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## International news

### OIL SPILL RESPONSE LIMITED (OSRL) STRENGTHENS SINGAPORE'S POSITION AS AN INTERNATIONAL OIL & GAS HUB



- **New facility for enhanced oil spill response in Asia Pacific**
- **Larger specialised facilities at Loyang Offshore Supply Base with sea and air links**
- **Cutting-edge well capping equipment on standby for immediate use**

June 13 - Oil Spill Response Limited (OSRL), the global oil spill response cooperative funded by more than 160 environmentally responsible oil and energy companies, announces the opening of a new base with enhanced response capabilities at Loyang in Singapore today.

The opening of the base is a milestone event for the maritime and oil and gas industries in the Asia Pacific region, bringing together expert personnel and equipment resources in a single place so as to deliver an integrated, swift and effective response to an emergency oil spill incident.

In addition, regional response capability sited at the base has been boosted by the recent arrival of advanced subsea well capping equipment known as a 'capping stack' which can be mobilised throughout the Asia Pacific region in the event of a subsea well control incident.

Investing in the base and resources sited at Loyang reflects OSRL's commitment to improving its response capability and expertise so as to deliver an industry-



leading service to its members, customers and stakeholders.

OSRL Chief Executive Robert Limb said today: "Staying true to our mission to respond to oil spills effectively and efficiently anywhere in the world, the Loyang base forms an important link in our global network of response bases and is a strategic launch pad from which to deliver our response, preparedness and subsea well intervention services to our members and stakeholders in the region. I believe our move to Loyang marks a significant upgrade of our services to the maritime and upstream oil and gas industries in Singapore, the Asia Pacific region and beyond."

Located within a dedicated oil and gas supply facility with wharf access and in proximity to key airports, the new base is strategically placed for OSRL to mount an emergency response either by air or sea: thereby offering a range of viable response delivery options during an emergency spill incident.

Mr Lam Yi Young, Chief Executive of the Maritime and Port Authority of Singapore, who was guest of honour at today's official opening, said: "We are very glad to have had the opportunity to work in partnership with OSRL over the years and to have witnessed its growth in Singapore. We congratulate OSRL for expanding and upgrading its facilities here in Singapore, which will boost OSRL's response efficiencies and capabilities in Singapore and the region."

Declan O'Driscoll, OSRL Regional Director, Asia Pacific, said: "The new base at Loyang enables OSRL to take advantage of the ability to deliver a multi-faceted approach to response via sea and air. The new facility also allows us to expand in terms of our staff, the space available and the addition of more resources as and when appropriate in the future."

In addition to its strategic location, its expanded size of 9,500 square metres comprises a storage area for response

equipment and dispersant, a dedicated warehouse for subsea well intervention equipment, a state-of-the-art Emergency Operations Centre, an in-house training facility and office space for 100 staff.

The new OSRL base is close to Seletar Airport where OSRL's Hercules C-130 aircraft is based permanently for wide-area high-volume aerial dispersant spraying operations in the event of a spill. It is also very near Changi Airport which is home to an array of sophisticated air logistics services. OSRL has access to a wharf facility with a water draft of 10 metres at the Loyang Base, providing direct deepwater access for OSRL's response catamarans and other transportation vessels required to mobilise the subsea well intervention equipment.

OSRL's integrated subsea well intervention system includes four capping stacks to shut in an 'out of control' subsea well, plus two hardware kits to clear debris and apply subsea dispersant at the wellhead. It is suitable for the majority of known subsea wells in the Southeast Asia and Australasia region and can be deployed in water depths up to 3,000 metres.

Mr Limb added: "As expectations of stakeholders continue to grow, it is even more important for us to ensure we are fully prepared. This new facility in Loyang demonstrates OSRL and industry's commitment to ensuring the highest level of preparedness and response capability." <http://www.oilspillresponse.com>

## THE GLOBAL INITIATIVE FOR WEST, CENTRAL AND SOUTHERN AFRICA (GI WACAF) LAUNCHES NEW WEBSITE

June 12 - The GI WACAF management team is pleased to unveil the new GI WACAF website.

The GI WACAF website has been redesigned to promote a more participatory approach. The information displayed on the old website is still available, but the layout has been redesigned to improve the navigation. [Click to access the new GI WACAF website](#)



## Incident reports

### BRAZIL 'ON ALERT' OVER AN OIL SPILL FROM ECUADOR

June 10 - Brazil is "on alert" over an oil spill that originated in Ecuador and is travelling downstream towards the Brazilian Amazon.

In a statement, the Brazilian foreign ministry said the navy and other agencies had been informed, and help was offered to Ecuador and Peru.

Last month, an estimated 11,480 barrels of oil leaked from a damaged pipeline into the River Coca in Ecuador.

The spill has already reached the Peruvian Amazon region of Loreto.

"Ibama (Brazilian Institute of Environment), Brazil's navy and ANP (National Petroleum Agency) are on alert in the event that the oil slick reaches the country," Brazil's foreign ministry said.

"Brazil has offered aid to Ecuador and Peru to support the work of containment and dispersion of the oil slick in the two countries." *BBC News* [Read more](#)

### Ecuadorean Amazon oil slick heads towards Peru

June 11 - An oil spill in the Ecuadorean Amazon is flowing downstream towards Peru and Brazil, heightening concerns about the impact of drilling in one of the world's last remaining wildernesses.

About 1.6m litres of crude was discharged into a tributary of the Amazon from the Trans-Ecuador pipeline, which was ruptured by a landslide on 31 May.

The slick contaminated the drinking supplies of Coca, a gateway city into the Amazon forest. Local media reported that 60,000 people had to rely on water brought in by 65 tankers.

Petroecuador, the pipeline operator, has hired the US cleanup company Clean Caribbean & Americas, which was involved in the operation after the Gulf of Mexico spill. *The Guardian* [Read more](#)

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### KOMI REPUBLIC: SPILLED OIL COVERS TUNDRA RIVERS



*Photo: The authorities request locals to take part in the clean-up of more than 500 tons of which spilled into the Kolva River on the Komi-Nenets tundra. (Photo: Gorodusinsk.ru)*

Follow-up to the report in last week's ISCO Newsletter - Environmentalists say that a state of emergency must be declared after at least 500 tons of oil spilled into local rivers from an oil facility in the Komi Republic.

