BLUE WATERS

Newsletter

On Marine Environment Security

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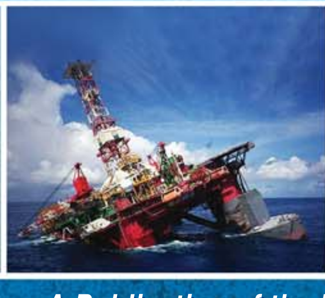
SAFETY OF OFFSHORE INSTALLATIONS



A Publication of the Indian Coast Guard

From the Director General's Desk

Offshore oil and gas production is clearly more challenging than onshore work due to the harsh and complex maritime environment. The operation involves environment risks, most notably due to oil spills from blow-outs, explosions, leaks and any other form of accident on and around platform. The sinking of the Deepwater Horizon oil rig, and the consequent challenges it posed to the US government, the US Coast Guard, the environment protection agencies, fishermen and the general public living near the Gulf of Mexico coast, besides the polluter BP merits detailed study. The Deepwater oil spill ranks as one of the biggest spills in the world, and the pollution response actions taken is one of the largest ever undertaken, with more than 5500 vessels, 120 aircraft, 50,000 personnel and deployment of more than 1000 kilometers of boom. Since the day the incident took place, it has been a testing period for all agencies involved in the response. The latest technologies available for cleanup viz. underwater application of oil spill dispersants, employment of fishing vessels and conversion of vessels of opportunity for skimming operations and innovative shoreline protection measures, were employed. In order to highlight various issues emerging from the Deepwater Horizon incident, articles on offshore drilling, international laws governing offshore operations, the operations undertaken for Deepwater Horizon have been included in this edition of Blue Waters for the benefit of the readers.

The past six months also witnessed two minor oil spills that affected Indian shores, viz. unreported bilge wash drifting to the beaches South of Chennai on 02 Jan 10, and 08 tons of oil-spill near Gopalpur (Orissa) on 12 Apr 10, due to fuel oil spillage from MV Malvika. In both instances the State Governments of Tamil Nadu and Orissa took proactive measures in cleaning up the affected shoreline. However, it is to be noted that Local Contingency Plans (LCP) in order to address the oil-spill cleanup issues that effect their shoreline are not in place even after necessary templates for the plan have been provided to all the coastal states. Hence, I have directed an expert team to produce a sample plan for any one coastal states, and distribute the same to all others after minor modifications to suit a particular state. The coastal state may thereafter promulgate the Local Contingency Plan so that, in case of any oil-spill affecting the state, the stakeholders and responsible authorities can be alerted for undertaking the assigned roles and responsibilities.

As the chairman NOSDCP, I would like to reiterate to all oil handling agencies and E&P operators to implement all necessary safety and environment protection measures, as we cannot afford a Deepwater Horizon like incident in our waters. Moreover, the Major Ports are to take all necessary preventive measures so that all carriers are safely loaded and ships are inspected thoroughly for seaworthiness. The issues requiring immediate attention of all resources agencies and stakeholders were discussed during the 15th NOSDCP meeting held at Dehradun on 18 Jun 10, and I earnestly expect that the decisions taken during the meeting are implemented in a time bound manner. Your proactive action for oil spill preparedness is the 'need of the hour'.

Jai Hind

(Anil Chopra)
Vice Admiral
Director General
Indian Coast Guard

15 Jul 10
New Delhi

Editorial

This issue of 'Blue Waters' is focused on informing the readers on the offshore operational issues such as the oil rigs and platforms used for exploration. International laws governing the offshore operations and the ongoing oil pollution response operation that is being undertaken for the largest ever oil spill at Gulf of Mexico.

Every day of the BP oil spill response operation is a valuable lesson to every offshore industry in the world, and also for the governments to evaluate their own preparedness and to put necessary preventive measure in place.

The regulatory and liability regimes for the oil spill from offshore installations is still not clearly elucidated. It is found that some of the provisions of the Environment Protection Act 1986 are extended to the offshore installation which are located beyond 12 nautical miles, whereas the EP Act 1986 is limited to the Territorial waters. The 2003 Amendments made to the MS Act brings all forms of offshore installation including the pipelines under the MS Act 1958, but the liability regimes are yet to be addressed. I hope this issue will be resolved soon by the concerned Ministries and departments.

I once again solicit your continued cooperation in providing articles and the information so as to spread all necessary information to all concerned in the larger interest of protecting our Marine Environment.

(Donny Michael)
Commandant
Joint Director (Environment)

CONTENTS

ARTICLES

BASIC INFORMATION ON OFFSHORE DRILLING OPERATIONS

Drilling for oil and natural gas offshore, in some instances hundreds of miles away from the nearest landmass, poses a number of different challenges over drilling onshore. The actual drilling mechanism used to delve into the sea floor is much the same as can be found on an onshore rig. However, with drilling at sea, the sea floor can sometimes be thousands of feet below sea level. Therefore, while with onshore drilling the ground provides a platform from which to drill, at sea an artificial drilling platform must be constructed.

Drilling offshore dates back as early as 1869, when one of the first patents was granted to T.F. Rowland for his offshore drilling rig design. This rig was designed to operate in very shallow water, but the anchored four legged tower bears much resemblance to modern offshore rigs. It wasn't until after World War II that the first offshore well, completely out of sight from land, was drilled in the Gulf of Mexico in 1947. Since then, offshore production, particularly in the Gulf of Mexico, has been very successful, with the

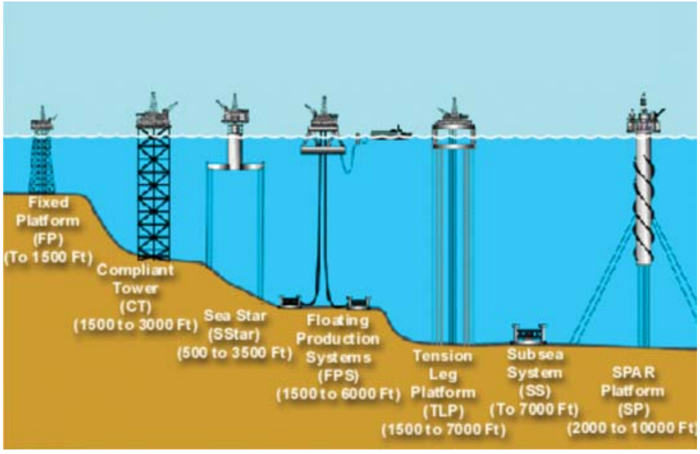
discovery and delivery of a great number of large oil and gas deposits.

The Drilling Template

Since the land that is going to be drilled through cannot provide a base for offshore drilling as it does for onshore drilling, an artificial platform must be created. This artificial platform can take many forms, depending on the characteristics of the well to be drilled, including how far underwater the drilling target is. One of the most important pieces of equipment for offshore drilling is the subsea drilling template. Essentially, this piece of equipment connects the underwater well site to the drilling platform on the surface of the water. This device, resembling a cookie cutter, consists of an open steel box with multiple holes in it, dependent on the number of wells to be drilled. This drilling template is placed over the well site, usually lowered into the exact position required using satellite and GPS technology. A relatively shallow hole is then dug, in which the drilling template is cemented into place. The drilling template, secured to the sea floor and attached to the drilling platform above with cables, allows for accurate drilling to take place, but allows for the movement of the platform above, which will inevitably be affected by shifting wind and water currents.

