference to pollution damage. Though some typical

categories of claim for pollution damage may fall reasonably clearly within this list, others may not. These issues are particularly acute in relation to bunker spills, as the right to limit liability for clean-up costs after such an incident is likely to depend on the same provisions in LLMC as that dealing with wreck removal and some states have exercised right to exclusive wreck removal claims when implementing the Convention in their national laws. This may have unintended implication in the context of bunker spills.



Irrespective of whether the shipowner's liabilities can be limited under LLMC, costs he incurs in taking **preventing measures** cannot rank as a claim against his limitation fund. This is in contrast to the position under CLC, where such costs are taken into account. This may mean in some cases that it is to the advantage of the owner if preventive measures are taken by public authorities or other third parties, though frequently shipowners and their insurers prefer to assume responsibility for such measures in order to exercise control over costs.

### **Compulsory insurance and certification**

One of the most significant changes made by the Convention is the introduction for non-tankers of a

system of compulsory insurance similar to that already in place for tankers under CLC. Under the Bunkers Convention, the registered owner of any ship of more than 1,000 gross tonnes is required to maintain insurance or other financial security to cover his liability for pollution damage. As the definition of 'ship' is very wide, this applies to all seagoing vessels and seaborne craft of any type whatsoever.

A certificate attesting that insurance or security is in force is to be issued to each ship by the appropriate authorities of a contracting state. The certificate is to be in the form of model annexed to the Convention, must contain certain particulars, and must be carried on board the ship. Claims for compensation for pollution damage may be brought directly against the insurer named in the certificate in respect of the liability of the registered owner.

The detailed provisions of the Convention with respect to compulsory insurance, certification and direct rights against the insurer are in most respects identical to those of CLC. The direct liability of the insurer is in all cases limited to the amount for which insurance or other financial security must be maintained under the Convention.

In practice most ships are insured against pollution liability risks for amounts much greater than those required by the Convention, and in such cases, the main issue determined by the above provisions is the amount for which the insurer may be sued directly, without benefit of any policy defences which could be invoked in defence of a claim for indemnity under the policy by the registered owner. As in the case of the limit of the owner's liability, this will depend on the limitation regime in force in the jurisdiction where the pollution damage



is sustained, but in any event will not exceed the amount calculated for the ship by reference to LLMC as amended by the 1996 Protocol.

Although the Convention requires insurance to be maintained to up to this level to cover the liability of the registered owner' for pollution damage'. It does not require the same amount to be available to satisfy claims for such damage in all cases. This follows from the fact that nothing in the Convention affects the right of the shipowner or insurer to limit liability in accordance with the applicable limitation regime and that LLMC provides for a single limitation fund to cover not only pollution claims but also various non-pollution claims which may arise from the same incident.

Given the very wide definition of 'Ship' contained in the Bunker Convention, the compulsory insurance and certification requirements may apply to some types of vessels or craft which are excluded from the scope of the limitation regime established by LLMC. Whilst this may result in unlimited liability for the registered owner, it cannot signify that he is required to maintain insurance for an unlimited amount, nor that the liability of the insurer named in the certificate is unlimited. If this interpretation had been intended then the Convention could more easily have stipulated that insurance be

maintained in "an amount of Rupees ...not exceeding the limits of liability under LLMC". The text actually used indicates that a liability limit for the insurer is to be calculated in such cases on the basis of the tonnage limits prescribed by LLMC as amended, notwithstanding that the unit concerned is outside the scope of that Convention.

### **Time limit for claims**

Rights to compensation under the Convention will be extinguished unless an action is brought within three years from the date on which the damage occurred. In no case may an action be brought more than six years from the date of the incident which caused the damage. Where the incident consists of a series of occurrences, the six-year period runs from the date of the first such occurrence. This time limits are the same as those provided for in CLC.



### **Jurisdiction of courts and enforcement of judgments**

The Bunker Convention contains provision for both jurisdiction of courts and enforcement of judgments of foreign courts relating to claims for compensation for pollution damage. These follow closely the corresponding provisions in CLC.