June 14 - The spill, apparently one of the biggest in several years, is now threatening to seriously disrupt major parts of the vulnerable waterways in the Komi and Nenets tundra and ruin life conditions for local inhabitants. According to Greenpeace, at least 500 tons of oil is now spreading from the Kolva River into the adjacent rivers of Pechora and Usa.

The spill reportedly happened already on the 22 May. However, information about the accident became known to the press only several days later.

According to the local Emergency Situations Authority in the city of Usinsk, an oil spill preparedness plan has been put into action and more than 100 people and about 30 special equipment units have been sent to the affected areas. *Barents Observer* [Read more](#)

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### CANADA: PIPELINE SPILLS OIL WASTE OVER MORE THAN 100 ACRES OF ALBERTA

June 14 - A major spill of toxic oil waste has wiped out trees and vegetation across a 104-acre swath of Alberta, Canada. The apparent cause of the spill: The rupture of a five-year-old pipeline that was designed to last at least 30 years.

The pipeline spilled 2.5 million gallons of a waste mixture of oil and water, which the company responsible, Houston-based Apache Corp., downplayed as "salty water" with "trace amounts of oil."

Whatever you call it, it's nasty stuff. "Every plant and tree died" in the area touched by the spill, says the chief of the nearby Dene Tha First Nation, while *The Globe and Mail* reports that "aerial photos show a broad strip of trees that have turned brown."

## Incident reports (continued)

It's unclear when the pipeline started spilling. Judging by the damaged trees in the area, the Dene Tha say the leak might have been sprung in the winter. But the spill was only revealed publicly this week by the province's energy regulators following media reports. *Gristmill* [Read more](#)

### Another report: Toxic waste spill in northern Alberta biggest of recent disasters in North America



June 12 - The substance is the inky black colour of oil, and the treetops are brown. Across a broad expanse of northern Alberta muskeg, the landscape is dead. It has been poisoned by a huge spill of 9.5 million litres of toxic waste from an oil and gas operation in northern Alberta, the third major leak in a region whose residents are now questioning whether enough is being done to maintain aging energy infrastructure.

The spill was first spotted on June 1. But not until Wednesday did Houston-based Apache Corp. release estimates of its size, which exceeds all of the major recent spills in North America. It comes amid heightened sensitivity about

pipeline safety, as the industry faces broad public opposition to plans for a series of major new oil export pipelines to the U.S., British Columbia and eastern Canada.

In northern Alberta, not far from the town of Zama City, the leak of so-called "produced water" has affected some 42 hectares, the size of 52 CFL fields, in an area less than 100 kilometres south of the Northwest Territories border.

"Every plant and tree died" in the area touched by the spill, said James Ahnassay, chief of the Dene Tha First Nation, whose members run traplines in an area that has seen oil and gas development since the 1950s.

Apache spokesman Paul Wyke called the spill "salty water," with "trace amounts" of oil. The Energy Resources Conservation Board, Alberta's energy regulator, said it contained roughly 200 parts per million of oil, or about 2,000 litres in total. But information compiled by the Dene Tha suggests the toxic substance contains hydrocarbons, high levels of salt, sulphurous compounds, metals and naturally occurring radioactive materials, along with chemical solvents and additives used by the oil industry.

Produced-water leaks are considered easier to clean up than oil spills. But the Dene Tha suspect this is a long-standing spill that may have gone undetected for months, given the widespread damage it has done. Apache and the Alberta government say its duration is under investigation *The Globe & Mail* [Read more](#)

### Also in Canada – Smaller Pipeline Leaks - Enbridge shuts major pipelines after oil leak, to restart soon

June 11 - Enbridge Inc, Canada's No. 1 pipeline company, said on Tuesday it closed three major oil pipelines after a small spill near a refinery in Sarnia, Ontario.

Graham White, a spokesman for the company, said in an email the 491,000 barrel per day Line 5, the 609,000 bpd Line 6A and the 231,000 bpd Line 6A were shut after the spill was discovered. Another small lateral line was also closed.

However, White said service on the lines will soon be restored following testing which determined that the leaked oil did not come from Enbridge's pipelines. *Reuters* [Read more](#)

### National Energy Board investigating an oil spill from Kinder Morgan pipeline near Merritt B.C.

June 14 - The Kinder Morgan Trans Mountain pipeline near Merritt has been shut down to prevent any more oil from leaking into the surrounding area.

The National Energy Board (NEB) says it is investigating the spill which was reported on Wednesday afternoon, but it is not known at this time how large the spill is, or what caused it. *Global News* [Read more](#) [Thanks to Gerald Graham, World Ocean Consulting]

### Crews fix defect in leaky Trans Mountain pipeline: Kinder Morgan

June 14 - Galarnyk and the National Energy Board say the total volume of oil spilled was less than about six barrels -- or just under 1,000 litres. *CTV News* [Read more](#) [Thanks to Gerald Graham, World Ocean Consulting]

## Incident reports (continued)

### THAILAND: BANGKOK: OIL SLICK HITS KOH SAMUI BEACH



June 5 - An oil slick about one kilometre long and 50 metres wide was spotted along the coastline of the popular Koh Samui on Wednesday.

Koh Samui district chief Prasert Jitmoong said residents of the beachside Ban Taling Ngarm community alerted him after they discovered the large fuel oil patch washing ashore.

Initial investigation indicated the slick was diesel oil. Officials from the provincial energy office collected samples of the dirty slick from the sea for further inspection, Mr Prasert said.

Mr Prasert speculated that an owner or owners of passenger boats or trawlers operating in the area may have secretly changed motor oil and dumped the old lubricant into the sea. *Bangkok Post* [Read more](#) [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

### USA: CORONA: PRADO BASIN MERCURY SPILL REPORTED

June 11 - A mercury spill was discovered in the ecologically sensitive Prado Basin in Corona, but it took almost six months for the U.S. Army Corps of Engineers to report the toxic discovery to state officials, according to documents released Tuesday, June 11.