In addition to the drilling template, a blowout preventer is installed on the sea floor. This system, much the same as that used in onshore drilling, prevents any oil or gas from seeping out into the water. Above the blowout preventer, a specialized system known as a 'marine riser' extends from the sea floor to the drilling platform above. The marine riser is designed to house the drill bit and drillstring, and yet be flexible enough to deal with the movement of the drilling platform. Strategically placed slip and ball joints in the marine riser allow the subsea well to be unaffected by the pitching and rolling of the drilling platform.

Offshore Drilling Rigs



There are two basic types of offshore drilling rigs :-

- Mobile Rigs can be moved from place to place, allowing for drilling in multiple locations.
- Rigs are permanently placed.

Moveable rigs are often used for exploratory purposes because they are much cheaper to use than permanent platforms. Once large deposits of hydrocarbons have been found, a permanent platform is built to allow their extraction. The sections below describe a number of different types of moveable offshore platforms.

Drilling Barges

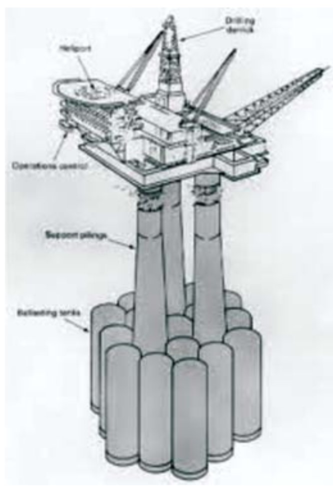
Drilling barges are used mostly for inland, shallow water drilling. This typically takes place in lakes, swamps, rivers, and canals. Drilling barges are large, floating platforms, which must be towed by tugboat from location to location. Suitable for still, shallow waters, drilling barges are not able to withstand the water movement experienced in large open water situations.

Jack-Up Rigs

Jack-up rigs are similar to drilling barges, with one difference. Once a jack-up rig is towed to the drilling site, three or four 'legs' are lowered until they rest on the sea bottom. This allows the working platform to rest above the surface of the water, as opposed to a floating barge. However, jack-up rigs are suitable for shallower waters, as extending these legs down too deeply would be impractical. These rigs are typically safer to operate than drilling barges, as their working platform is elevated above the water level.

Submersible Rigs

Submersible rigs, also suitable for shallow water, are like jack-up rigs in that they come in contact with the ocean or lake floor. These rigs consist of platforms with two hulls positioned on top of one another. The upper hull contains the living quarters for the crew, as well as the actual drilling platform. The lower hull works much like the outer hull in a submarine



- when the platform is being moved from one place to another, the lower hull is filled with air making the entire rig buoyant. When the rig is positioned over the drill site, the air is let out of the lower hull, and the rig submerses to the sea or lake floor. This type of rig has the advantage of mobility in the water, however once again its use is limited to shallow water areas.

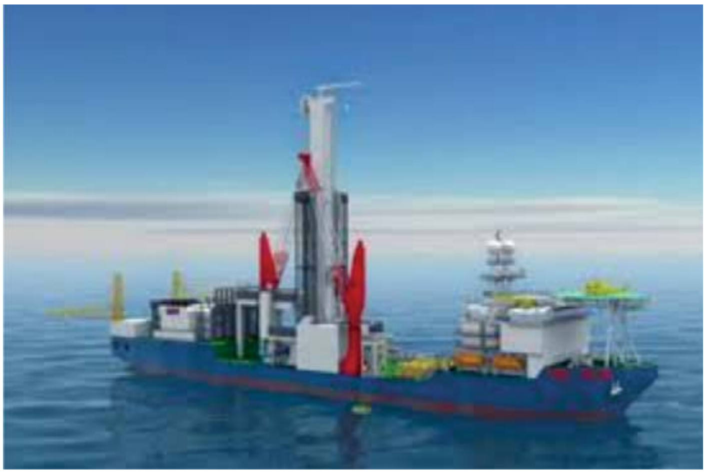
Semisubmersible Rigs

Semisubmersible rigs are the most common type of offshore drilling rigs, combining the advantages of submersible rigs with the ability to drill in deep water. Semisubmersible rigs work on the same principle as submersible rigs; through the ‘inflating’ and ‘deflating’ of its lower hull. The main difference with a

semi-submersible rig, however, is that when the air is let out of the lower hull, the rig does not submerge to the sea floor. Instead, the rig is partially submerged, but still floats above the drill site. When drilling, the lower hull, filled with water, provides stability to the rig. Semisubmersible rigs are held in place by huge anchors, each weighing upwards of ten tons. These anchors, combined with the submerged portion of the rig, ensure that the platform is stable and safe enough to be used in turbulent offshore waters. Semisubmersible rigs can be used to drill in much deeper water than the rigs mentioned above.

Drillships

Drillships are exactly as they sound, ships designed to carry out drilling operations. These boats are specially designed to carry drilling platforms out to deep-sea locations. A typical drillship will have, in addition to all of the equipment normally found on a large ocean ship, a drilling platform and derrick located on the middle of its deck. In addition, drillships contain a hole (or ‘moonpool’), extending right through the ship down through the hull, which allow for the drill string to extend through the boat, down into the water. Drillships are often used to drill in very deep water, which can often be quite turbulent. Drillships use what is known as ‘dynamic positioning’ systems. Drillships are equipped with electric motors on the underside of the ships hull, capable of propelling the ship in any direction. These motors are integrated into the ships computer system, which uses satellite positioning technology, in conjunction with sensors located on the drilling template, to ensure that the ship is directly above the drill site at all times.



Offshore Drilling and Production Platforms

As mentioned, moveable rigs are commonly used to drill exploratory wells. In some instances, when exploratory wells find commercially viable natural gas or petroleum deposits, it is economical to build a permanent platform from which well completion, extraction, and production can occur. These large, permanent platforms are extremely expensive, however, and generally require large expected hydrocarbon deposits to be economical to construct. Some of the largest offshore platforms are located in the North Sea, where because of almost constant inclement weather, structures able to withstand high winds and large waves are necessary. A typical permanent platform in the North Sea must be able to withstand wind speeds of over 90 knots, and waves over 60 feet high. Correspondingly, these platforms are among the largest structures built by man. There are a number of different types of permanent offshore platforms, each useful for a particular depth range.

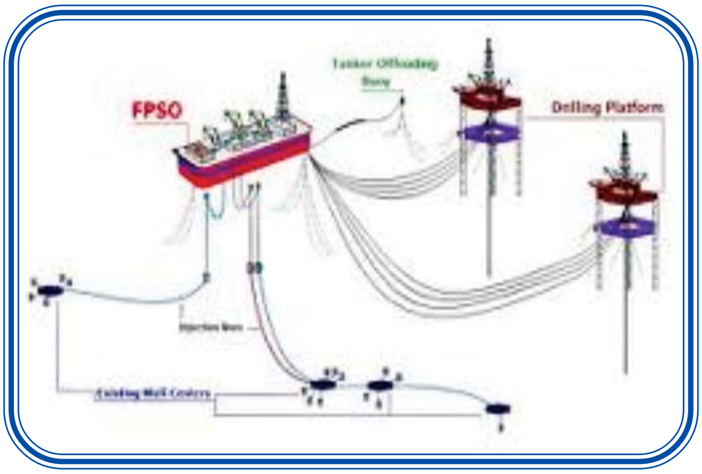
This depiction of offshore drilling and completion platforms gives an idea of just how massive these offshore rigs can be. For reference, the fixed platform is usually in no more than 1,500 feet of water whereas the height of the Hoover Dam, from top to bottom, is less than half that, at just under 730 feet. Because of their size, most permanent offshore rigs are constructed near land, in pieces. As the components of the rig are completed, they are taken out to the drilling location. Sometimes construction or assembly can even take place as the rig is being transported to its intended destination.