**BUNKER OIL –  
THE BIGGER SILENT KILLER**

*by  
Pollution Response Team (East)*

**Background**

Bunker fuel is technically any type of fuel oil used aboard ships. It gets its name from the containers on ships and in ports that it is stored in; in the days of steam they were coal bunkers but now they are bunker fuel tanks. The Australian Customs and the Australian Tax Office define a bunker fuel as the fuel that powers the engine of a ship or aircraft. Bunker A is No. 2 fuel oil, bunker B is No. 4 or No. 5 and bunker C is No. 6. Since No. 6 is the most common, “bunker fuel” is often used as a synonym for No. 6. No. 5 fuel oil is also called navy special fuel oil or just navy special; No. 5 or 6 are also called furnace fuel oil (FFO). Small molecules like those in propane gas, naphtha, gasoline for cars, and jet fuel have relatively low boiling points, and they are removed at the start of the fractional distillation process. Heavier petroleum products like diesel and lubricating oil are much less volatile and distill out more slowly, while bunker oil is literally the bottom of the barrel; the only things more dense than bunker fuel are carbon black feedstock and bituminous residue which is used for paving roads (asphalt) and sealing roofs. **Bunker fuel can also be prepared by using burnt Motor oil with 10 % diesel additives.** At a Diplomatic Conference held at IMO headquarters in London between Monday March 19<sup>th</sup> and Friday March 23<sup>rd</sup> 2001, the final text of a Bunker Pollution Convention was agreed. The Convention was kept open for signature from October 1<sup>st</sup> 2001 until September 30<sup>th</sup> 2002. This Convention therefore has to be seen as plugging a gap by

addressing, for the first time, the problem of pollution caused by the escape of bunkers from general cargo ships. Not surprisingly the Convention follows the CLC precedent in most respects. There are, however, a number of notable differences and this paper will, in addition to summarizing the main provision of the Bunker Convention, seek to identify and explain those differences. The International Group of P&I Clubs suggested that the drafting of the 1992 Protocol is widely recognized as defective and to overcome this defect, it should be put right in the context of the Bunker Convention.

**Classification**

In the maritime field, following type of classifications are used for fuel oils.

- (a) **MGO (Marine gas oil)**. Roughly equivalent to No. 2 fuel oil, made from distillate only.
- (b) **MDO (Marine diesel oil)**. A blend of heavy gasoil that may contain very small amounts of black refinery feed stocks, but has a low



viscosity up to 12 cSt so it need not be heated for use in internal combustion engines.

- (c) **IFO (Intermediate fuel oil).** A blend of gasoil and heavy fuel oil, with less gasoil than marine diesel oil.
- (d) **MFO (Marine fuel oil).** Same as HFO (just another “naming”).
- (e) **HFO (Heavy fuel oil).** Pure or nearly pure residual oil, roughly equivalent to No. 6 fuel oil.

## Effects of Bunker fuel on Marine animals and Environment

Once oil makes its way into the environment, it poses a range of threats to marine life. Animals coated by even small amounts of oil may be unable to swim or fly properly, maintain their body temperature, feed or even reproduce. Oil can also cover beaches and other vital habitats, making it difficult for animals to find uncontaminated food and nesting and resting places. Some animals are more vulnerable to oil than others. For example, young may be less able to deal with either



coatings or exposure to toxic substances than adults due to their size, underdeveloped immune systems and behaviors. Marine mammals, seabirds (especially penguins) and sea turtles are all particularly vulnerable to oil on surface waters as they spend considerable amounts of time on the surface feeding, breathing and resting. Animals that become coated in or ingest oil often die quickly. Large numbers of animals were killed immediately after the Exxon Valdez spill, including as many as 300 seals, 900 bald eagles, 2,800 sea otters and 250,000 seabirds.

## Invisible loss to the environment

As ships get bigger, the pollution is getting worse. The most staggering statistic of all is that just 16 of the world's largest ships can produce as much lung-clogging sulphur pollution as all the world's cars. Marine heavy fuel, or ‘bunker fuel’, which leaves behind a trail of potentially lethal chemicals: sulphur and smoke that have been linked to breathing problems, inflammation, cancer and heart disease. James Corbett, of the University of Delaware, is an authority on ship emissions. He calculates a worldwide death toll of about



64,000 a year, of which 27,000 are in Europe. Britain is one of the worst-hit countries, with about 2,000 deaths from funnel fumes. Corbett predicts the global figure will rise to 87,000 deaths a year by 2012. Bunker fuel is also thick with sulphur. IMO rules allow ships to burn fuel containing up to 4.5 per cent sulphur. That is 4,500 times more than is allowed in car fuel in the European Union. The sulphur comes out of ship funnels as tiny particles, and it is these that get deep into lungs. Thanks to the IMO's rules, the largest ships can each emit as much as 5,000 tons of sulphur in a year – the same as 50 million typical cars, each emitting an average of 100



grams of sulphur a year. With an estimated 800 million cars driving around the planet, that means 16 super-ships can emit as much sulphur as the world fleet of cars. Smoke and sulphur are not the only threats from ships' funnels. Every year they are also belching out almost one billion tons of carbon dioxide. Ships are as a big contributor to global warming as aircraft – but have had much less attention from environmentalists.

Both international shipping and aviation are exempt from the Kyoto Protocol rules on cutting carbon emissions. But green pressure is having its effect on airlines. Ahead of 2010 Copenhagen climate talks, airlines have promised to cut emissions by 50 per cent by 2050.