More than 9 ounces of mercury was found in a former oil field south of Monica Circle, on the southwestern edge of the basin, officials with Riverside County's Department of Environmental Health said. *The Press-Enterprise* [Read more](#)

### USA: OFFICIALS KEEP AN EYE ON INLAND WATERWAY COOKING OIL SPILL

June 14 - Clean-up crews contracted by the Environmental Protection Agency cleaned cooking oil spilled during Tuesday's crash cleaned from storm sewers by mid-afternoon on Thursday, said EPA's on-scene coordinator, Paul Atkociunas. Today, Friday, June 14, the clean-up crews will keep an eye on the storm sewers and ditch and turn their attention to a small oxbow pond in order to clean oil contained there by absorbent booms. *Petoskey News* [Read more](#)

### UK: TRAILER OF TOXIC SLUDGE DUMPED CLOSE TO ARMAGH

June 10 - A trailer laden with between 20 to 30 containers of toxic sludge from illegal fuel laundering has been found dumped near Keady in County Armagh. It was discovered close to the junction of the Castleblayney and Crossnenagh Roads on Saturday afternoon. *BBC News* [Read more](#) [Thanks to David, ADR Training]

### USA: HAZMAT TACKLES OIL SPILL IN OHIO

June 8 - Crews worked late into the night Friday cleaning up an oil spill on the Mahoning River. "I've been with the HazMat team for 15 years and this is the biggest spill I have seen," said Jason DeLuca, interim chief of Trumbull County HazMat, about the spill that originated at a Warren Township coke plant. *TribToday.com* [Read more](#)

### UK: THIEVES SPILL DIESEL AFTER BUNGLED HEIST IN THETFORD

June 12 - Three fire crews had to clean up the mess left by a pair of thieves after they bungled the theft of 15,000 litres of diesel from a coach provider. Two crews from Thetford and an Environment Protection Unit from Sprowston had to clean up 500 litres of spilled fuel in Howlett Way, Thetford after the theft early on Monday morning. *Bury Free Press* [Read more](#) [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

### USA: HAZMAT CREWS ON SCENE OF CHEMICAL SPILL IN MISSOULA

June 12 - Officials say that several thousand gallons of chemicals spilled overnight at Spectrum Products in Missoula, prompting a hazardous materials response.

Several agencies are on the scene of the incident, where between 5,000 and 7,000 gallons of citric, phosphoric, and sulfuric acids spilled out after a valve was accidentally left open overnight. *KRTV.com* [Read more](#)



## Incident reports (continued)

### USA: OSV SINKS IN GULF OF MEXICO AFTER STRIKING OIL PLATFORM



June 15 - A 112-foot supply vessel sank on Friday after striking an oil platform in the U.S. Gulf of Mexico, WDSU News in New Orleans reports.

The U.S. Coast Guard told WDSU that the M/V Celeste Ann struck a platform located 15 miles west of Southwest Pass at about 9:18 a.m. on 14 June. All 20 people onboard, including 4 crew, were rescued before the boat sank.

A Coast Guard aircraft flew over the scene and reported a half-mile by 150 foot sheen of oil on the ocean surface. *gCaptain* [Read more](#)

## Other News

### INDIA: TWO PRATIBHA TANKERS RAISE POLLUTION WORRIES OFF MUMBAI

June 15 - The two stranded ships owned by the Mumbai-based Pratibha Shipping Company, Pratibha Tapi and Pratibha Indrayani are adrift and may soon become a major environmental hazard along the Mumbai coast.

As per the latest report from the Maritime Rescue Coordination Centre (MRCC), Pratibha Tapi is dragging anchor at very slow rate whereas Pratibha Indrayani is maintaining its position. *Oceaneus* [Read more](#) [Thanks to Capt. D. C. Sekhar, Member of ISCO Council for India]



### U.S. COAST GUARD DEEPWATER HORIZON RESPONSE TRANSITIONS TO NATIONAL RESPONSE CENTER REPORTING



June 10 - The Federal On-Scene Coordinator for the Deepwater Horizon oil spill has announced that the Gulf Coast Incident Management Team has started transitioning back to National Response Center reporting.

The primary function of the NRC is to serve as the sole national point of contact for reporting all oil, chemical, radiological, biological and etiological discharges into the environment anywhere in the United States and its territories. The reported information is passed to a local Coast Guardsman who investigates the report and takes appropriate action.

"This is another important step towards meeting our goal of returning the shoreline to as close to pre-spill conditions as possible while managing the scale of the response to meet conditions on the

ground," said Capt. Duke Walker, FOSC for the Deepwater Horizon Response. *USCG 8th District Public Affairs Office* [Read more](#)

### USA: \$14 BILLION DOLLARS LATER, BP'S OIL SPILL IS CLEANED FROM 3 OF 4 AFFECTED STATES

June 10 - BP said the Coast Guard has concluded 'active cleanup operations' in Mississippi, Alabama, and Florida, but the work continues along 84 miles of Louisiana's shoreline.

The London-based oil giant said the Coast Guard has concluded "active cleanup operations" in Mississippi, Alabama and Florida, but the work continues along 84 miles of Louisiana's shoreline.

The cleanup by BP contractors ended last Friday in Alabama, on June 1 in Florida and on May 1 in Mississippi, according to company spokesman Jason Ryan.

The Coast Guard will continue responding to reports of oil washing up anywhere along the Gulf Coast. BP said it will take responsibility for removing any oil that came from its blown-out Macondo well.

*The Christian Science Monitor* [Read more](#)

## GERMANY: CLEANUP COSTS: GERMANY ESTIMATES BILLIONS IN FLOOD DAMAGE

June 11 - As historic flooding continues to surge through Germany, one unofficial estimate has already placed possible damage at 12 billion euros. Some organizations are complaining that donations are down compared to the disastrous floods of 2002.

With continued flooding along rivers in eastern and northern Germany on Tuesday, the country faced a shortage of sandbags, and was forced to ask its neighbors for deliveries to reinforce dikes and levees. *Spiegel Online* [Read more](#)

## USA: ABANDONED OIL WELLS RAISE FEARS OF POLLUTION

June 8 - Abandoned oil field equipment is a common problem in Texas, which is home to vast numbers of old wells that were never properly sealed. Some remain from the heady decades of the early- to mid-20th century, before current standards kicked in. In recent decades, regulators have worked to plug the old wells so they do not act as a conduit for liquid pollutants to enter groundwater. But some fear that the recent surge in oil drilling, brought about by the modern practice of hydraulic fracturing, will set off worrisome encounters with the old wells.