Fixed Platforms

In certain instances, in shallower water, it is possible to physically attach a platform to the sea floor. This is what is shown above as a fixed platform rig. The 'legs' are constructed with concrete or steel, extending down from the platform, and fixed to the seafloor with piles. With some concrete structures, the weight of the legs and seafloor platform is so great, that they do not have to be physically attached to the seafloor, but instead simply rest on their own mass. There are many possible designs for these fixed, permanent platforms. The main advantages of these types of platforms are their stability, as they are attached to the sea floor there is limited exposure to movement due to wind and water forces. However, these platforms cannot be used in extremely deep water, it simply is not economical to build legs that long.

Floating Production Systems

Floating production systems are essentially semisubmersible drilling rigs, as discussed above, except that they contain petroleum production equipment, as well as drilling equipment. Ships can also be used as floating production systems. The platforms can be kept in place through large, heavy anchors, or through the dynamic positioning system used by drillships. With a floating production system, once the drilling has been completed, the wellhead is actually



attached to the seafloor, instead of up on the platform. The extracted petroleum is transported via risers from this wellhead to the production facilities on the semisubmersible platform. These production systems can operate in water depths of up to 6,000 feet.

Subsea System

Subsea production systems are wells located on the sea floor, as opposed to at the surface. Like in a floating production system, the petroleum is extracted at the seafloor, and then can be 'tied-back' to an already existing production platform. The well can be drilled by a moveable rig, and instead of building a production platform for that well, the extracted oil and natural gas can be transported by riser or even undersea pipeline to a nearby production platform. This allows one strategically placed production platform to service many wells over a reasonably large area. Subsea systems are typically in use at depths of 7,000 feet or more, and do not have the ability to drill, only to extract and transport.

Spar Platforms

Spar platforms are among the largest offshore platforms in use. These huge platforms consist of a large cylinder supporting a typical fixed rig platform. The cylinder however does not extend all the way to the seafloor, but instead is tethered to the bottom by a series of cables and lines. The large cylinder serves to stabilize the platform in the water, and allows for movement to absorb the force of potential hurricanes. The first Spar platform in the Gulf of Mexico was installed in September of 1996. It's cylinder measured 770 feet long, and was 70 feet in diameter, and the platform operated in 1,930 feet of water.

INTERNATIONAL REGULATIONS GOVERNING OFFSHORE OPERATIONS

The need for measures to address pollution from offshore oil and gas activities has been considered by the General Assembly of the United Nations and, for several years, has been discussed actively within both the Commission on Sustainable Development (CSD) and the International Maritime Organization. The United Nations Convention on the Law of the Sea (UNCLOS) creates both an obligation and provides a structure for such measures, which are being pursued by several United Nations Organisations. The United Nations CSD has considered the matter and has concluded that "there is no compelling need at this time to further develop globally applicable environmental regulations in respect of the exploitation and exploration aspects of offshore oil and gas activities." Nonetheless, views are divided. Those in favour of international regulations or guidelines have argued that there are many oil- producing regions that do not have the capacity to develop either national or regional standards and that some kind of international regulations or guidelines would help them. Those who have argued against global measures contend that offshore oil and gas activities only pose a threat of local pollution, which can be dealt with through national

regulations or regional agreements. The industry itself has developed only a modest number of high-level standards. The implementation of meaningful environmental management systems by the oil companies, coupled with changes to well design and overall operational procedures, may offer a means of reducing adverse environmental impacts whilst avoiding prescriptive regulations.

The United Nations and a Structure for Environmental Regulation of Offshore Activities

The United Nations Open-ended Informal Consultative Process was established by the General Assembly (1) to facilitate the annual review by the assembly of developments in ocean affairs. It held its third meeting on 8–15 April 2002. The report of this meeting (2) makes the following recommendations with respect to offshore oil and gas activities.

- The General Assembly should recommend that regional seas conventions and action plans in regions where offshore oil and gas industries are developing or are in prospect, and where installations do not exist, should develop programmes and/or measures to prevent, reduce and control pollution from offshore installations.
- The General Assembly should invite regional seas conventions and action plans that have developed such programmes and measures to make their information and experience available for this process.
- The General Assembly should invite International Maritime Organization (IMO), United Nations Environmental Programme (UNEP) and World Meteorological Organization (WMO) to undertake an initiative, involving the relevant regional organisations as well as the oil and gas industry, to develop guidance on the best environmental practices to prevent and control pollution from accidents on offshore installations and to mitigate their effects.

UNCLOS on Offshore Operations

The UNCLOS, which entered into force on 16 November 1994, is a widely accepted treaty, having been accepted by majority of nations and the notable exceptions being the US. The convention provides an overall framework for environmental governance of offshore and, to some extent, onshore oil and gas exploration and production operations. The implementation and enforcement principles of UNCLOS can be summarised as follows.

- States party must adopt laws and regulations on pollution from land-based sources and through the atmosphere, taking into account international provisions, and enforce these laws and regulations (Articles 207(1), 212(1), 213 and 222).
- With respect to seabed activities subject to national jurisdiction, states party must adopt and enforce national laws and regulations to prevent, reduce and control pollution of the marine

environment arising from, or in connection with, seabed activities subject to their jurisdiction and from artificial islands, installations and structures, which must be no less effective than international rules, standards and recommended practices and procedures. States are also required to endeavour to harmonise their policies at the appropriate regional level (Articles 208 and 214).

- States shall adopt laws and regulations and take other measures on pollution from seabed activities and from dumping, which shall be no less effective than international (in the case of dumping, global) rules and standards (Articles 139, 208, 209, 210 and 214).
- Coastal states are required to adopt and enforce national laws and regulations to prevent, reduce and control pollution of the marine environment from artificial islands, installations and structures under their jurisdiction. Furthermore, states must adopt measures to minimise, to the fullest possible extent, pollution from installations and devices used in the exploration or exploitation of the natural resources of the seabed and subsoil (Articles 194, 208 and 210).
- States should co-operate in establishing contingency plans against pollution (Article 199).
- States shall enforce this legislation within their jurisdiction (including vessels flying their flag and aircraft of their registry) and ensure that their nationals, and bodies controlled by such nationals, comply with the requirements applicable in the areas of the seabed that are beyond national jurisdiction, known as 'the area' (Articles 139, 208, 209, 210 and 214).
- States must adopt laws and regulations on pollution from vessels that are entitled to fly their flag (flag states) that are at least as effective as generally accepted international rules and standards (Articles 139, 208, 209, 210 and 214). Industry trade organisations have also developed a framework of standards, recommended practices and other guidelines for environmental protection. The principal such organisations for the oil and gas industries are the International Organization for Standardization (ISO), the International Association of Oil and Gas Producers (OGP), the International Association of Drilling Contractors (IADC) and the American Petroleum Institute (API). These organisations represent their membership before government and governmental organisations. The Society of Petroleum Engineers sponsors a semi-annual environmental conference and a number of regional conferences with environmental 'best practice' as their focus.

It is noteworthy that Articles 208, 209 and 211 of UNCLOS do not differentiate between international standards, recommended practices and procedures developed by intergovernmental bodies such as the IMO and those developed by the industry organisations producing internationally recognised standards such as the ISO and API.

