ISCO NEWSLETTER

The Newsletter of the International Spill Response Community

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International news

OIL SPILL RESPONSE LIMITED (OSRL) INTRODUCES INTERNATIONAL WELL CAPPING EQUIPMENT AT NEW BASE IN SOUTH AFRICA

- *Advanced capping equipment on standby for international use*
- *Developed through unprecedented industry collaboration*
- *Available to companies across the industry via OSRL*

October 10 - Oil Spill Response Limited (OSRL), the global oil spill response co-operative funded by more than 160 oil and energy companies, today announced the opening of a new Base in Saldanha Bay, South Africa, to support regional and global response operations. The Base houses cutting edge well capping equipment designed to shut-in an uncontrolled subsea well, marking a major advancement in Africa's oil spill response capability.

The Saldanha capping stack is available to oil and gas companies across the industry through OSRL's Subsea Well Intervention Service (SWIS) which provides for swift subsea incident response around the world. The integrated subsea well intervention system includes four capping stacks suitable for international use and two hardware kits for debris clearance, BOP intervention and the subsea application of dispersant at a wellhead. The equipment can be used for the majority of known subsea wells in water depths up to 3000m.

The SWIS equipment is currently stored in three international locations - Stavanger, Norway; Singapore; and Saldanha Bay, South Africa; and is maintained ready for immediate mobilisation and onward transportation by sea and/or air in the event of an incident. Further capping and dispersant equipment will be delivered for storage in Brazil by the end of this year. A global containment solution is also being developed to supplement the intervention system and will be ready for use by the end of 2014.

SWIS is the culmination of unprecedented industry collaboration. In 2011, nine international oil and gas companies formed the Subsea Well Response Project (SWRP), pooling resources to develop equipment that could enhance subsea well control capability. OSRL collaborated with SWRP to make this equipment available for the benefit of wider industry, and companies can now subscribe to SWIS to incorporate this essential subsea well contingency into their own incident response plans.

Robert Limb, Chief Executive of Oil Spill Response Limited, said: "SWIS represents a transformational addition to OSRL's portfolio of services, helping our members prepare for, and handle, potential subsea well control incidents on a global scale. Members benefit from world-class capping capability, supported by OSRL's industry-leading response and preparedness expertise. Our new facility at Saldanha has strategic significance in that we are now able to deliver an enhanced service in this region - a development that is wholly consistent with our mission to enable the most efficient, safe and effective response to oil spills wherever they may occur."

Keith Lewis, Project Manager, Subsea Well Response Project, commented: "The oil and gas industry faces continuous challenge to improve safety and must be in a position to respond effectively to a subsea well incident, wherever in the world subsea well operations take place. The delivery of world-class intervention equipment to Saldanha represents a major advancement for the region. As part of a package of measures, it is designed to enhance the international industry's capability to respond to a subsea well incident. Collaboration across the industry and around the world has made this possible."

Michael Engell-Jensen, Executive Director, International Association of Oil and Gas Producers, who attended OSRL's inauguration event at Saldanha Bay, added: "The industry must be prepared to control a flowing well with ever greater speed and efficiency in the unlikely event of an incident. The continuing collaboration between SWRP and OSRL to develop subsea well response capability through the provision of capping and related systems is of paramount importance both for the oil and gas industry and environmental protection." *OSRL Press Release* *http://www.oilspillresponse.com/*

NATIONS ADOPT LANDMARK MERCURY POLLUTION CONVENTION

Nations have begun signing a legally binding treaty designed to curb mercury pollution and the use of the toxic metal in products around the globe.

Mercury can produce a range of adverse human health effects, including permanent damage to the nervous system.

The UN treaty was formally adopted at a high level meeting in Japan.

The Minamata Convention was named after the Japanese city that, in the 1950s, saw one of the world's worst cases of mercury poisoning.

In January, four years of negotiations concluded with more than 140 countries agreeing on a set of legally binding measures to curb mercury pollution.

UN data showed that mercury emissions were rising in a number of developing nations.

The convention regulates a range of areas, including:

- the supply of and trade in mercury;
- the use of mercury in products and industrial processes;
- the measures to be taken to reduce emissions from artisanal and small-scale gold mining;
- the measures to be taken to reduce emissions from power plants and metals production facilities.