"Not every unplugged well leads to pollution, but a high percentage of wells that are left unplugged do present pollution hazards," said Scott Anderson, an oil and gas expert based in Austin with the Environmental Defense Fund. *The New York Times* [Read more](#)

## USA & CANADA: ENBRIDGE LAUNCHES ONLINE PIPELINE TRAINING PROGRAM FOR FIRST RESPONDERS



*Photo: Enbridge has launched an online training program for first responder organizations located along more than 50,000 miles of Enbridge onshore pipelines comprising several pipeline systems in the United States and Canada.*

Enbridge is launching a pipeline emergency training program for first responder organizations located along Enbridge onshore pipelines in the United States and Canada.

Launched with Enbridge Energy Partners, the online training program features 3-D, interactive graphics to help first responders better visualize response to pipeline incidents.

"The real value of the Enbridge online pipeline emergency training is that it provides relevant, accurate information about all pipelines as well as specific information about the products transported in Enbridge's natural gas, crude oil and gas liquids pipelines," said Mark Maki, Enbridge Energy Partners president. *Calgary Beacon* [Read more](#) [Thanks to David Cooper via Linked-in]

## UAE: MENA REGION COMES TOGETHER TO TACKLE MARINE OIL SPILLS

June 11 - Oil spills have now become one of the most important concerns for the MENA region's governments. With the sharp increase in oil production and number of ships passing through the region, the chances for oil spills are greater than ever. The Marine Emergency Mutual Aid Centre (MEMAC), formed under the Regional Organisation for Protection of the Marine Environment (ROPME), is the GCC's cooperation body tasked with strengthening the capacities of member states to tackle and prevent oil pollution in the ROPME Sea Area. MEMAC has devised a Master Plan that they are going to unveil at the Oil Spill Preparedness, Response and Recovery MENA 2013, taking place from 16-19 June 2013 at the Beach Rotana Hotel, Abu Dhabi, U.A.E.

MEMAC has been collaborating with members of the GCC to bring in new regulations that not only enhance the preparedness levels to tackle oil spills but also improve the collaboration between these nations. "With over 50,000 ships passing through the Strait of Hormuz daily, a number which is expected to rise to 60,000 by 2015, the need to be better prepared to prevent and respond to oil spills is greater than ever," said MEMAC Director, Capt. M. Al- Janahi.

Some of the key speakers at the forum include Saudi Aramco Senior Oil Spill Specialist, Capt. Majid Khaldi; Abu Dhabi Ports Company Harbour Master, Capt. Ashraf Mabrouk; PDO Corporate Functional Discipline Head of Emergency and Business Continuity Management, Johnson B. Awe; Sudapak Petroleum Operating Company Ltd. HSE Manager for Africa, Ahmed Elidrisy and U.S. Navy MARLO Bahrain Officer-In-Charge, Cdr. Jose Herrador, among many others.

Zawya [Read more](#) [Thanks to Negin Bagherian via linked in]

## People in the news

### ANDREW TUCKER IS OIL SPILL ADVISER AT BP



Andrew Tucker is an experienced response specialist with 10yrs experience responding and managing oil/chemical incidents globally, and 10yrs previous to this working in the UK in the field of environmental protection and waste management. He is now working for BP in the Group Crisis team as the Oil Spill Adviser.

Prior to his role with BP, he worked for ITOPF ([www.itopf.com](http://www.itopf.com)) as a senior technical adviser for almost 9 years. His role was to respond globally to oil and chemical spills from international shipping, to manage and to provide objective technical advice and information on all aspects of pollution response, the effects of spills on the marine environment, to investigate the damage caused and undertake pollution surveys.

### ENCANA NAMES BP GULF SPILL VETERAN AS ITS NEW CEO

Encana Corp named former BP Plc executive Doug Suttles, who played a major role in responding to BP's disastrous 2010 Gulf oil spill, as its new chief executive on Tuesday as Canada's largest natural-gas producer searches for a new course following years of strategic missteps.

Suttles, a nearly three-decade veteran of the oil and gas industry, is taking the reins from interim CEO Clayton Woitas, a board member who replaced former CEO Randy Eresman temporarily when Eresman left the company unexpectedly in early January. Suttles was also named an Encana director.

*Chicago Tribune* [Read more](#)



### NEW MEMBER OF STAFF AT GI WACAF



Benjamin Jeanne replaced Antoine Blonce within the GI WACAF Project Management team in September 2012. He is based at IMO Headquarters in London.

His previous experience includes Development of a Geographic Information System (ArcGIS Server) grouping Total sites and all protected areas listed by the United Nations Environment Programme (UNEP-WCMC); Creation of an intranet portal to bring together all the necessary informations in case of accident of pollution. The portal created can be adapted to the needs of each crisis thanks to an interface like Netvibes or iGoogle; Feedback on the use of GIS tools during the accident of the offshore platform "Deepwater Horizon" (BP) in the Gulf of Mexico.

## ISCO news

### REMINDER – ISCO AT OIL SPILL WORKSHOP IN BEIJING ONLY A WEEK AWAY

There is an amazing 30% discount on registration cost for ISCO members and Member of the ISCO Executive Committee, Mr Li Guobin will be on the Sunic Ocean booth to answer your questions and give you information about ISCO. We are hoping to strengthen ISCO's presence and number of members in China! [More info](#)

### NEW AWARDS OF PROFESSIONAL RECOGNITION, OTHER NEW MEMBERS WELCOMED

#### New Fellow (FISCO)

Mark Francis (Brazil)

#### New Member (MISCO)

Mark R. Murphy, Conesta-Rovers & Associates (USA)

#### New Corporate Members

Sie Econad (Ukraine)

Oil Response Company of Australia

#### New Individual Member

Prof. Albert V. Condello III CHMM

A number of new applicants have submitted applications for Professional Recognition. Submitted documentation is currently being evaluated by the Membership Committee and awards will announced later.





In this issue of the ISCO Newsletter we are printing No. 131 in a series of articles contributed by Dr Douglas Cormack.