### **Impact of Bunker fuel on Indian coasts**

There has been a considerable increase in shipping through the Indian EEZ. Over 3000 tankers, transit annually through the international sea-lanes bordering the Indian coast. This number is further expected to increase by four times by 2020. The Gulf of Kutch in the west and the Malacca Straits in the east are the potential zones for major oil pollution. In Gulf of Kutch alone, 1100 tankers ply annually. By 2020, this number is likely to increase by four times to 4400 tankers annually which is going to pose a major threat to the ecologically sensitive marine park in the Gulf of Kutch.



Also the passage of oil in the renowned international oil route close to southern peninsular India is again a major risk. Two monsoons that affect India the south west and the north east with strong winds and dangerous sea



conditions increase the risk factor. As many as fourteen ships ran aground in the year 2006 on the west coast of India during the southwest monsoon. There is always an increase in usage of petroleum products for development and the increase in the risk factor. Oil spills are often taking place but these incidents are neither reported nor detected thereby causing damage to marine environment. As we know, the spill oil poses a range of threats to marine animals as well as environment. The inhalation and ingestion of compound related to oil spills can also harm marine life in the long and short term. A recent accident occurred in 2010, off Mumbai caused a havoc to the mangroves, beaches, aquatic animals when 800 tons of oil leaked from the vessel MV Chitra. In another incident at Goa coast, the

tar balls were reported in the sea water. On account of bunker oil spill affecting 110 kilometres of Maharashtra coast, heavy loss to coastal environment was reported and NEERI assessed the environmental loss as Rs. 515 crores.



## **CASE STUDY – OIL SPILL RESPONSE OPERATIONS FOR MV MIRACH**

### **Background**

MV Mirach, IMO No. 81168841, call sign 3EEH8, 1982 built, Panamanian registered bulk carrier, carrying 25000 tons of iron ore from Vizag and heading towards Karachi ran aground on a shallow patch off crocodile rock near Colachel (South West) Tamil Nadu coast on 29 March 2011. The information on grounding was intimated to Coast Guard by local marine police. The master of the vessel was immediately contacted, who stated that the vessel's bow has touched bottom and the ship will be able to refloat during the next high tide and required no Coast Guard assistance.

Further investigation made by the Coast Guard ships on patrol revealed that the ship had 149 tons of fuel oil and all underwater compartments are intact and there was no flooding inside any compartments. The ship also reported that there was no oil spill. The crew was also reported to be safe. The master thereafter realized that the ship cannot retrieve itself and requested the shipowner's, M/s Pina Shipping Company, Panama to arrange for salvors on 30 Mar 11. The owners intimated that a salvage contract was made with M/s Orient Blossom Pvt. Ltd Singapore and the salvage experts arrived onboard the ship on 31 Mar 11 to carry out the damage assessment.



The Coast Guard ships were deployed in the area to maintain surveillance for likely oil spill from the ship and to respond to such spill if required. In view of the presence of 149 tons of FFO, a notice to master/ship owners was served under section 356 J of the Merchant Shipping Act 1958 on 30 Mar 11, to take appropriate measures to prevent the escape of oil from the grounded vessel and to prevent damage to the marine environment from possible oil pollution.



**Oil Spill Incident**

On 04 Apr 11, at about 0700 hrs, the local agent of the ship M/s JM Baxi, Tuticorin, intimated Coast Guard that the grounded vessel's forward portion has going down due to ingress of water in hold no. 2 and 3. The crew embarked the life boat and abandoned the ship. However, the salvage team continued to remain onboard. A Coast Guard Dornier sortie was launched on 04 Apr and it reported that the forward two holds were



submerged and there was no oil spill in the area. The Coast Guard advised the salvage team to transfer all fuel oil from the wing tanks to centre tank and seal them as preventive measure. The salvage team accordingly transferred all fuel oil to tanks No. 2 and 4 (centre tanks) which were located in higher position and had double bottom protection.

A second aircraft sortie was launched in the afternoon and the aircraft observed iron ore contamination with water near the ship. However, the aircraft also observed intermittent patches of oil sheen on sea surface in the vicinity of the vessel which were attributed to escape of engine room bilges. The sheen was also found dissipating naturally, due to rough sea conditions.

By around 05 Apr, 50 percent of the ship sank by the bow and a fresh slick of 100 m in length was reported by the ICG ship. The shipowner in the interim, arranged a salvage vessel SMIT Nicobar from the salvor and it was expected to reach the area by 09 Apr 11. The owners also arranged hot tap fuel removal equipment from Rotterdam. By 06 Apr 11, thin windrows of oil sheen extending 8 to 10 miles and moving in 130 degrees direction was observed by the Coast Guard aircraft. The aerial monitoring was regularly undertaken and the leakage of fuel oil was reported in the sea area for the next four days.