BBC News Read more Another report in *TerraDaily*

Incident reports

USA: IN REMOTE FIELD, NORTH DAKOTA OIL BOOM SUFFERS FIRST BIG SPILL

October 10 - A Tesoro Logistics LP pipeline has spilled more than 20,000 barrels of crude oil into a North Dakota wheat field, the biggest leak in the state since it became a major U.S. producer.

The six-inch pipeline was carrying crude oil from the Bakken shale play to the Stampede rail facility outside Columbus, North Dakota. The affected part of the line has been shut down, Tesoro said.

Farmer Steven Jensen discovered the leak on September 29 while harvesting wheat on his 1,800-acre farm, about nine miles northeast of Tioga, North Dakota.

Oil was gushing from the pipeline "like a faucet, 4 to 6 inches spewing out," said Jensen, who added that nearby wheat plants were ruined.

The leak did not pose an immediate threat to groundwater sources, Kris Roberts, who leads the environmental response team at the state Department of Health told Reuters.

At an estimated 20,600 barrels, it ranks among the biggest U.S. spills in recent years. *Reuters* Read more

North Dakota farmer finds oil spill while harvesting wheat

October 10 - A North Dakota farmer who discovered an oil spill the size of seven football fields while out harvesting wheat says that when he found it, crude was bubbling up out of the ground.

Farmer Steve Jensen says he smelled the crude for days before the tires on his combines were coated in it. At the apparent break in the Tesoro Corp.'s underground pipeline, the oil was "spewing and bubbling 6 inches high," he said in a telephone interview Thursday.

What Jensen had found on Sept. 29 turned out it was one of the largest spills recorded in the state. At 20,600 barrels it was four times the size of a pipeline rupture in late March that forced the evacuation of more than 20 homes in Arkansas. *MSN News* Read more [Thanks to Bill Hazel, MPC Corp.]

INDIA: ONGC OIL LEAK HITS URAN COAST, HEAVY POLLUTION FEARED ALONG 10-KM STRETCH

October 8 - A pipeline in the Oil and Natural Gas Corporation's Uran plant developed a leak on Sunday night, spilling about 5,000 litres of crude oil into the Arabian Sea that spread about 10km along the coastline and caused considerable water pollution.

The grey-black film of oil stretched along the Uran shoreline, from Mora to Karanja villages, adversely affecting local fishermen and raising ecological concerns. Environmentalists said if the oil seeps into the sand on the shore, it could irreparably damage the soil and the region's flora and fauna. They added that given the spread of the spill the quantum of crude leaked into the sea could be high. *The Times of India* Read more

Oil spill off Mumbai worse than estimated

An ONGC woker engaged in clean-up of oil at Uran Creek in Navi Mumbai on Wednesday. — PHOTO: PTI

October 9 - The oil spill on the Uran coast close to Mumbai is larger than what was estimated, the Maharashtra Pollution Control Board (MPCB) has said. The admission came two days after the leak of crude oil from an ONGC pipeline. It took 12 hours to cap.

Initially the MPCB estimated that 1,000 litres of oil had washed into the sea. On Wednesday, it said the figure could be thrice more. "The leakage started at 8.30 p.m. on Sunday and it was arrested around 11 a.m. the following day. This means that a lot of oil has seeped into the sea. It is definitely more than thrice the amount the ONGC estimated," said Dr. Y.B. Sontakke, MPCB's regional officer for Navi Mumbai. *The Hindu* Read more

Environment ministry notice to ONGC over Mumbai oil spill

October 10 - The environment ministry has issued a showcause notice to **Oil and Natural Gas Corp. Ltd** (ONGC) concerning an oil spill from pipelines in an ONGC installation off the Uran coast near Mumbai, Maharashtra.

"The ministry of environment and forests has constituted a team headed by member secretary of the Central Pollution Control Board (CPCB) **J.S. Kamyotra**. The team will make an immediate site inspection and submit a report by 14 October 2013," the ministry said in a notice.