Offshore Activities in Areas Subject to National Jurisdiction

Under UNCLOS, exploitation of seabed mineral

resources is subject to the exclusive control of the adjacent coastal state out to the limit of its exclusive economic zone or the limit of its continental shelf if the continental shelf extends beyond 200 miles. In 1996, the United Nations CSD concluded that "there is no compelling need at this time to further develop globally applicable environmental regulations in respect of the exploitation and exploration aspects of offshore oil and gas activities." Further, it was concluded that "the primary focus of action on the environmental aspects of offshore oil and gas operations continues to be at the national, sub-regional and regional levels," and noted that, in support of such action, there was a need to "share information on the development and application of satisfactory environmental management systems."

Thirteen 'regional seas' programmes have been established under the auspices of UNEP, involving more than 140 nations. Two other regional programmes are based on free-standing conventions: The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) and the Convention for the Protection of the Marine Environment of the Baltic Sea (Helsinki Convention). In addition, a high-level intergovernmental forum, the Arctic Council, has been established to address the mutual concerns faced by the Arctic governments and indigenous populations. **India forms parts of the South Asia Seas Programme (SASP).** The SASP has five members viz, Bangladesh, Maldives, India, Pakistan and Sri Lanka. The SASP has developed the South Asia Cooperative for Environment Protection (SACEP) and has formulated a Regional Contingency Plan for South Asia Seas addressing both oil and HNS. The SACEP does not specifically address issues related to Offshore Operations environmental pollution.

While **no global measures** have been adopted regulating the discharges directly arising from the exploration, exploitation and associated offshore processing of oil and gas, harmonised regulations with respect to the exploration and exploitation of oil and gas have been developed as part of the Baltic, Mediterranean, north-east Atlantic and Kuwait regional programmes and under the Arctic Council. The matter has been considered by other regional programmes; however, in general, they have decided that other issues should be given higher priority.

The regional programmes also offer a means for intergovernmental exchanges on regulatory practice and experiences, including exchange of information on best environmental practice. The UNEP maintains a website to facilitate the exchange of such information as it relates to offshore oil and gas exploration and production.

DEEPWATER HORIZON INCIDENT

The Status as on 15 Jul 2010

The *Deepwater Horizon* oil spill (also known as the Gulf of Mexico Oil Spill or the BP Oil Spill) was the largest accidental marine oil spill in the history of the petroleum industry. The spill stemmed from a sea-floor oil gusher that resulted from the Deepwater Horizon drilling rig explosion 50 miles southeast of the

Mississippi River delta on 20 April 2010. Most of the 126 workers on the platform were safely evacuated, and a search and rescue operation began for 11 missing workers. The *Deepwater Horizon* sank in about 1,500 m of water on 22 April 2010. On April 23 the U.S. Coast Guard suspended the search for missing workers who are all presumed dead.

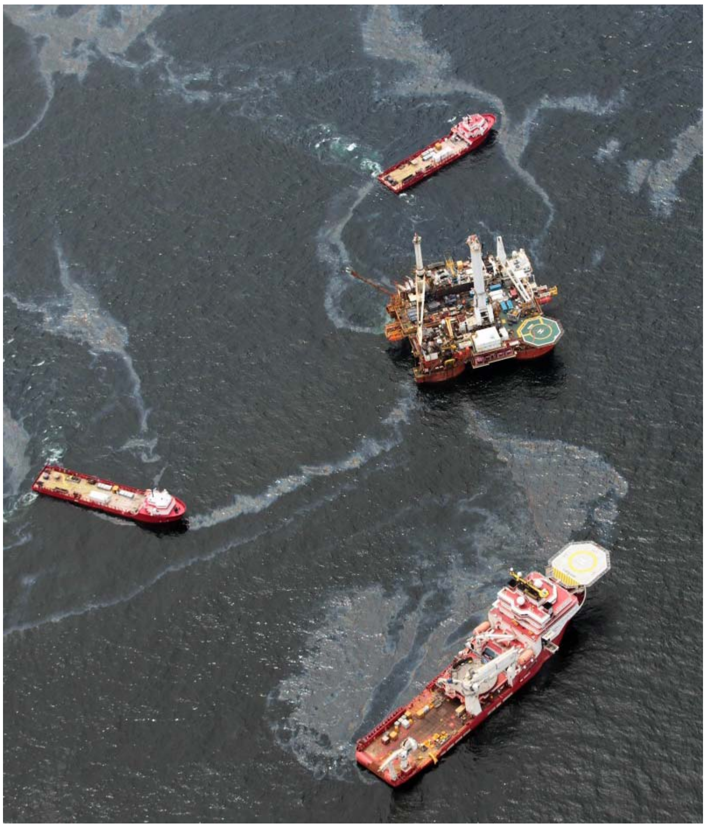
BP was principal developer of the Macondo Prospect oil field where the accident occurred. The *Deepwater Horizon*, owned by Transocean Ltd., was under a contract with BP to drill an exploratory well. BP was the lessee and principal developer of the Macondo Prospect oil field in which the rig was operating. At the time of the explosion, BP and Transocean were in the process of closing the well in anticipation of later production. Halliburton had recently completed cementing of casings in the well. The U.S. Government has named BP as the responsible party in the incident and will hold the company accountable for all cleanup costs resulting from the oil spill. BP has accepted responsibility for the oil spill and the cleanup costs but indicated that the accident was not their fault as the rig was run by Transocean personnel.

The sinking of the platform caused **crude oil** to gush out of the riser - the 5,000-foot pipe that connects the well at the ocean floor to the drilling platform on the surface. Attempts to shut down the flow, first estimated at about 1,000 barrels of oil a day, failed when a safety device called a blowout preventer could not be activated. On 28 April 10, government officials said there were three leaks and the well was spilling over 5,000 barrels of oil a day - nearly a mile below sea level. Some independent estimates made in the initial days of the accident put the spill rate as in the range of 20,000 to 100,000 barrels per day.

On 27 May 2010, a U.S. government team of experts announced its determination that the overall best initial estimate for the lower and upper boundaries of flow rates of oil is in the range of 12,000 and 19,000 barrels per day. On 10 June 10, the expert revised their estimate upwards to 20,000 to 400,000 barrels per day. By 10 June 10, this amounted to between 1,000,000 barrels (42 million gallons) and 2,000,000 barrels (84 million gallons) released since 22 April, making the *Deepwater Horizon* by far the worst accidental release of oil in U.S. history. On 03 June 10, BP installed a containment system on the leaking well that was capturing 15,000 barrels per day by 09 June 10. Live video feeds from the well site a mile beneath the water's surface showed a sizable amount of oil escaping from the area of the containment cap.

Previous oil spills

Prior to the *Deepwater Horizon*, the largest oil spill in U.S. waters was in 1968 when the tanker *Mandoil II* spilled about 300,000 barrels into the Pacific Ocean off Columbia River near Warrenton, Oregon. The 1989 wreck of the Exxon Valdez released about 261,905



barrels (11 million gallons) of crude oil into Prince Williams Sound in Alaska. In 2005, Hurricane Katrina caused a spill of eight million gallons of crude and refined oil products from many different point sources into the southern corridor of the Mississippi River and the Gulf of Mexico. In 1979-80, the Ixtoc 1 exploratory well operated the PEMEX, the Mexican national oil corporation, experienced a blowout and ultimately released about 3.3 million barrels (140 million gallons) of crude oil into the Bay of Campeche in Mexico.

Effects of oil spill

As of end Jun 2010, the oil slick produced by the *Deepwater Horizo*n oil spill has covered as much 28,958 square miles (75,000 square kilometers), with the extent and location of the slick changing from day to day depending on weather conditions. By the first week in June, oil had come ashore in Louisiana, Mississippi, Alabama and Florida, with significant wildlife fatalities in Louisiana. In the weeks following the accident, scientists discovered enormous oil plumes in the deep waters of the Gulf of Mexico, raising concerns about ecological harm far below the surface that would be difficult to assess.