Dr Douglas Cormack is an Honorary Fellow of ISCO. As the former Chief Scientist at the British Government's Marine Pollution Control Unit and head of the UK's first government agency, the Warren Spring Laboratory, Douglas is a well known and highly respected figure in the spill response community. He is the Chairman and a founder member of the [International Spill Accreditation Association](#)

### CHAPTER 131: KNOWLEDGE-BASED CONTINGENCY PLANNING

As to salvage operations, the plan notes that casualties have to be approached and boarded with possible exposure to volatile oil components and individual HNS; that all such with boiling points  $\leq 150^{\circ}\text{C}$  evaporate totally in 1 hour from fully extended floating layers of 0.1mm thickness; that all oil components with boiling points  $\leq 250^{\circ}\text{C}$  evaporate from layers of this thickness in 5 hours despite the less volatile and non-volatile components forming water-in-oil emulsions in the meantime.

Again, the plan notes that the single nine carbon compound nonane evaporates entirely from an 0.1mm layer in 3 minutes, and from a 1.0mm layer in 30 minutes and that oil components with up to nine carbon atoms comprising only 20-30% of crude oils and those with up six comprising only 5% will evaporate even faster, their equivalent layer thickness being 0.02-0.33mm and 0.005mm respectively.

Thus, the plan notes, that while vapours from such slicks burn in the open air when ignited, explosions are only possible in confined spaces where layer thickness may be sufficient to create saturated vapour pressures and/or concentrations in air within the explosive envelop bounded by the higher and lower explosive limits of the released substance or mixture of substances; that open air approach through floating layers is not therefore subject to explosive risk; and that explosive risk in confined spaces can be quantified by reference to long known relationships of volatility, mass-transfer and concentration. Thus the plan notes that the association of substances with explosion icons in guide-books with no reference to concentrations attainable in reality, is no more helpful than associating others with the toxic skull/cross-bones icon with no reference to concentration, and that safety in enclosed-spaces can be ensured only by substance identification, direct measurement of exposure-concentration and the wearing of appropriate protective clothing.

As to gases as distinct from vapours of volatile-liquids, the plan notes that these are transported in pressurised containment and are released from damaged containment as pressurised jets; that these jets immediately expand as cones of increasing diameter as they dilute with entrained-air with increasing distance from source; that gases heavier than air tend to slump and spread as fans in contact with the surface of sea or land while diluting with distance from source as do jets; that such releases cannot be recovered; that explosion/toxicity risks are concentration-dependent; that concentrations can be measured downwind of the advancing front and towards the sides at sea/ground level; and that while populations cannot be issued with breathing equipment, exposure-concentrations from ship-source release may require short term window closure rather than evacuation.

As to actual concentrations both temporal and spatial as a function of release-quantity, guidance could be provided by mathematical modelling in conjunction with wind-tunnel experiments with buoyant and slumping gases, though with respect to vapours the plan notes that 100 m<sup>3</sup> of liquid at a layer thickness of 0.1mm covers an area of 1 km<sup>2</sup>; that were this to evaporate to a height of 1m, the concentration would be 100ppm; that were the affected area to extend to a rectangle 10km long and to a height of 10m the exposure concentration would be 1ppm and *pro rata* for increasing distance and height, though this estimate does not provide sufficient guidance as to what direct measurements might reveal for gas plumes.

As to sampling and measurement equipment for use onboard casualties, the plan notes that tank atmospheres may be monitored by oxygen analysers each equipped with a 2m suction hose and hand-operated sampling bellows; that individual HNS contaminants can be identified and quantified in air by a wide range of packed reaction (Dreger) tubes operated in conjunction with such calibrated pumps; that total hydrocarbon analysers are available as are compressed-air driven ventilation fans, lengths of flexible ducting and injection nozzles, all such powered equipment being intrinsically safe; and that suitable breathing and resuscitation apparatus, protective clothing of various grades and specificities are also available together with fire-fighting and intrinsically emergency-lighting and portable-radio equipment; and that of the foregoing, the sampling and reaction tubes are also applicable to atmospheric monitoring in respect of ensuring the safety of shore side populations in incidents of gas release.

For more specific guidance on personal protection and atmospheric sampling and analysis, reference may be made to the companion Chemical Response Manual of Koops and Zeinstra. [http://www.wkoops.nl/index.php/Main\\_Page](http://www.wkoops.nl/index.php/Main_Page)

1 The *Rational Trinity: Imagination, Belief and Knowledge*, D.Cormack, Bright Pen 2010 available at [www.authorsonline.co.uk](http://www.authorsonline.co.uk)

2 *Response to Oil and Chemical Marine Pollution*, D. Cormack, Applied Science Publishers, 1983.

3 *Response to Marine Oil Pollution - Review and Assessment*, Douglas Cormack, Kluwer Academic Publishers, 1999.

## IN SITU BURNING: CHAPTER 23



A short series of articles on In Situ Burning contributed by Dr Merv Fingas of Spill Science, Edmonton, Alberta, Canada T6W 1J6 [fingasmerv@shaw.ca](mailto:fingasmerv@shaw.ca)

Merv Fingas MSc PhD worked for more than 35 years in the field of oil spill technology at Environment Canada's Environmental Technology Center in Ottawa, Ontario. As head of the Emergencies Science Division at the Centre, he conducted and managed research and development projects. He is currently working independently in Alberta. Dr Fingas is the Member of ISCO Council for Canada.

### Summary of the Serial

This is the 23rd of a series of articles on in-situ burning of oil spills. This series will cover in-situ burning step-by-step and will present the latest in knowledge on the topic.

### 23. Fire-resistant booms – Historical

As discussed in previous episodes, an oil slick should be at least 0.5 to 3 mm thick in order to quantitatively remove significant amounts of oil. It is not fruitful to burn thin slicks. Several methods for increasing the thickness of a slick to this level or to maintain a thickness at or above this level are discussed in this section.

The biggest concern with containment booms for in-situ burning is the ability of the boom's components to withstand heat for long periods of time. Very few fire-resistant booms are commercially available because the market is small and the cost of production is high. Fire-resistant booms cost considerably more than conventional booms. These booms were tested for fire resistance and for containment capability and designs are modified in response to test results.