The notice added that the faulty pipelines/ONGC installation responsible for the oil spill is being immediately closed under section 5 of the Environment Protection Act, 1986. "A showcause notice is being issued to ONGC to show why action should not be taken against them under the Environment Protection Act, 1986." *Live Mint* Read more

Incident reports (continued)

NIGERIA: TWO NEW INCIDENT REPORTS

October 7 - Seven NNPC Oil Workers Injured in Pipeline Explosion

At least five persons were reportedly burnt, when a vandalised pipeline belonging to the Pipelines and Products Marketing Company (PPMC), a subsidiary of the Nigerian National Petroleum Corporation (NNPC), exploded late Saturday afternoon in Adeje, near Warri, Delta State, as the workers carried out repairs on the damaged pipeline. Others also reportedly sustained light injuries. *AllAfrica.com* Read more

October 10 - Shell: New leaks close major Nigerian oil pipeline

Shell Nigeria says new leaks have forced it to close the Trans-Niger Pipeline that carries 150,000 barrels of crude daily, 10 days after the pipeline was reopened following repairs for leaks.

Spokeswoman Precious Okolobo said in a statement Wednesday night that a team has been dispatched to repair leaks at three places in the southern Niger Delta's Ogoniland. A joint investigation including community leaders will determine the cause and impact of the spills. *Fuel Fix* Read more

FRANCE: OIL SLICKS OFFSHORE CORSICA

October 11 - During September, oil slicks were observed to the north-west and east of Corsica. Some of these large slicks required particular attention given their proximity to particularly sensitive areas (Scandola Nature Reserve, UNESCO World Heritage Site, Marine Protected Area). Slick drift forecasts and attentive monitoring of these slicks' behaviour were the opportunity for the Corsican MRSC, the Mediterranean maritime authority (PREMAR), Météo France and Cedre, among others, to work in close and efficient cooperation. *CEDRE Newsletter* Read more

Other news

USA: COLORADO PLANS TO REVIEW RESPONSE PLAN TO OIL SPILLS DURING FLOOD

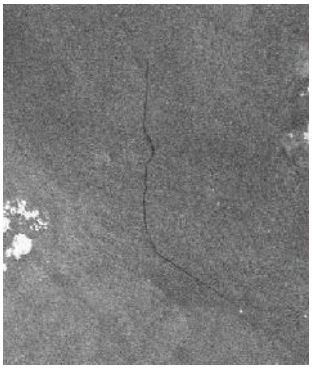
Colorado regulators are conducting a "formal review" of the state's disaster plan for the oil and gas industry in the wake of September's floods. Conservation groups would like limits set on operations in and near floodplains, such as the one in northern Colorado pictured. (Tim Rasmussen, The Denver Post)

October 6 - From the start, state oil and gas regulators were gathering information and passing it on to the incident commander overseeing disaster response, said Alan Gilbert, a Colorado Department of Natural Resources official.

"We are going to have a formal review," Gilbert said. "We'll look at what worked and what didn't work."

In their review, state officials will evaluate how effective the regulations were in preventing flood spills and whether reporting was adequate and the emergency plans adequate, Gilbert said. *The Denver Post* Read more

UK: SATELLITE IMAGERY BUSTS MAERSK TANKER IN UK POLLUTION CASE



October 7 - At a hearing today at Truro Magistrates Court in the UK, Maersk Tankers Singapore was ordered to pay a total of £22,500 in fines and costs after pleading guilty to a breach of UK maritime pollution legislation.

For the first time ever, satellite imagery was used as primary evidence in a maritime pollution case brought about by the UK's Maritime and Coastguard Agency (MCA).

On 25 February 2012 a satellite operated by European Maritime Safety Agency (EMSA) detected the Singapore-registered Maersk Kiera trailing a slick in the waters between Lands End and the Scilly Isles. According to the MCA, the vessel was contacted by Falmouth Coastguard to query whether they were carrying out tank cleaning operations as they had satellite imagery of oil traces in the track of the Maersk Kiera. *gCaptain* Read more

USA: BP TRIAL UPDATES

October 7 - Judge hears conflicting estimates of BP oil spill

Determining how much oil spilled is a multibillion-dollar question for U.S. District Judge Carl Barbier, who is presiding over the trial involving the deadly Deepwater Horizon rig explosion and the nation's worst offshore oil spill. The judge ultimately could decide how much more money BP owes for its role in the disaster.