The salvage team reported that the leakage of oil from the ship is due to the crack in No 4 cargo hold. The fuel oil was found oozing out at a regular rate and the salvage team could not contain the oil leakage. The salvage team as last resort applied OSD on the oozing out area so as to disintegrate the thick fuel oil at the source of release. By 11 Apr 11, the grounded vessel's hull cracked into two separate position from hold no. 3 and by 12 Apr 11, the ship sank completely and minor sheen of oil was found continuously seeping out from the wreck.

### **Coast Guard efforts**

The Coast Guard launched **Operation Crocodile** on 30 Mar 11, to keep a monitoring watch on the stranded ship, as no oil spill was found from 30 Mar – 04 Apr 11. In addition, it was also appreciated that the local prevailing current is likely to take the oil spill away from the shore.

However, due to the proximity of local tourist spots such as Vivekanand Rock and Kanyakumari beach/temple, the Coast Guard launched operation '**Samudra Swachchata**' on 05 April and five Coast Guard ships and Coast Guard Dornier aircraft were deployed for monitoring and response roles. In addition, the Coast Guard pollution response team for shoreline protection were mobilized from Chennai alongwith booms, skimmers and other accessories to Colachel area. Certain vital areas were kept under close observation for laying the booms as preventive measure. The Coast Guard ships and Dornier applied oil spill dispersant in the area to disperse the oil in rough sea as the containment option was ruled out. The ships boarding team in difficult sea condition boarded the wreck and monitored the situation closely.

### **Investigation**

The preliminary inquiry revealed that the grounding of MV Mirach is attributed to navigational errors on the part of ships's crew, wherein, the waypoint coordination were wrongly fed by the duty officer. In addition, it was found that the ship steered very close to the shore to try to take short cut and went straight on crocodile rock.

The crocodile rock consists of series of pinnacle rocks which are generally submerged and form a unique eco system. When MV Mirach ran aground, the ship was actually resting on top of few needle like rocks. By 04 Apr, the forward portion to ship dipped due to ingress of water. By 11 Apr 11, the mid section broke into two, as it was not supported by any rock. By 12 Apr 11, due to heavy sea action, the aft portion slipped from the rock support and sank to the bottom.

The ship had a total of 05 tanks. The forward tank had 16 MT of FFO which got damaged totally and all oil escaped into the sea. The two mid section tanks had 133 tons of FFO. By 06 Apr, the mid section developed a crack and it is estimated about 33 MT of FFO escaped from the tanks. One tank located below machinery compartment containing 34 MT of diesel oil was found safe and one lube oil tank having 20 MT of lube oil located below accommodation area was also found safe.



### **Salvage operations.**

By 30 Mar 11, the salvage team arrived on scene for assessment and survey of the vessel for removing the trapped oil. By 09 Apr 11, the salvage tug SMIT NICOBAR arrived on scene to render necessary assistance to the salvage team. By 14 Apr, the diving equipment, air compressors, hot top equipment and other accessories were brought to the area. By 15 Apr 11, the salvage team alongwith divers assessed the underwater area and commenced the oil transfer operations to salvage tug. From 16 Apr – 20 Apr, a total of 80 MT of FFO was transferred from the ship. Two hopper barges MV Sreekrishna and MV Subhtram were hired for transferring the recovered oil to the port.

By 20 Apr 11, all the oil which were removable from the ship was taken out and the operation was terminated.

The vital lesson learnt from the operations is that there is no professional salvage company available in India to remove oil from the stranded/sunken ship. The shipowners are totally dependent on foreign salvage company which entails a time delay. Requirement exists to establish such salvage service within India to tackle similar situation in future.

# REPORTS

## INDIA WATCH

### OIL LEAK FROM ONGC PIPELINE AT MUMBAI HIGH

Around 0950 hrs on 21 Jan 11, M/s ONGC, Mumbai informed Coast Guard Regional HQrs (West) regarding oil pipeline rupture in BLQ-1 platform and subsequent crude oil leakage near platform at 0845 hrs in position 42 NM West of Prong Light (Mumbai). The loss of oil estimated to be approx 25000 barrels by M/s ONGC. Coast Guard Dornier was launched at 1043 hrs on 21 Jan 11 from CGAS Daman for an initial assessment.



The approx quantity of oil spill estimated to be 40-50 tons by Coast Guard Dornier. Simultaneously, ICGS Sangram with Helo in PR configuration also diverted to area. An Operation codenamed “**Paryavaran Suraksha 01/11**” was launched for coordinated pollution response operation in Offshore Development Area (ODA) to contain oil spill. On 22 Jan 11 ICGS Sangram launched Helicopter at 0810 hrs for aerial and surface assessment and indicated area of 02 NM around datum was clear and nil traces of crude oil observed. MSV

Sagar Prabh/ Sagar Sevak and Malviya – 36 of M/s ONGC mobilised for inspection/defect rectification of pipeline on 22 Jan 11. The Crude oil was diverted through alternate route. The Operation “ **Paryavaran Suraksha 01/11**” was terminated at 1200 hrs on 22 Jan 11.