The fire resistance of these booms had been extensively tested at the U.S. Coast Guard Fire and Safety Test Detachment in Mobile, Alabama. These booms have also been tested for strength, integrity, and oil containment capabilities during tow tests at the Oil and Hazardous Materials Simulated Environmental Test Tank (OHMSETT) facility in Leonardo, New Jersey.

The different types of fire-resistant boom are water-cooled booms, stainless steel booms, thermally resistant booms, and ceramic booms. Fire-resistant booms require special handling, especially stainless steel booms, because of their size and weight. Thermally resistant booms are similar in appearance and handle like conventional booms, but are built of many layers of fire-resistant materials. The various types of fire-resistant boom are shown in Figure 24.

Fire-resistant booms developed by Environment Canada in the late 1970s consisted of a series of ceramic, stainless steel designs or those that used air or water sprays to contain oil during burning.<sup>1</sup> In the early 1980s, Dome Petroleum Ltd. further modified the stainless steel boom. The Dome boom consists of 1.5 m vented stainless steel flotation units with a pentagonal cross section. A stainless steel panel attached to the top of each unit creates the freeboard and a PVC-coated nylon skirt attached to the bottom of the float provides the draft. The flotation sections are attached using 0.75 m flexible panels constructed of stainless steel mesh encased in a Fibrefax blanket with a PVC-coated nylon skirt. The Dome boom was designed to be used for more than one in-situ burn incident.

Fire-resistant booms manufactured today are generally designed to survive several burns at one site, but are then disposed of or refurbished. The first documented use of a fire-resistant boom for burning at a major oil spill is the use of the Fire Boom at the Exxon Valdez spill.<sup>1</sup> This Elastec/American Marine boom with some experimental prototype sections was used during the Newfoundland Offshore Burn Experiment (NOBE) in 1993 at which two burns of 50,000 L of oil were conducted. After the first burn, small gaps were found in the Nextel ceramic fabric above the waterline between the flotation logs, caused by abrasion. The damage was minor enough to allow the boom to undergo a second burn. After the second burn, the stainless steel wire mesh in one of the prototype sections had parted resulting in the loss of two metre-long flotation logs. This was caused by the use of small sections of steel wire mesh rather than using full sheets during manufacture. During the 411 burns at the Deepwater Horizon spill in the Gulf of Mexico, a variety of fire-resistant booms were used, however mostly the Hydro Fire Boom and the Pyroboom.

A standard has been devised by ASTM to test the durability of fire-resistant booms for in-situ burning.<sup>65</sup> The standard is a minimum 5-hour test involving three 1-hour burning periods with two 1-hour cool-down periods between the burning periods. Booms are tested in a test tank with oil or diesel fuel. Oil is pumped into the center of the boom at a predetermined rate and is burned. The oil is continuously fed into the boom for 1 hour and then is shut off allowing the burn to die out. The boom then cools for 1 hour and is tested for two additional 1-hour burn/1-hour cooling sessions. At the start of the third burn, oil is pumped into the boom to test for gross leakage. Several booms were tested in this manner. An analogous test was developed using propane and conducted at the OHMSETT test facility.<sup>66</sup>

In 1994, the Marine Spill Response Corporation (MSRC) conducted at-sea towing tests of four fire-resistant booms: the American Marine (3M) Fire Boom, the Applied Fabrics PyroBoom, the Kepner Plastics SeaCurtain FireGard and the Oil Stop Auto Boom Fire Model.<sup>1</sup> The purpose of these tests was to evaluate the relationship between boom performance and buoyancy-to-weight ratio, tow speed, and sea state. The booms were towed in a U configuration at tow speeds of between 0.25 and 1.25 m/s (0.5 and 2.5 knots).

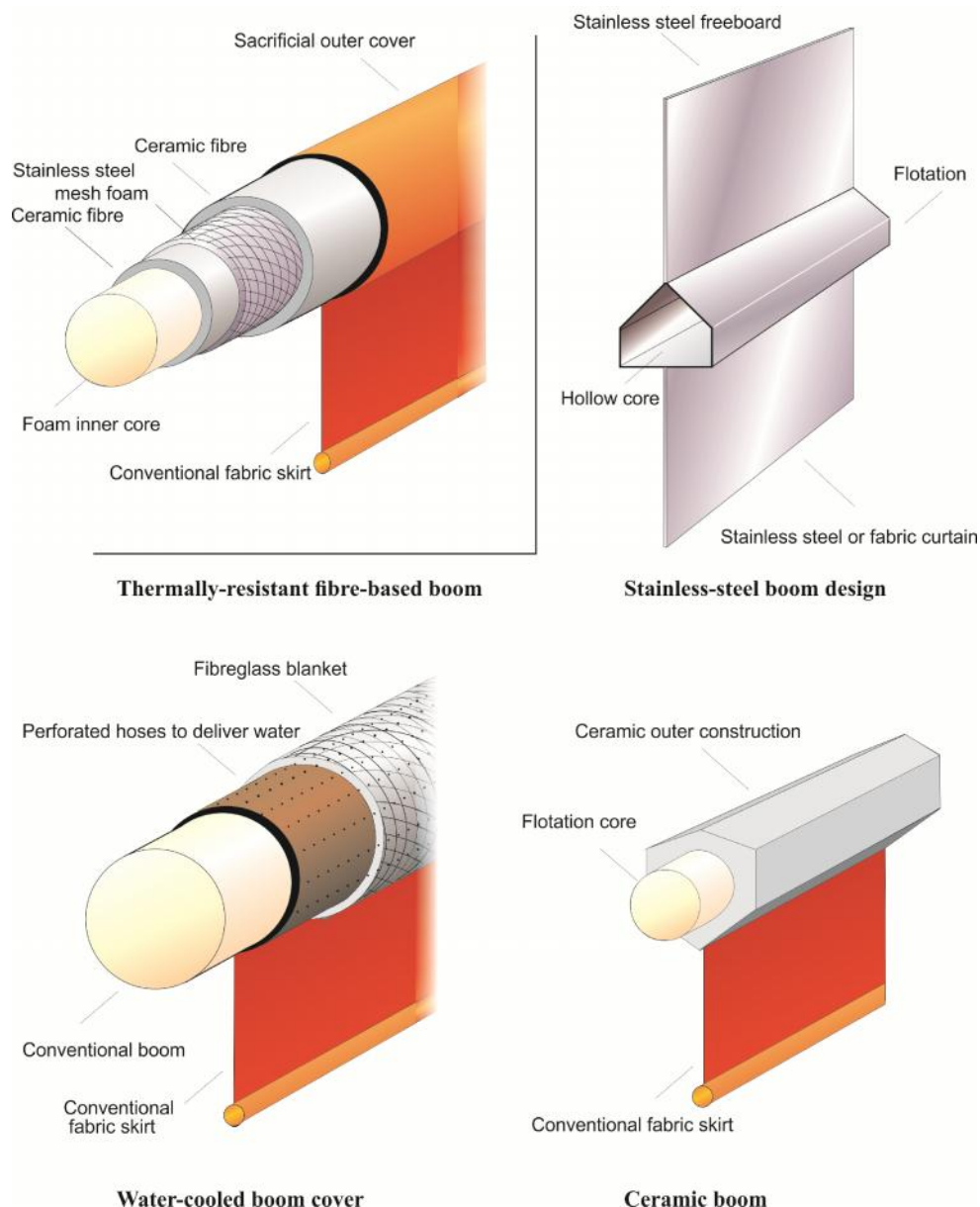
## Special feature – In situ burning (continued)