Government experts estimate 4.2 million barrels, or 176 million gallons, spilled into the Gulf. BP has urged Barbier to use an estimate of 2.45 million barrels, or nearly 103 million gallons, in calculating any Clean Water Act penalties. Both sides agree that 810,000 barrels, or 34 million gallons, escaped the well but were captured before the crude could pollute the Gulf.

Under the Clean Water Act, a polluter can be forced to pay a maximum of either $1,100 or $4,300 per barrel of spilled oil. The higher maximum applies if the company is found grossly negligent, as the government argues BP should be. But penalties can be assessed at amounts lower than those caps.

Using the government's figures, a maximum penalty if the company is found grossly negligent could total $18 billion. Using the company's figures, that maximum penalty would be around $10.5 billion. *ABC6.com* Read more

October 8 - BP and US Government Fight Over Leak Size

The lawyers for British oil giant BP and the US federal government have disagreed over methods used to assess the size of the oil spill in the Gulf of Mexico following the 2010 Deepwater Horizon Disaster.

While the government estimates a total spill size of about 4.9 million barrels of oil, BP claims that just 3.26 million barrels escaped into the sea. A total of 810,000 barrels of oil collected during the cleanup is excluded from the spill size.

Government attorney Steve O'Rourke said the leakage was similar to an Exxon Valdez-type spill occurring about every 4.5 days for the duration of the incident. O'Rourke added that BP's estimate for the spill is well below the actual size as the company was emphasizing the lower end of its estimate.

Meanwhile, BP lawyer Mike Brock criticised government scientists' methods for calculating the spill. Brock argued that they committed a wide range of errors as they rushed to make an estimate shortly after the spill, in order to appease the public. *International Business Times* Read more

October 10 - BP witness says only 3.26 million barrels of oil escaped from doomed Macondo well

BP's Macondo well spilled only 3.26 million barrels of oil during the 87 days that followed the April 20, 2010 blowout that sank the Deepwater Horizon drilling rig, killing 11 workers, a witness for the company testified Thursday.

Martin Blunt, an assistant professor of petroleum engineering at Great Britain's Imperial College, said his estimate takes into account the geology of the area of the Gulf of Mexico where the Macondo reservoir was located, unlike the 5 million or more barrels estimated by expert witnesses for the Justice Department. *The Times Picayune* Read more

October 11 - Federal judge orders BP, private plaintiffs to hammer out changes to business claims rules

Attorneys for BP and private plaintiffs who entered into a multibillion-dollar settlement of economic claims from the 2012 Deepwater Horizon accident and oil spill have been given until 5 p.m. Tuesday (Oct. 15) to recommend new language to govern the way "business economic claims" are paid under the settlement.

U.S. District Judge Carl Barbier ordered both sides to work together from Tuesday to Friday to turn their versions into proposed rules on which both sides can agree. The rules also must be consistent with an Oct. 2 ruling by a divided three-judge panel of the 5th U.S. Circuit Court of Appeals that threw out earlier rulings by Barbier upholding a previous version of the rules.

BP appealed Barbier's decisions, saying the rules allowed large businesses to use accounting methods that were letting them reap windfall profits that did not represent their losses. In some cases, BP argued, business claims were being approved for companies that experienced no losses caused by the oil spill.

Plaintiffs' lawyers contended that BP was aware the settlement rules might result in some unusual payments, but underestimated both the value of those settlements and how many claimants would qualify for payments. *The Times Picayune* Read more

CANADA: WEST COAST OIL SPILL RESPONSE PREPAREDNESS UPDATES

The Pacific States/British Columbia Oil Spill Task Force's 2013 Annual Meeting

The Pacific States/B.C. Oil Spill Task Force's Annual meeting took place at the downtown Seattle Public Library on Wednesday, September 25th from 8:00-5:00. This year's theme was "Emerging Issues in West Coast Spill Prevention, Preparedness and

Other news (continued)

Response". *The Pacific States – British Columbia Oil Spill Task Force* Read more- Agenda, Presentations & Audio Files

October 8 - Federal pledge to build coast guard ships a good sign for B.C. spill response, Clark says

Days after raising concerns about Ottawa's support for marine-spill response on the B.C. coast, Premier Christy Clark says she is "thankful" the federal government is committed to doing better.