### OIL RECOVERY FROM MV JUTTHA PATHAMA

M/s Allied Shipping intimated on 03 Mar 11 that one of their Vessel MV Juttha Pathama ran aground on 28 Feb 11 at 2200 hrs near East of Okha Light. The Vessel had at the time of grounding 241 tons of Furnace Fuel oil as Bunkers. The Coast Guard vessel IC – 110 was deployed for monitoring of vessel any leakage of bunker oil/marine pollution. As the Coast Guard did not have any facility to remove the bunkers, from the ship, the Coast Guard requested MoS/DGS may issue necessary directives to the shipowners for early removal of ships bunkers by involving a suitable salvage company. The ship owner arranged salvors and 241



tons of fuel oil was removed on 12 Mar 11. The vessel MV Juttha Pathama was thereafter successfully refloated by the salvors.

**OIL POLLUTION BY MV RATNA URVI**

M/s India Steamship intimated that one of their vessel, MT Ratna Urvi (Flag Indian, IMO No. 8813568) carrying 31600 metric ton of crude oil, while berthing alongside at Haldia collided with the jetty resulting in spillage of about 10 tons of crude oil at about 0830 hrs on 30 Jan 11.

The Disaster Management Team of CGDHQ-8 Haldia was sent to Haldia jetty immediately for assistance. The team found that the tanker's starboard slop tank had a 6 inch rupture at 2 meters above the waterline, The ruptured tank was emptied immediately by transferring oil to other tanks thereby preventing outgress of oil.

ACV H-182 and CG Dornier undertook recce of the area up to Sagar and reported sighting of two patches of oil sheen (Approx-100 x 05 mtrs) 04-05 NM south of Harbour Buoy.

These sheen patches were observed to be dissipating/ weathering naturally and reported no threat of oil spill to the local environment.



**OIL SPILL BY MV MIRACH**

The Merchant vessel MV Mirach, a Panamanian registered vessel carrying 25,825 tons of iron ran aground on a shallow patch off Crocodile rock near Kolachel (South West Tamil Nadu Coast) on 29 Mar 2011 and eventually sank on 12 April 2011.

Coast Guard Ships were diverted to the area to assess the situation and report any environmental damage to the area regularly, as the ship was carrying



149 tons of fuel oil as bunkers. On the insistence of Coast Guard, the shipowners immediately

arranged professional salvors for removing the trapped oil.

Minor oil spills which occurred from 04 April to 10 April from the ship due to cracking of the hull was neutralized by the Coast Guard ships and aircraft. The salvors removed the trapped oil on 20 Apr 11.



## ENERGY EFFICIENCY DESIGN INDEX (EEDI)

Discussions at IMO in recent years have resulted in the development of an Energy Efficiency Design Index (EEDI) to ensure that the EEDI delivers environmental effectiveness by generating, through enhanced energy efficiency measures, significant reductions in GHG emissions from ships. Numerous stakeholders – policy-makers, ship-owners, naval architects, class societies, etc. – are contributing to this endeavor providing technical and other input to the debate.

### Enhancing energy efficiency

Shipping is permanently engaged in efforts to optimize fuel consumption. And, while ships are universally recognized as the most fuel-efficient mode of bulk transportation, the Second IMO GHG Study, in 2009, identified a significant potential for further improvements in energy efficiency, mainly through the use of already existing technologies such as more efficient engines and propulsion systems, improved hull designs and larger ships: or, in other words, through technical- and design-based measures that can achieve noteworthy reductions in fuel consumption and resulting CO<sub>2</sub> emissions on a capacity basis (tonne-mile). The study also concluded that additional reductions could



be obtained through operational measures such as lower speed, voyage optimization, etc. The EEDI addresses the former type of measure by requiring a minimum energy efficiency level for new ships; by stimulating continued technical development of all the components influencing the fuel efficiency of a ship; and by separating the technical and design-based measures from the operational and commercial ones. It is already being used to enable a comparison to be made of the energy efficiency of individual ships with undertaken the same transport work (i.e. moved the same cargo).

### Applicability

The EEDI formula – as presently drafted – is not supposed to be applicable to all ships. Indeed, it is explicitly recognized that it is not suitable for all ship types (particularly those not designed to transport cargo) or for all types of propulsion systems (e.g., ships with diesel-electric, turbine or hybrid propulsion systems will need additional correction factors). IMO's Marine Environment Protection Committee (MEPC) is poised to consider the matter in detail at future sessions, with a view to adopting further deliberations of the EEDI.