By 09 June 10, BP stock had lost close to half its value, more than $82 billion, in the seven weeks since the spill started, and by 22 June 10 the company had spent $2.0 billion, including the cost of the spill response, containment, relief well drilling, grants to the Gulf states, claims paid, and federal costs. By 22 June 10, BP stated that it had opened 25 claims offices and issued approximately 32,000 claims checks totalling $105 million. On 22 June 10, BP announced the formation of its Gulf Coast Restoration Organization to oversee the company's reponse to the disaster.

With oil still flowing from the leak, nine weeks after the accident, it was clear that the oil industry's impressive ability to extract oil from ever deeper offshore environments had not been accompanied by an equally effective capability to predict and respond to accidents. As drillers pushed the boundaries, regulators didn't always mandate preparation for disaster recovery or perform independent monitoring. Documents and testimony from Congressional hearings revealed a series of potential failures and warning signs at the well site in the hours leading up to the rig explosion, as well as questions that had been raised years earlier about the reliability of deepwater technology and the ability of the industry to deal with "worse-case scenarios" of accidents. The Minerals Management Service, the government agency with lead oversight of offshore oil and gas activity, came under heavy criticism for lax environmental planning and for sacrificing sound stewardship of a public natural resource for the narrow economic gain to private industry.

Attempts to stop the leak

BP's long term plan is to complete so-called relief wells that will intercept the existing wellbore at approximately 12,800 feet below the sea floor. Once that is accomplished, heavy fluids and cement can be pumped down hole to kill the well. BP estimated this process will take at least 90 days. On 02 May 10, BP began drilling the first deep-water intercept relief well, which is located one-half mile from the Macondo well, in a water depth of roughly 4,990 feet. A second relief well was begun on 16 May 10. BP's engineers sought to cut off the leak by using ROVs to

activate the blowout preventer (BOP), a massive five story, 450 ton stack of shut-off valves, rams, housings, tanks and hydraulic tubing that sits on top of the well. The BOP is designed to quickly shut off the flow of oil or natural gas by squeezing, crushing or shearing pipe if there is a sudden, unexpected spike in pressure. **This procedure failed**. Early speculation suggested that gas hydrates formed in the BOP, causing it to malfunction. A gas hydrate is a crystalline solid consisting of gas molecules, usually methane, each surrounded by a cage of water molecules. It is similar to ice, except that the crystalline structure is stabilized by the guest gas molecule within the cage of water molecules. Gas hydrates are common when gas and water mix, and are found on the ocean floor where there are low temperatures and high pressure.

On 07 May 10, BP maneuvered a 98-ton steel containment dome over the worst of the leaks, and planned to funnel the oil through a pipe to the surface, where it would be collected by a drill ship. This procedure failed when the dome's opening was clogged with gas hydrates. The dome was moved off to the side of the wellhead and is resting on the sea floor.

On May 12, 2010, BP abandoned plans for a second, smaller containment dome or "**top hat**" cofferdam, a 5-foot-tall, 4-foot-diameter structure that weighs less than 2 tons and would be injected with alcohol to act as an antifreeze to keep its outlet clear of gas hydrates.

The first significant success at reducing the release of oil came on 17 May 2010, when robots inserted a four-inch diameter Riser Insertion Tube Tool (RITT) into the Horizon's riser (21-inch diameter pipe) between the well and the broken end of the riser on the seafloor in 5,000 feet of water. BP subsequently reported that from the period from 17th May to 23rd May, the daily oil

rate collected by the RITT had ranged from 1,360 barrels of oil per day (b/d) to 3,000 b/d, and the daily gas rate has ranged from 4 million cubic feet per day (MMCFD) to 17 MMCFD. The oil is being stored and gas is being flared on the drillship Discoverer Enterprise, on the surface 5,000 feet above. The RITT was disabled on the evening of 25 May 2010, in preparation for the "top kill" procedure initiated the following day.

On 26 May 2010, the U.S. government gave BP the approval to proceed with a "**top kill**" operation to stop the flow of oil from the damaged well. The procedure was intended to stem the flow of oil and gas and ultimately kill the well by injecting heavy drilling fluids through the blowout preventer on the seabed, down into the well.On 29 May 2010, BP engineers said that the "top kill" technique had failed. Despite successfully pumping of over 30,000 barrels of heavy mud, in three attempts at rates of up to 80 barrels a minute, and deploying a wide range of different bridging materials, the operation did not overcome the flow from the well.

Simultaneously with the top kill, BP attempted what is known as a "**junk shot**." This method involves debris such as shredded tires, golf balls and similar objects being shot under extremely high pressure into the blowout preventer in an attempt to clog it and stop the leak. The process was carried out “a number of times” with the U.S. Coast Guard before BP concluded that it had failed.

After consultation with government officials, BP then attempted with a custom-built cap known as the **Lower Marine Riser Package (LMRP) Cap Containment System.** This involved cutting and then removing the damaged riser from the top of the failed Blow-Out Preventer (BOP) to leave a cleanly-cut pipe at the top of the BOP’s LMRP. The cap was designed to be connected to a riser from the *Discoverer Enterprise* drillship and placed over the LMRP with the intention of capturing most of the oil and gas flowing from the well.

The next move attempted was a “**cut-and-cap**” approach. On 03 June 2010, a cap was succesfully placed on top of the BOP after a 20 foot pair of shears had severed the riser from the BOP. About 6,000 barrels were recovered on 04 June and pumped to a recovery ship on the surface. According to BP, by 08 June, the rate of recovery had risen to about 15,000 barrels per day. On 16 June a second containment system connected directly to the blowout preventer became operational carrying oil and gas to the Q4000 service vessel where it was burned in a clean-burning system. To increase the processing capacity, the drillship *Discoverer Clear Leader* and the floating production, storage and offloading (FPSO) vessel *Helix Producer 1* were added, offloading oil with tankers *Evi Knutsen*, and *Juanita*. Each tanker has capacity of 750,000 barrels (32,000,000 US gallons; 119,000 cubic metres). In early Jul, BP announced that its one-day oil recovery effort accounted for about 25,000 barrels of oil, and the flaring off of 57.1 million cubic feet (1.62×10^6 m^3) of natural gas. The government’s estimates suggested the cap and other equipment were capturing less than half of the oil leaking from the sea floor as of late June.

On 10 July 10, the containment cap was removed to replace it with a better-fitting cap consisting of a Flange Transition Spool and a 3 Ram Stack (“Top Hat Number 10”). On 15 July, BP tested the well integrity by shutting off pipes that were funneling some of the oil to ships on the surface, so the full force of the gusher from the wellhead went up into the cap. That same day, BP said that the leak had been stopped after all the blowout preventer valves had been closed on the newly-fitted cap.

Permanent closure

Transocean’s *Development Driller III* started drilling a first relief well on 02 May and was at 13,978 feet (4,260 m) out of 18,000 feet (5,500 m) as of 14 June. *GSF Development Driller II* started drilling a second relief on 16 May and was halted at 8,576 feet (2,614 m) out of 18,000 feet (5,500 m) as of 14 June while BP engineers verified the operational status of the second relief well’s BOP. Each relief well is expected to cost about $100 million. It is expected that the relief well will be able to undertake the bottom kill of the well in end Aug 2010.

Oil Spill Response

Protection of the coastline

BP assumed responsibility for the initial clean up and mitigation efforts. According to BP Chief Executive, Tony Hayward, “we are taking full responsibility for the spill and we will clean it up and where people can present legitimate claims for damages we will honor them.” On 28 April, the U.S. military announced it was joining the cleanup operation.