Ms. Clark offered the supportive comments Tuesday when asked about a federal plan to spend $3.3-billion on up to 10 Canadian Coast Guard ships that are being built in B.C. *The Globe and Mail* Read more [Thanks to Gerald Graham, World Ocean Consulting]

October 9 - Energy deals with First Nations can't be rushed, PM's envoy warns

The Prime Minister's envoy appointed to bring First Nations onside to develop energy corridors across British Columbia is warning that much time has already been lost, setting the stage for "confrontation and resistance" rather than agreement.

While Ottawa is cranking up the pressure to reach a quick resolution to provide new export pathways for Western Canada's energy resources, Doug Eyford, a Vancouver lawyer and treaty negotiator, is discouraging the notion that there are any shortcuts on the road to reconciliation. *The Globe and Mail* Read more [Thanks to Gerald Graham, World Ocean Consulting]

October 9 - Shipping oil has never been safer. Improved tanker design, navigation and a fleet of response vessels means spills aren't inevitable

An oil tanker is guided by tugboats as it goes under the Lions Gate Bridge at the mouth of Vancouver Harbour. Photograph by: Jonathan Hayward, The Canadian Press Files, Vancouver Sun

As British Columbians continue to debate energy development and transportation proposals to allow Canada to ship oil exports to new markets, questions are being asked of safety in the marine sector and of our ability to deal with an oil spill in the unlikely event of such an occurrence.

Shipping oil in and out of B.C. is nothing new. Oil has been uneventfully moved on the coast of British Columbia for the past 100 years. For most of that time, the technologies of precision navigation that are today compulsory equipment on the bridge of a ship simply did not exist.
The Vancouver Sun Read more

October 10 - Study sets foundation for world-class marine spill plan

A comprehensive study assessing current marine-spill preparedness and response capabilities was released by the Province today. The study also outlines necessary improvements to achieve a world-class system to ensure B.C.'s coast is protected from potential marine spills.

Nuka Research, an international expert in spill preparedness and response, had been commissioned by the provincial government to undertake the study so B.C. could better understand the federal government's ability to deal with a spill off the west coast.

The West Coast Spill Response Study contains three volumes, including:

- Volume 1 - An assessment of the existing marine-spill prevention and response regime in place for B.C.
- Volume 2 - A vessel traffic study assessing the current and potential levels of shipping on the west coast of Canada and the current volume of hydrocarbons being shipped or used as fuel.
- Volume 3 - An analysis to identify international best practices and the elements required for establishing a world-class marine spill preparedness and response system.

British Columbia Newsroom *Read more* [Thanks to Gerald Graham, World Ocean Consulting]

October 11 - B.C. study points to inadequate oil spill response system. Liberal government says more federal resources needed to protect west coast

Only three to four per cent of a relatively small oil spill off the north coast of B.C. would be recovered in the first five days, according to a new study commissioned by the B.C. government.

The finding is part of a detailed assessment by an international expert that brought to light weaknesses in B.C.'s spill response system. *The Vancouver Sun* Read more

Other news (continued)

October 11 - Response to B.C. oil spill would be devastatingly slow and incomplete

According to the London-based International Tanker Owners Pollution Federation, even in ideal conditions in oceans around the world, only 10 to 15 per cent of oil is likely to be recovered.

While more oil could be recovered beyond the five days modelled in B.C. waters, oil also disperses over time increasing the difficulty of recovery, noted the 274-page Nuka report. *The Province* Read more [Thanks to Gerald Graham, World Ocean Consulting]

October 11 - Government of Canada Welcomes the West Coast Spill Response Study

The Honorable Lisa Raitt, Minister of Transport, today welcomed the study commissioned by the province of British Columbia regarding the West Coast Spill Response Study and reiterated the Government of Canada's commitment to a world-class tanker safety system.

"Our government is committed to protecting both the safety of Canadians and our environment," said Minister Raitt. "Through our government's plan for Responsible Resource Development, we are ensuring the safe and reliable transport of energy resources through our waterways."