**Effectiveness of EEDI in reducing CO2 emissions**

It has been suggested that the EEDI will result in little or no reduction in CO<sub>2</sub> emissions in those sectors where slow-steaming is already practiced. The simplified formula for EEDI is equal to CO<sub>2</sub> EMISSION divided by TRANSPORT WORK. The CO<sub>2</sub> emission represents total CO<sub>2</sub> emission from combustion of fuel, including propulsion and auxiliary engines and boilers, taking into account the carbon content of the fuels in question. If energy-efficient mechanical or electrical technologies are incorporated on board a ship, their effects are deducted from the total CO<sub>2</sub> emission. The transport work is calculated by multiplying the ship’s capacity (dwt), as designed, with the ship’s design speed measured at the maximum design load condition and at 75 per cent of the rated installed shaft power. The EEDI, in establishing a minimum energy efficiency requirement for new ships depending on ship type and size, provides a robust mechanism that may be used to increase the energy efficiency of ships, stepwise, to keep pace with technical developments for many decades to come. It is a non-prescriptive mechanism that leaves the choice of which technologies to use in a ship design to the stakeholders, as long as the required energy-efficiency level is attained, enabling the most cost-efficient solutions to be used. Such technologies have been comprehensively considered in the 2009

IMO GHG Study.

The introduction of the EEDI for all new ships –if comes into effect in the short term, will mean that between 45 and 50 million tonnes of CO<sub>2</sub> will be removed from the atmosphere annually by 2020, compared with present status. There is, therefore, every confidence, among the vast majority of the international maritime community, that the EEDI will result in more energy efficient ships, in reduced emissions of GHGs, in effectiveness and in a significant contribution by a global industry to the global efforts to stem climate change.

**IMO Legal Committee supports follow-up to oil well incidents**

The Legal Committee of IMO, meeting for its 97th session, expressed its support in principle for the inclusion of a new item in the Committee’s work programme to consider liability and compensation issues connected with trans-boundary pollution damage resulting from offshore oil exploration and exploitation activities. The move came in the wake of the much publicized **Deepwater Horizon** incident and a submission to the Committee proposing a new work programme item, following the incident on the **Montara** offshore oil platform, located in the Australian Exclusive Economic Zone, in which a well blew out, leading to a significant oil spill. To accommodate this work, the



Committee agreed to recommend to the IMO Council an appropriate amendment to the Organization's strategic plan.

### **Bunkers Convention Implementation**

The Committee approved a draft resolution on the issuing of certificates under the International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001, to ships that are also required to hold a certificate under the International on Civil Liability for Oil Pollution Damage 1992, as amended, and decided to submit it to the 106th regular session of the Council for consideration and, thereafter, for submission to the next session of the IMO Assembly for adoption. The resolution recommends that all States Parties to the Bunkers Convention issue the certificate prescribed by the Bunkers Convention even when the ship also holds a CLC Certificate; require ships having a gross tonnage greater than 1000gt, flying their flag or entering or leaving ports or offshore facilities in their territory, to be insured and to hold a Bunkers Certificate as prescribed by the Bunkers Convention even when the ship already holds a CLC Certificate, and avoid taking action that could cause unnecessary bureaucracy. The Committee also approved *Guidelines for accepting documentation from insurance companies financial security providers and P & I clubs*, which recommend that a State Party to the Bunkers Convention should accept Blue Cards issued by a member of the International Group of P & I



Associations when it is possible to verify the Blue Card from the International Group's website, and provide criteria for accepting documentation from P&I Clubs outside of the International Group

### **STW validates marine environment awareness model course**

A new model course relating to marine environment awareness, designed to help meet new training requirements, was validated by the Sub-Committee on Standards of Training and Watchkeeping (STW) when it met for its 42nd session. The course has been developed in response to the new requirements for marine environment awareness training in the Manila Amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, and the Seafarers' Training, Certification and Watchkeeping (STCW) Code, which were adopted in Manila, the Philippines, in June 2010 and enter into force in 2012. The Sub-Committee reiterated that validation of model courses by the Sub-Committee in this context meant that it found no grounds to object to their contents. In doing so, the Sub-Committee did not approve the document and, it could therefore, not be regarded as an official interpretation of the Convention. The work plan to revise relevant model courses pursuant to the Manila Amendments to the STCW Convention and Code was also agreed by the Sub-Committee.





**EVENTS**

**16<sup>TH</sup> NATIONAL OIL SPILL  
DISASTER CONTINGENCY PLAN  
(NOSDCP) AND PREPAREDNESS  
MEETING, KOCHI**



The Sixteenth National Oil Spill Disaster Contingency Plan (NOS-DCP) and Preparedness meeting was held at Hotel Presidency, Kochi on 19 Apr 2011. Vice Admiral Anil Chopra AVSM, Director General Indian Coast Guard chaired the meeting. A total of 45 delegates from various Government Departments, Ports and Oil Companies attended the meeting.