The U.S. government established a “unified command” structure to coordinate the response to the spill. The stated purpose of the unified command is to link the organizations responding to the incident and to provide a forum for those organizations to make “consensus decisions.” The *Deepwater Horizon* Unified Command include BP, Transocean, and the following federal agencies : Minerals Management Service, NOAA, the EPA, Homeland Security, the Coast Guard, the Department of the Interior, the Department of State and the Department of Defense.

The three fundamental strategies for addressing spilled oil were adopted i.e. contain it on the surface, away from the most sensitive areas, to dilute and disperse it in less sensitive areas, and to remove it from the water. The Deepwater response employed all three strategies, using a variety of techniques. While most of the oil drilled off Louisiana is a lighter crude, the leaking oil was of a heavier blend which contained asphalt-like substances. Initially BP employed remotely operated underwater vehicles, 700 workers, four airplanes and 32 vessels. By 29 April, 69 vessels including skimmers, tugs, barges and recovery vessels were active in cleanup activities. On 04 May the US Coast Guard stated that 170 vessels, and nearly 7,500 personnel participated, with an additional 2,000 volunteers assisting. On 26 May, all 125 commercial fishing boats helping in the clean up were ordered ashore after some workers began experiencing health problems. On 31 May, BP set up a call line to take cleanup suggestions which received 92,000 responses by late June, 320 of which were categorized as promising.

Containment

The response included deploying many miles of containment boom, whose purpose is to either corral the oil, or to block it from a marsh, mangrove, shrimp/crab/oyster ranch or other sensitive area. Booms extend 18–48 inches (0.46–1.2 m) above and below the water surface and are effective only in relatively calm and slow-moving waters. By 15 July, more than 1200 kilometers of boom were deployed.

Dispersal

On 01 May, two military C-130 Hercules aircraft were employed to spray oil dispersant. Officials requested that BP release information on their dispersant effects. The Environmental Protection Agency later approved the injection of dispersants directly at the leak site, to break up the oil before it reaches the surface, after three underwater tests. Independent scientists suggest that underwater injection of Corexit into the leak might be responsible for the oil plumes discovered below the surface. However, National Oceanic and Atmospheric Administration administrator stated that there was no information supporting this conclusion, and indicated

further testing would be needed to ascertain the cause of the undersea oil clouds. By 12 July, BP had reported applying 1,070,000 US gallons (4.1E+6 l) of Corexit on the surface and 721,000 US gallons (2,730,000 l) underwater (subsea).

Removal

Three basic approaches to removing the oil from the water have been adopted and they were burning the oil, filtering off-shore, and collecting for later processing. On 28 April, the US Coast Guard announced plans to corral and burn off up to 1000 barrels of oil each day. It tested how much environmental damage a small, controlled burn of 100 barrels did to surrounding wetlands, but could not proceed with an open ocean burn due to poor conditions.

BP stated that more than 215,000 barrels of oil-water mix had been recovered by 25 May. In mid June, BP ordered 32 machines that separate oil and water with each machine capable of extracting up to 2000 barrels per day, BP agreed to use the technology after testing machines for one week. By 28 June, BP had successfully removed 890,000 barrels of oily liquid and burned about 314,000 barrels of oil. The Environmental Protection Agency prohibited the use of skimmers that left more than 15 parts per million of oil in the water. Many large-scale skimmers are therefore unable to be used in the cleanup because they exceed this limit. An urban myth developed that the U.S. government declined the offers because of the requirements of the Jones Act. This proved untrue and many foreign assets deployed to aid in cleanup efforts. The Taiwanese supertanker *A Whale*, recently retrofitted as a skimmer, was tested in early July but failed to collect a significant amount of oil. According to Bob Grantham, a spokesman for shipowner TMT, this was due to BP's use of chemical dispersants. The Coast Guard said 33 million gallons of tainted water had been recovered, with 5 million gallons of that consisting of oil. An estimated 11 million gallons of oil were burned. BP said 826,000 barrels had been recovered or flared.

Controlled Burn

On 28 April, BP performed the first controlled burn of surface oil, also known as an *in situ* burn. Fire booms, U-shaped devices that are towed behind two boats and used to pull oil away from the main spill for safe burning, can be used when seas are below 3 feet and when sufficient amounts of oil can be "corralled." Controlled burns continued to be used at the *Deepwater Horizon* spill site through mid-May, when conditions were right. This represents the first on-water in-situ burning at a spill since the 1989 test burn during the Exxon Valdez oil spill, which was the first time a fire-resistant boom was used at a spill. By 22 June, more than 225 controlled burns have been conducted that removed more than 9.3 million gallons of oil from the open water.

As of end Jun, the Unified Command identified the following resources employed to respond to the spill :

- Total response vessels: 6,300

- Total boom deployed: more than 6.7 million feet (regular plus sorbent boom)
- Oily water recovered to date: more than 25 million gallons
- Dispersant used to date: more than 1.345 million gallons
- Oil recovered: 13.5 million gallons
- Overall personnel responding: more than 37,000

Clean up costs

The Oil Spill Liability Trust Fund (OSLTF), established in the US, is available to pay the expenses of federal response to oil pollution under the Federal Water Pollution Control Act, and to compensate claims for oil removal costs and certain damages caused by oil pollution as authorized bythe Oil Pollution Act of 1990 (OPA). The law requires that disbursements under the OSLTF be recovered from responsible parties liable under OPA when there is a discharge of oil to navigable waters. Aggressive collection efforts are consistent with the "polluter pays" public policy underlying the OPA. BP and Transocean have been named as responsible parties, although all claims are being processed centrally through BP.

The OPA requires that responsible parties pay the ***entire*** pricetag for cleaning up after spills from offshore drilling, including lost profits, destroyed property and lost tax revenue, but the statute caps their liability for economic damages at $75 million. In a letter to Homeland Security Secretary Janet Napolitano and Interior Secretary Ken Salazar on 16 May 2010, BP Chief Tony Hayward said the company believes claims related to the spill will exceed the limit. Howard stated that "we are prepared to pay above $75 million on these claims and we will not seek reimbursement from the U.S. Government or the Oil Spill Liability Trust Fund."

On 05 July, BP reported that its own expenditures on the oil spill had reached $3.12 billion, including the cost of the spill response, containment, relief well drilling, grants to the Gulf states, claims paid, and federal costs. The United States Oil Pollution Act of 1990 limits BP's liability for non-cleanup costs to $75 million unless gross negligence is proven. BP has said it would pay for all cleanup and remediation regardless of the statutory liability cap. Nevertheless, some Democratic lawmakers are seeking to pass legislation that would increase the liability limit to $10 billion.

On 16 Jun, after a meeting with the US president, BP executives agreed to create a $20 billion spill response fund.

As of 15 July, the oil leak has been plugged and the response operation is ongoing to neutralise the spilled oil. The operation will be terminated only after undertaking complete sealing of the well by cementing through the relief wells. This may happen in end Aug/ early Sep 10.

IMO NEWS

60th Marine Environment Protection Committee (MEPC)

The IMO's Marine Environment Protection Committee (MEPC) after the 60th session of the MEPC meeting has concluded that more work needs to be done before it completes its consideration of the proposed mandatory application of technical and operational measures designed to regulate and reduce emissions of greenhouse gases (GHGs) from international shipping.

Meeting at the Organization's London headquarters, the Committee's 60th session agreed to establish an intersessional Working Group to build on the significant progress that had been made during the meeting on technical and operational measures to increase the energy efficiency of ships. The Working Group will report back to the Committee's next session (MEPC 61), in September 2010.