The Government of Canada has appointed a Tanker Safety Expert Panel that is reviewing Canada's already robust system and will propose further measures to strengthen it. Over the past six months, the panel has engaged stakeholders to enhance the government's knowledge and understanding of how well the current system is working, review our current preparedness and response capacity, and propose new ways to bring Canada's tanker safety system to a world-class status. *The Maritime Executive* Read more

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PANAMA HOPES U.S. WILL CLEAN UP CHEMICAL WEAPONS IT LEFT ON ISLAND

October 12 - Even as the United States presses for the rapid destruction of chemical weapons in Syria, a dispute lingers over unexploded chemical munitions that U.S. soldiers left on a Panamanian island more than 60 years ago.

Panama has pressed the United States for decades to remove them, and now it's optimistic that the Obama administration has agreed.

But the administration itself is less definitive about whether an agreement has been struck to clean up the ordnance that litters San Jose Island, 60 miles into the Pacific from Panama City, the nation's capital.

The World War II-era chemical munitions are known to include phosgene and mustard gas, and may include other toxic chemical agents. From 1945 to 1947, a contingent of U.S. soldiers tested chemical weapons on the then-deserted island, leaving behind at least eight unexploded 500- and 1,000-pound bombs. *The Sacramento Bee* Read more

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CANADA: WHERE WE ARE HEADED: PROPOSED GREAT LAKES PROTECTION ACT

The Government of Ontario has taken a significant step forward on Great Lakes protection by introducing, in the Ontario legislature, the proposed Great Lakes Protection Act. The overall intent of the proposed act is to help ensure the Great Lakes stay drinkable, swimmable and fishable.

In introducing the proposed act, Ontario is delivering on a commitment in the November 2011 Speech from the Throne, to: "follow through on its goal to become the continent's water innovation leader by 2015 and work with environmental experts and community groups to develop and introduce a Great Lakes Protection Act. These and other measures enhance the affordability and quality of life in Ontario. And this, in turn, attracts the world's top talent and new investment in jobs and growth. " *Ontario Ministry of Environment* Read more [Thanks to Marc Shaye Hon.FISCO, Member of the ISCO Executive Committee]

People in the news

UK: GEORGE EUSTICE REPLACES RICHARD BENYON AT DEFRA

October 7 - MP George Eustice has been appointed Parliamentary Under Secretary of State for Natural Environment, Water and Rural Affairs at Defra after Richard Benyon stepped down today.

MP for Camborne, Redruth and Hayle since May 2010, Eustice is a member of the Environment and Rural Affairs Select Committee. *Edie Water* Read more

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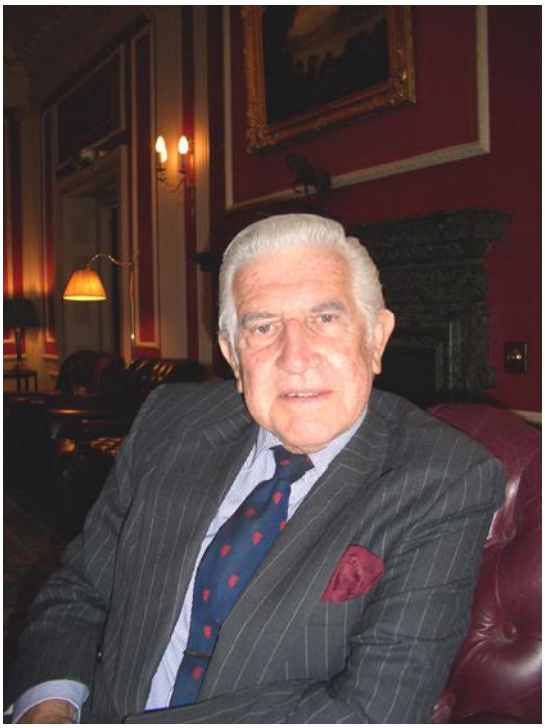
Obituary

DUNCAN LYON, Hon.FIMarEST, FInstPet, Hon.FISCO 1924-2013



"Finished with Engines"

Countless people across the maritime industries will be saddened by the death on 28 September of Duncan Lyon. Throughout his long and distinguished journey through many areas of the marine world Duncan made friends with his charm, generosity and good humour. The mention of his name in the most unlikely corners of our global business arena could generate smiles and stories told with fondness and respect.