The Chairman in his inaugural address welcomed all the delegates to the 16<sup>th</sup> NOSDCP meeting and recalled the directives issued to the ports and oil handling agencies during the 15<sup>th</sup> NOSDCP meeting with regard to the preparatory measures to deal with oil spills that may occur during monsoons. The DGICG brought out the salient issue related to the oil response operations undertaken to MV MSC Chitra oil spill incident and appreciated the post spill cleanup efforts made by DG Shipping, MbPT, JNPT, Maharashtra

Govt., NGOs and other volunteers who participated in the cleanup operations to bring back the Coastline of Maharashtra close to the pre spill state. He insisted that all concerned agencies should take proactive measures to deal with oil spills within their area and stringent preventive, such vessel traffic control and port state inspection so that oil spills does not occur as a result of maritime accidents.

The Chairman’s address was followed by an overview by Commandant Donny Michael, Director (FE) who brought out the events that occurred since the last NOSDCP and action taken with regard oil spill operation, conduct of training, conduct of NATPOLREX and joint audit of ports and oil handling agencies.

The following presentation were made during the NOSDCP meeting:-

- (a) **“Oil Cess”** by Captain Deepak Kapoor, DDG (Tech), Mumbai.
- (b) **“Tier-I PR Equipment for Ports and Oil Companies”** by Commandant Donny Michael, Director (FE), CGHQ.



The first Coast Guard Environment 2010 award for Best Oil handling Agency category was awarded to M/s Hardy, E&P Pvt Ltd by the Chairman during the meeting.

**MINOR & MAJOR OIL SPILLS IN INDIAN WATERS (SINCE 1982)**

S. No.	Date	Qty and Type of Spill (Tonnes)	Location	Spilled by
01	1982	Not Assessed	West Coast	Sagar Vikas
02	24/10/88	1000	Bombay Harbour	Lajpat Rai
03	1989	Not Assessed	West Coast	SEDCO 252
04	1989	5500/Diesel Oil	795 nm SW of Bombay	MT Puppy
05	04/8/1989	Not Assessed	Bombay Harbour	ONGC Tanker
06	29/8/1989	Not Assessed	Saurashtra coast	Merchant ship
07	29/8/1989	Not Assessed	Bombay Harbour	Unknown
08	22/3/1990	Not Assessed	NW of Cochin	Merchant Ship
09	07/9/1991	692/FO	Gulf of Mannar	MT Jayabola
10	14/11/1991	40000/Crude	Bombay High	MT Zakir Hussain
11	22/2/1992	Tanker wash	40 NM S of New Moore Is	Unknown
12	2/4/1992	1000/Crude	54 NM west of Kochi	MT Homi Bhabha
13	16/8/1992	1060/SKO	Madras Harbour	MT Albert Ekka
14	17/11/1992	300/FO	Bombay Harbour	MV Moon River
15	21/1/1993	40000	Off Nicobar Islands	Maersk Navigator
16	28/3/1993	NK/Crude	Off Narsapur	ONGC shore rig at Kumarada
17	29/4/1993	110/Crude	Bombay Harbour	MT Nand Shivchand
18	10/5/1993	90/FO	Bhavnagar	MV Celelia
19	17/5/1993	6000/Crude	Bombay High	BHN Riser pipe rupture
20	02/8/1993	260/FO	Off New Mangalore	MV Challenge
21	01/10/1993	90/Crude	Cochin Harbour	MT Nand Shiv Chand
22	12/5/1994	1600/Crude	Off Sacramento Pt.	Innovative-1
23	12/5/1994	Not Assessed/FO	360 NM SW of Porbandar	MV Stolidi
24	05/6/1994	1025/Crude	Off Aguada Lt	MV Sea Transporter
25	20/7/1994	100/FO	Bombay Harbour	MV Maharshi Dayanand
26	27/11/1994	288/HO	Off Madras	MV Sagar
27	26/3/1995	200/Diesel	Off Vizag	Dredger Mandovi-2
28	24/9/1995	Not Assessed/FO	Off Dwaka	MC Pearl
29	13/11/1995	Tanker wash	Eliot beach, Madras	Unknown
30	21/5/1996	370 FO	Hooghly River	MV Prem Tista
31	16/6/1996	120 /FO	Off Prongs, Mumbai	MV Tupi Buzios
32	18/6/1996	132 /FO	Off Bandra, Mumbai	MV Zhen Don