Although the meeting was able to prepare draft text on mandatory requirements for the Energy Efficiency Design Index (EEDI) for new vessels and on the Ship Energy Efficiency Management Plan (SEEMP) for all ships in operation, the Committee noted that, among other things, issues concerning ship size, target dates and reduction rate in relation to the EEDI requirements all required finalization. The Committee agreed on the basic concept that a vessel's attained EEDI shall be equal or less (e.g. more efficient) than the required EEDI, and that the required EEDI shall be drawn up based on EEDI baselines and reduction rates yet to be agreed. The Committee noted guidelines for calculating the EEDI baselines using data from existing ships in the Lloyd's Register Fairplay database. The Committee agreed to establish an Expert Group on market-based measures to undertake a feasibility study and impact assessment of the various proposals submitted for a market-based instrument for international maritime transport – again, reporting back to MEPC 61.

MARPOL Amendments

Among other items on a full agenda, the Committee adopted amendments to the MARPOL Convention to formally establish a North American Emission Control Area, in which emissions of sulphur oxides (SOx), nitrogen oxides (NOx) and particulate matter from ships will be subject to more stringent controls than the limits that apply globally. Another new MARPOL regulation, to protect the Antarctic from pollution by heavy grade oils, was also adopted. These amendments are expected to enter into force on 01 Aug 2011.

Implementation of the BWM Convention

The MEPC addressed issues relating to the implementation of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention) and adopted a resolution that requests Administrations to encourage the installation of ballast water management systems on new ships, in accordance with the application dates contained in the Convention. The resolution also urges countries that have not already done so to ratify the Convention, which will enter into force twelve months after the date on which not fewer than 30 States, the combined merchant fleets of which constitute not less than 35 per cent of the gross tonnage of the world's merchant shipping, have become Parties to it. To date, it has been ratified by 22 countries representing 22.65 per cent of the gross tonnage of the world's merchant shipping. The Committee decided to grant 'basic approval' to eight ballast water management systems that make use of active substances and 'final approval' to four such systems, after consideration of the reports of the tenth, eleventh and twelfth meetings of the Joint Group of Experts on the Scientific Aspects of Marine Environment Protection (GESAMP) Ballast Water Working Group, which met in September, October and December 2009, respectively.

Protocol to the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996 (the HNS Convention)

A Protocol to the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996 (the HNS Convention), aimed at bringing that Convention into effect, has been adopted by a Diplomatic Conference convened by IMO at its Headquarters in London. The Protocol of 2010 to the HNS Convention addresses practical problems that have prevented many States from ratifying the original Convention, which, despite being adopted in 1996, has, to date, only 14 ratifications and is some way from meeting the conditions for its entry into force.

Under the 2010 Protocol, if damage is caused by bulk HNS, compensation would first be sought from the shipowner, up to a maximum limit of 100 million Special Drawing Rights (SDR) (around US$150 million). Where damage is caused by packaged HNS, or by both bulk HNS and packaged HNS, the maximum liability for the shipowner is 115 million SDR (US$172.5 million). Once this limit is reached, compensation would be paid from the second tier, the HNS Fund, up to a maximum of 250 million SDR (US$375 million) (including compensation paid under the first tier).

The Fund will have an Assembly, consisting of all States Parties to the Convention and Protocol, and a dedicated Secretariat. The Assembly will normally meet once a year. The Conference agreed that the Protocol should enter into force eighteen months after the date on which:

(a) at least twelve States, including four States each with not less than 2 million units of gross tonnage, have expressed their consent to be bound by it; and

(b) IMO has received information in accordance with article 20, paragraphs 4 and 6, that those persons in such States who would be liable to contribute pursuant to article 18, paragraphs 1(a) and (c), of the Convention, as amended by this Protocol, have received, during the preceding calendar year, a total quantity of at least 40 million tonnes of cargo contributing to the general account.

REPORTS

INDIA WATCH

OIL SPILL OFF GOPALPUR ORISSA

The oil spill incident reported near Gopalpur in Orissa by Essar Shipping by the vessel MV Malavika at 1600 hrs on 12 Apr 2010 at Gopalpur anchorage. The barge Sneh IV whilst casting off made contact with MV Malvika in way of fuel oil tank No 4 Starboard that ruptured ship's hull resulting in spillage of fuel oil from the said tank. Approximately 08 tons of fuel oil escaped.

Coast Guard ship with integrated Helicopter on board was diverted from patrol area and the ship immediately launched Helo for aerial recee to check the extent of oil spill. CG helicopter carried out aerial survey for oil spill expanse up to 20 Kms north of Rushiklulya river mouth and 10 Km seaward from the coast. OSD was sprayed by Dornier to neutralise the oil spill. Satisfactory cleanup action was initiated by the Gopalpur port authority and the state government.

WORLD WATCH

OIL SPILL FROM PIPELINE IN NEW ORLEANS

The US Coast Guard, the State of Louisiana, and the Cypress Pipe Line Company (CPL) have deployed personnel and equipment to respond to an oil spill from a pipeline on 07 Apr 10, in the Delta National Wildlife Refuge.

About 5,000 feet of containment boom was deployed to enclose the oil. Workers deployed an additional 2,000 feet of boom around the environmentally sensitive area near Breton Island. More than 50 people and 16 vessels were involved in conducting and managing cleanup operations and environmental protection efforts, which included recovery of the oil and attempting to keep wildlife out of the impacted area. There were no reports of any birds or other animals impacted in the incident.

CPL, which operates the pipeline, reported that approximately 18,000 gallons of crude oil has been released. An area of approximately 160 square miles was impacted by the spill-16 square miles of marsh and 120 square miles offshore. Cypress Pipe Line Company is a joint venture between British Petroleum and Chevron Pipe Line Company.

TEXAS OIL SPILL

A collision between a tanker Eagle Otome, owned by AET Tankers, a Malaysian company and a towing vessel at port Texas on led to spillage of 462,000 gallons of oil from the tanker on 24 Jan 2010. The tanker headed for the Exxon Mobil Corp. refinery in Beaumont collided with a vessel pushing two barges. The local Coast Guard intimated that about 10 percent of the total oil spilled was recovered.

It was the largest spill in Texas in 16 years, but still well shy of one 20 years ago involving Norwegian tanker Mega Borg that leaked 4.3 million gallons of crude oil about 60 miles off Galveston. Two sensitive wildlife areas nearby remain unaffected by the spill, which is mostly contained in a 2-mile stretch of the Sabine Neches Waterway near Port Arthur, about 90 miles east of Houston. Authorities have received one report of an oil-covered heron, and residents have been urged to report other affected animals. About 500 responders on the water and in the command post worked overnight to contain the spill. Nearly 46,000 feet of plastic booms and 15 skimmer boats were used for responding to the spill.

OIL SPILL AT SINGAPORE STRAITS

An oil tanker and heavy bulk carrier have been involved in a major collision in the Malacca Straits of the coast of Singapore on 25 May 2010. The accident has caused and estimated 14,600 barrels of light crude oil to spill into the ocean after a 10-meter gash was opened up in the oil tanker as a result of the collision. The spill was contained by emergency oil-spill response vessels from Singapore and Malaysia. The emergency response teams, consisting of 20 vessels, have been rapidly spreading oil dispersants on the spill and have surrounded the area with oil retaining booms in continued efforts to prevent the oil from reaching the coastline.