The results of these tests showed that the higher the buoyancy-to-weight ratio of the boom the faster the boom can be towed before it will submerge. In general, fire-resistant booms have a lower buoyancy-to-weight ratio than conventional booms. It was also found that three of the four booms tested exhibited mechanical failure at high tow speeds. The report further concluded that the mechanical integrity, sea-keeping performance, and ease of deployment and recovery of commercially available fire-resistant boom must be improved.

The United States Coast Guard and the US Minerals Management Service evaluated the containment behavior of the fire-resistant booms currently on the market in a test tank and compared these results with previous at-sea performance results.<sup>67</sup> These studies determined the tow speeds at which the booms first began to lose oil (“first loss”) and the speed at which a continuous, significant loss occurs (“gross loss”). It also determined the rate of loss of oil at specific tow speeds and the tow speed at which the boom physically failed, i.e., became submerged or suffered structural damage. The following are the conclusions of these tests.

- In terms of oil containment, the performance of the fire-resistant booms was similar to conventional, non-fire resistant booms, with first losses occurring at tow speeds of 0.44 to 0.52 m/s (0.85 to 1.0 knots) in calm waters. These losses were relatively unaffected by regular waves and were reduced slightly by short-crested waves.
- The physical failure of fire-resistant booms was also similar to that of conventional booms with critical tow speeds between 1 and 1.5 m/s (2 and 3 knots).
- The critical tow speeds determined during the at-sea tests were lower by 0.25 to 0.75 m/s (0.5 to 1.5 knots) than the critical tow speeds determined during tank tests.

From the limited data available from the in-tank and at-sea tests, an increase in the buoyancy-to-weight ratio of the boom appears to increase the boom’s ability to contain oil at higher than normal tow speeds.





## Special feature – In situ burning (continued)

### References

- 1 Fingas, M., "In-situ Burning", Chapter 23, in *Oil Spill Science and Technology*, M. Fingas, Editor, Gulf Publishing Company, NY, NY, pp. 737-903, 2011
- 66 Buist, I., J. McCourt, J. Morrison, B. Schmidt, D. DeVitis, et al., *Fire Boom Testing at OHMSETT in 2000*, AMOP, 707, 2001
- 67 Cunneff, S., D. DeVitis and J. Nash, *Test and Evaluation of Six Fire Resistant Booms at OHMSETT*, *Spill Sci. Technol. Bull.*, 353, 2000

**To be continued**

## Publications

### FOR YOUR INTEREST – LINKS FOR RECENT ISSUES OF PERIODICALS

<a href="#">ASME EED EHS Newsletter</a>	News and commentary on HSE issues from George Holliday	Most recent issue
<a href="#">Bow Wave</a>	Sam Ignarski's Ezine on Marine & Transport Matters	Current issue
<a href="#">Cedre Newsletter</a>	News from Cedre in Brittany, France	May 2013 issue
<a href="#">The Essential Hazmat News</a>	Alliance of Hazardous Materials Professionals	June 10 issue
<a href="#">USA EPA Tech Direct</a>	Remediation of contaminated soil and groundwater	June 1 issue
<a href="#">USA EPA Tech News &amp; Trends</a>	Contaminated site clean-up information	May 2013 issue
<a href="#">Technology Innovation News Survey</a>	From US EPA - Contaminated site decontamination	April 16-30 issue
<a href="#">Intertanko Weekly News</a>	International news for the oil tanker community	No. 23 2013
<a href="#">CROIERG Enews</a>	Canberra & Regions Oil Industry Emergency Response Group	June 2013 issue
<a href="#">Soil &amp; Groundwater Product Alert</a>	From Environmental Expert	June 10 issue
<a href="#">Soil &amp; Groundwater Ezine</a>	Articles, papers and reports	May 2013 issue
<a href="#">Soil &amp; Groundwater Newsletter</a>	From Environmental Expert	June 13 issue
<a href="#">Soil &amp; Groundwater Events</a>	Upcoming events compiled by Environmental Expert	May 2013 issue
<a href="#">IMO Publishing News</a>	New and forthcoming IMO publications	May-Jun 2013
<a href="#">Pollution Online Newsletter</a>	News for prevention & control professionals	June 12 issue
<a href="#">EMSA Newsletter</a>	News from the European Maritime Safety Agency	June 2013 issue
<a href="#">JOIFF "The Catalyst"</a>	Int'l Organisation for Industrial Hazard Management	April 2013 issue
<a href="#">Int'l Environmental Technology</a>	Environmental Monitoring, Testing and Analysis	April 2013 issue
<a href="#">HELCOM Newsletter</a>	Baltic Marine Environment Protection Commission	May 2013 issue

## Events

### OFFSHORE ARABIA 2014 – CALL FOR PAPERS

Offshore Arabia 2014 conference Theme is Regional Oil Spill Prevention & Preparedness. The Technical Committee would like to invite you to submit your papers based on the following conference topics.