S. No.	Date	Qty and Type of Spill (Tonnes)	Location	Spilled by
33	18/6/1996	128 /FO	Off Karanja, Mumbai	MV Indian Prosperity
34	23/6/1996	110/FO	Off Worli, Mumbai	MV Romanska
35	16/8/1996	124/FO	Malabar Coast	MV Al-Hadi
36	25/1/1997	Tank wash	Kakinada Coast	Unknown
37	19/6/1997	210/FO	Off Prongs Lt, Mumbai	MV Arcadia Pride
38	19/6/1997	Not Assessed	Hooghly river	MV Green Opal
39	14/9/1997	Naptha, DieselPetrol	Vizag	HPC refinery
40	02/8/1997	70/FO	Off Mumbai	MV Sea Empress
41	10/3/1998	Gas leak	Bombay High	Drill Rig Noble
42	12/5/1998	Gas Leak	Bombay High	Bombay High platform
43	01/6/1998	20/Crude	Off Vadinar	Vadinar,SBM
44	09/6/1998	Not Assessed	Off Porbandar	Ocean Barge
45	09/6/1998	Not Assessed	Off Veraval	Ocean Pacific
46	08/7/1999	500/FO	Mul Dwarka	MV Pacific Acadian
47	19/7/2000	Not Assessed	Off Sagar Island	MV Prime Value
48	8/9/2000	Not Assessed	Off Fort Aguada	MV River Princess
49	17/12/2000	1/FO	Bombay Harbour	MV STonnesewall Jackson
50	08/6/2001	Not Assessed	Vadinar Gulf of kutch	Not known
51	10/7/2001	1305/Diesel Oil	Hooghly river	MV Lucnam
52	23/09/2002	Not Assessed	Off Pt Calimare 220 NM	MV HIDERBAHY
53	29/04/2003	2000 Ltrs of Arab light crude oil	05 miles off Kochi	MT BR AMBEDKAR
54	09/05/2003	2000/Naphtha	Mumbai harbour (sw of west Colaba Pt.)	MT UPCO_III
55	18/05/2003	145/FFO	Off Haldia	MV SEGITEGA BIRU
56	10/08/2003	300/Crude Oil	ONGC Rig (BHN)	URAN Pipe Line
57	28/02/2004	01/Crude Oil	36 inches ONGC pipe line at MPT Oil Jetty (Tata Jetty -OPL PIRPAU)	During Cruide oil trasfer from Jawahar Dweep to ONGC -Trombay through 36 ` pipe
58	01/10/2004	500 to 600 Ltrs	Berth – MPT – 8 Goa	During oil transfer
59	23/03/2005	110	Off Goa (Aguada Lt)	MV Maritime Wisdom off Aguada Lt.
60	27/07/2005	80	Fire taken place on oil platform off Bombay high	BHN Platform Bombay High
61	30/08/2005	08	Sunken Ship off Tuticorin	MV IIDA

S. No.	Date	Qty and Type of Spill (Tonnes)	Location	Spilled by
62	21/04/2006	90	Sunken Ship off Goa	INS Prahar
63	06/05/2006	Minor spill (less than 100 ltrs)	Sunken Tug off Pt. Calimer Tamilnadu	DCI Tug-IV
64	30/05/2006	70 tons of Furnace Fuel Oil	Grounded off Karawar Port	MV Ocean Seraya
65	14/08/2006	4500	Outside Indian EEZ near A&N Islands	MV Bright Artemis & MV Amar
66	15/10/2007	13.9/FO	Off Jakhau	MV Star Leikanger & barge Dhan Lakshmi due to collision
67	17/10/2007	Not assessed Kakinada	S Yanam Beach, oil rigs	Oil drifted to shore from
68	19/07/2009	50 litres	Off Mangalore	MV Asian Forest
69	06/08/2009 to 13/08/2009	Approx 200 tons (oil debris wash-off on the shorelines)	South Gujarat and Maharashtra Coast (Western India)	Not established
70	09/09/2009	200-500 litres	Paradip Port Anchorage	MV Black Rose
71.	02/01/2010	05 tons	Off South Chennai	Not known
72.	12/04/2010	08-10 tons	Gopalpur (Orissa)	MV Malvika
73.	20/07/2010	80 tons	Panna Offshore, Near Panna SBM	PMT Joint Venture
74.	07/08/2010	700 tons (approx)	Mumbai Harbour	MC Chitra
75.	15/08/2010	20 KL oil removed for the ship	Eastern side of Kavaratti Island	MV Nanda Aprajita
76.	23/11/2010	12 tons	Off Hugli Point	Collission between MV Tiger Spring & MV Green Valley
77	21/01/2011	40 Tons Crude oil	Mumbai High	ONGC Mumbai Uran Pipeline
78	30/01/2011	10 Tons	Haldia Jetty	MV Ratna Urvi
79	30/01/2011	Approx 80 Tons	Naval Dock, Mumbai	Collision between INS Vindhyagiri & MV Nardelake
80	29/03/2011	Not assessed	Sunk off South West Coast of Tamil Nadu Coast	MV Mirach (Panamanian Ship)

... the updates will continue ...

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