The Malaysian flagged MT Bunga Kelana 3, an Aframax tanker, had been carrying approximately 62,000 tonnes of light crude oil when it was stuck by the St. Vincent & the Grenadines flagged tanker MV Waily, a bulk carrier. The collision caused a 10-meter wide gash to open on the side of the Bunga Kelana 3, from which approximately 14,600 barrels or 2,000 tonnes of light crude oil has leaked into the ocean. The MV Waily reportedly only suffered minor damage in the incident whilst both vessels are currently anchored in the Singapore Strait due to continuing investigations.

The incident happened in the Malacca Strait, approximately 6 kilometers South of Singapore's south-eastern tip, in the Traffic Separation Scheme (TSS) of the Singapore Strait. Approximately 40% of global shipping trade passes through the Malacca Strait between Malaysia and Indonesia whilst Singapore is currently the world's largest bunkering port and Asia's top oil-trading hub. Shipping lanes and traffic are believed to unaffected by the 4 kilometer radius oil spill.

POLLUTION AT GBR AUSTRALIA

The 230-metre (750 ft) bulk carrier was en-route to China from Gladstone, Queensland, when it sailed outside the shipping lane and ran aground on Douglas Shoal on 03 April 10, 120 kilometres from Rockhampton and 70 km east of Great Keppel Island. One of the vessel's fuel tanks was damaged. It was initially assumed that up to 150 tonnes of heavy fuel oil had leaked from the ship in a narrow oil slick was extending 2 nautical miles from *Shen Neng 1*, but on investigation, it was found that only 3 to 4 tons had been lost. The slick was successfully broken up using chemical dispersants. The 2 to 3 metre swell prevented the use of a boom to contain the oil. According to the Australian Maritime Safety Authority, the *Shen Neng 1* was supposed to be on a route between Douglas Shoal and the Capricorn Islands. The ship went aground 5.8 nautical miles outside the shipping lane.

On 14 April 2010, Australian Federal Police officers executed a search warrant on the vessel and arrested the ship's master and chief officer-on-watch. They faced the Gladstone Magistrates Court on 15 April 2010. The ship's master was charged with liability for a vessel which caused damage to the Great Barrier Reef Marine Park and granted bail and allowed to leave Australia. The chief officer-on-watch was charged with the offence of being the person in charge of a vessel that caused damage to the park. He was granted bail on the condition that he reside on the carrier until a more permanent bail arrangement is reached.

The ship's owner could face severe fines if it is determined it broke the law and caused damage in the marine park. Rudd said the company could be fined up to AU$ 5.5 million, while Bligh said the owner could be fined up to AU$ 1 million. The master of the vessel is facing a fine of up to AU$ 55,000 while the chief officer-on-watch is facing a fine of up to AU$ 220,000.

The vessel was re-floated on 12 April 10 and anchored in waters near Great Keppel Island. It may be brought to Gladstone to unload its cargo of 65,000 tonnes of coal.The beach clean-up and removal of oil from the North West Island commenced on 15 April 2010.

EVENTS

15TH NATIONAL OIL SPILL DISASTER CONTINGENCY PLAN (NOSDCP) AND REPAREDNESS MEETING, DEHRADUN

The Fifteenth National Oil Spill Disaster Contingency Plan (NOS-DCP) and Preparedness meeting was held at KDM Institute of Petroleum & Exploration, ONGC, Dehradun **on 18 Jun 2010**. Vice Admiral Anil Chopra, AVSM, Chairman NOSDCP chaired the meeting. A total of 48 delegates from various Government Departments, Ports and Oil Companies attended the meeting.

The Chairman in his inaugural address welcomed all the delegates to the 15th NOSDCP meeting and touched upon the salient points related to oil spill response preparedness, the oil spill incidents, the ongoing efforts of the Government of India for legislating the international conventions related to environment protection and the training being imparted by the Coast Guard for the benefit of the stakeholders.

The Chairman's address was followed by a special talk by Shri AK Hazarika, Director (Onshore), ONGC on the hazards of the offshore oil exploration and production. He co-related the incident of Deepwater Horizon incident in the Indian context and advised oil industries to give highest priority to the safety issues. The Secretary, NOSDCP & Director (Fisheries and Environment), CGHQ briefed the participants about the developments at the National level since last NOS-DCP meeting. The Director (F&E) gave a presentation on overview of NOSDCP.

There were three presentations arranged for the benefit of the Members of the meeting. The first presentation was on "**Deepwater Horizon Oil Spill Response at Gulf of Mexico, USA**" by Commandant Donny Michael, Joint Director (FE), CGHQ. The second

presentation was on on "**Floating Production Storage and Offloading (FPSO) platforms**" by Dr. PK Pant, Senior Vice President, Reliance Industries, Mumbai. The third presentation was on "**Oil Finger Printing and Identification of Polluter**" by Dr. JS Sharma, Deputy General Manager (Chem.), ONGC, New Delhi.

The important issues which were discussed and deliberated upon during the meeting were establishing Tier-I facilities in major ports, establishment of oil spill response organisation for tackling large oil spills, preparation of contingency plan by the coastal states for oil pollution, legislative efforts for NOSDCP, establishment of coastal bio-shield, ocean monitoring through satellites, port reception facilities, utilisation of oil cess fund, etc. All delegates actively participated in the meeting and points meriting attention were discussed thoroughly and appropriate decisions were taken after taking into consideration of the opinion provided by the delegates and the experts.

The Chairman in his concluding address thanked all stakeholders for attending the meeting and appreciated the efforts made by the ONGC for hosting the 15th NOSDCP and preparedness meeting. He thanked all members who made informative presentations. Finally, the Chairman appreciated the members for the cooperation made in implementing the decisions taken during the previous meeting and requested the members to take further necessary actions on points deliberated during the meeting in a timely manner.

INDIAN COAST GUARD ANNUAL POLLUTION RESPONSE TRAINING PROGRAMME - 2010

DATE	VENUE	TYPE OF TRAINING	COORDINATOR	REMARKS
Western Region				
15 - 19 Mar 10	Mumbai	IMO Level—I	PRT (West)	Completed
22 - 26 Mar 10	Mumbai	IMO Level—I	PRT (West)	Completed
19 - 23 Jul 10	Mumbai	IMO Level—I	PRT (West)	
18 - 22 Oct 10	Mumbai	IMO Level—I	PRT (West)	Third Batch 25 Trainees
06 - 10 Dec 10	Mumbai	IMO Level—I	PRT (West)	Fourth Batch 25 Trainees
Eastern Region				
08 - 12 Mar 10	Chennai	IMO Level—I	PRT (East)	Completed
26 - 30 Jul 10	Chennai	IMO Level—II	PRT (East)/ AMET	National Level 30 Trainees
06 - 10 Sep 10	Chennai	IMO Level—I	PRT (East)	Regional Level 25 Trainees
North West Region				
15 - 18 Mar 10	Vadinar	Theory & Practical Class	CGS Vadinar	Completed
15 - 18 Nov 10	Vadinar	Theory & Practical Class	CGS Vadinar	25 Trainees
Andaman & Nicobar Region				
22 - 26 Feb 10	Andaman & Nicobar	Local resources agencies and Coast Guard personnel	PRT(A&N)	Completed
22 - 24 Sep 10	Andaman & Nicobar	Local resources agencies and Coast Guard personnel	PRT(A&N)	

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 Sacromento 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

S. No.	Date	Qty and Type of Spill (Tonnes)	Location	Spilled by
31	16/6/1996	120 /FO	Off Prongs, Mumbai	MV Tupi Buzios
32	18/6/1996	132 /FO	Off Bandra, Mumbai	MV Zhen Don
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	O5 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

S. No.	Date	Qty and Type of Spill (Tonnes)	Location	Spilled by
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
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

... the updates will continue ...

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