- Oil Spill Prevention, Contingency Planning and Emergency Preparedness
- Knowledge Sharing and Lessons Learned from Offshore/Onshore Case Histories & Recent Major Incidents
- Innovations as Applied to Oil Spill Recovery & Response:
- Use of Satellite Imagery in Oil Spill Monitoring and Response
- Mapping and Surveying
- Recovery Systems and Cleanup Techniques
- Strategies, Policies & the Use of Appropriate Equipment for Applying Chemical Dispersants
- Oil Spill Estimation
- Terminal & Tankers Measures to Prevent and Respond to Oil Spills
- Oil Drilling and Producing Measures to Prevent and Respond to Oil Spills
- Oil Spill Waste and Oily Discharge Management
- Restoration and Rehabilitation Practices for the Affected Areas, Wildlife and Shorelines
- Offshore/Onshore Risk & Crisis Management

[More info](#)

### EI: HUMAN FACTORS APPLICATION IN MAJOR HAZARD INDUSTRIES - CALL FOR ABSTRACTS EXTENDED DEADLINE MONDAY 1 JULY 2013

The organising committee is inviting submissions for oral presentations. To submit your contribution you will need to:

- prepare an abstract of up to 500 words on the topic you intend to present, supplied in Microsoft Word format,
- indicate presenter(s) and co-authors with their affiliation,
- submit the abstract to Stuart King at e: [sking@energyinst.org](mailto:sking@energyinst.org) ; t:+44 (0)20 7467 7163.

Submissions will be evaluated by the organising committee and successful entrants will be notified shortly after the submission deadline For more info contact [Vickie Naidu](#)

## Training

### TRAINING VIDEOS FROM EFILM GROUP

Training in response to terrorism: Ricin, anthrax, IEDs, explosive & incendiary weapons. [More info](#)

Hazardous chemical training for first responders. [More info](#)

## Business opportunities

### PROVISION OF CONSULTANCY SERVICES TO SUPPORT THE DRAFTING OF THE ACTION PLAN FOR THE IMPLEMENTATION OF THE OFFSHORE PROTOCOL TO THE BARCELONA CONVENTION

It is recalled that that to assist the implementation of the Decision IG.20/12, the United Nations Environment Programme – Mediterranean Action Plan for the Barcelona Convention, hereinafter referred to as (UNEP MAP), with the support of the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), invited, early May 2013, relevant consultants and consultancy firms to submit their proposal to support the “Drafting of the Mediterranean Action Plan for the implementation of the Offshore Protocol to the Barcelona Convention”.

Following the evaluation of the four offers received in due time, the evaluation committee declared the tender unfruitful.

A second Request for Proposal is hereby published:

RFP10/2013 - Request for Proposals (Consultancy firm)

Provision of consultancy services to support the Drafting of the Action plan for the implementation of the Offshore Protocol to the Barcelona Convention

Submission Deadline: 03 July 2013

[Click here to download the Request RFP10/2013 - Request for Proposals \(Consultancy firm\)](#)

## AUSTRALIA: BUSINESS PARTNERSHIP

John Eddy of Spill Tech Pty Ltd. in Noosaville, Queensland, Australia writes “As I near retirement I am looking for a working partner to take into the Spill Tech office”.

Please contact John directly at Spill Tech [info@spilltech.com.au](mailto:info@spilltech.com.au) His website is at [www.spilltech.com.au](http://www.spilltech.com.au)

## Company news

### INDIA: UNIQUE WINS OIL SPILL RECOVERY CONTRACT

Cairn India has awarded Unique Hydrographic Systems a three year contract for an oil spill recovery project in India.

One of the country’s largest independent oil and gas exploration and production companies, Cairn India and its joint venture partners account for more than 20 per cent of India’s domestic crude oil production.

The project terms include the supply of oil spill recovery equipment from Lamor, along with vehicles and a trained team of responders and supervisors for approximately 700 km of hot crude oil pipeline stretching from Barmer to Jamnagar. [More info](#)

The ISCO Newsletter is published weekly by the International Spill Control Organisation, a not-for-profit organisation supported by members in 45 countries. ISCO is dedicated to raising worldwide preparedness and co-operation in response to oil and chemical spills, promoting technical development and professional competency, and to providing a focus for making the knowledge and experience of spill control professionals available to IMO, UNEP, EC and other organisations. ISCO is managed by an elected executive committee members of which are **Mr David Usher** (President, USA), **Mr John McMurtrie** (Secretary, UK), **Mr Marc Shaye** (USA), **Mr Dan Sheehan** (USA), **Rear Admiral M. L. Stacey**, CB (UK), **M. Jean Claude Sainlos** (France), **Mr Kerem Kemerli** (Turkey), **Mr Paul Pisani** (Malta), **Mr Simon Rickaby** (UK), **Mr Li Guobin** (China), and **Captain Bill Boyle** (UK). The Executive Committee is assisted by the non-executive ISCO Council composed of the following national representatives – **Mr John Wardrop** (Australia), **Mr Namig Gandilov** (Azerbaijan), **Mr John Cantlie** (Brazil), **Dr Merv Fingas** (Canada), **Captain Davy T. S. Lau** (China, Hong Kong), **Mr Li Guobin** (China, Mainland), **Mr Darko Domovic** (Croatia), **Eng. Ashraf Sabet** (Egypt), **Mr Torbjorn Hedrenius** (Estonia), **Mr Pauli Einarsson** (Faroe Islands), **Prof. Harilaous Psarftis** (Greece), **Captain D. C. Sekhar** (India), **Mr Dan Arbel** (Israel), **Mr Sanjay Gandhi** (Kenya), **Mr Joe Braun** (Luxembourg), **Chief Kola Agboke** (Nigeria), **Mr Jan Allers** (Norway), **Capt. Chris Richards** (Singapore), **Mr Anton Moldan** (South Africa), **Dr Ali Saeed Al Ameri** (UAE), **Mr Kevin Miller** (UK), and **Dr Manik Sardesai** (USA). More info on Executive Committee and Council Members can be found on the ISCO website at [www.spillcontrol.org](http://www.spillcontrol.org)

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