Duncan Lyon was born in Glasgow on St George's day, 23rd April 1924 and passed away peacefully after a short illness on the 28th Sept 2013. As a proud Scotsman sharing a birthday with William Shakespeare he was at ease on both sides of the border making friends across the social spectrum with style and eloquence.

Duncan attended Glasgow Technical College (later to become the University of Strathclyde) to study marine engineering with an apprenticeship at Harland & Wolff and subsequently joined Port Line and then Cunard. After acquiring his chief engineer's ticket, Duncan joined the world's most famous ship - the RMS Queen Mary realizing his boyhood dream and went on to become her Chief Engineer. He often told the tale about a rain-drenched afternoon in September 1934 as an 11-year-old boy with his pal Roddy McMillan, they listened attentively to his schoolmaster deliver the news that Hull No 534, nearing completion at John Brown's shipyard on the Clyde, was to be named "Queen Mary" after the wife of King George the V. At the time the ship was the wonder of the world and it is no surprise that it inspired him to become a marine engineer. The teacher was Duncan MacRae who went on to achieve fame as a thespian with a maritime flavour in the film "Whisky Galore" while pal Roddy also shared the limelight in the TV series "Para Handy" about a Clydeside "puffer". With no pretence Duncan became a character in the real world of marine engineering moving on to one of Britain's greatest shipping companies -The Blue Funnel Line.

He came ashore to join Texaco/Caltex Group in London where he utilized his maritime engineering skills in the fuel and lubricant business later joining Ocean/Antar Oil as director. He subsequently moved on to become the MD of Gamlen UK Ltd supplying chemicals to ships and then to Magnus Maritec in a similar position. As the marine supply industry consolidated and environmental issues became a priority he found a niche opportunity with ITT marketing oil-in-water monitoring systems. This involvement led him to the position of MD of Marine Pollution Control Ltd and European Coordinator of the global consortium Maritime Response Alliance based in Seattle and set up to deal with oil spill incidences.

Picture (right): On a happy occasion, Duncan celebrates his 80th birthday with friends at the Caledonian Club in London

A scion of the City Duncan remained active long past the normal retirement deadline and in touch with his friends and colleagues in the marine world. On his 80th birthday 46 of the great and the good of the industry feted him with a grand dinner at his beloved Caledonian club with old friend and US based jazz legend Annie Ross flying in to serenade him. This splendid occasion reflected the great affection with which he was held by his contemporaries across a number of generations. With his good humour and topical interest Duncan remained popular with the young and not so young well into his late 80s.

Duncan was a Freeman of both the cities of London and Glasgow; a Liveryman of the Worshipful Company Shipwrights; a Craftsman of the Incorporation of Hammermen of Glasgow; a member of the Anchorities and the Caledonian club and past president of the London chapter of the Propeller Club of the United States. For the services he rendered to the Institute and to the Maritime Industry as a whole he was appointed as Honorary Vice-President IMarEST. He was also a Fellow of the Institute of Petroleum and, more recently in 2011, he was elected as an Honorary Fellow of the International Spill Control Organization which he first joined in 2005.

Duncan is survived by his wife Liz, four sons, four daughters and 9 grandchildren. His sparkling conviviality, companionship and warmth will be sorely missed by all who knew him. His funeral will be at Chiltern's Crematorium, Whielden Lane, Amersham, HP7 0ND on Tuesday 15th Oct 2013 at 14.45.

CAN BACTERIA COMBAT OIL SPILL DISASTERS? SCIENTISTS EXAMINE THE ALTERNATIVES TO DISPERSANTS

In Germany, teams of international scientists have decrypted the effectiveness of two types of bacteria, which could be used in the future to help combat oil spill disasters. According to a report written by scientists from the Helmholtz Centre for Environmental Research and the Helmholtz Centre for Infection Research in the peer-reviewed journal Applied and Environmental Microbiology, Alcanivorax borkumensis converts hydrocarbons into fatty acids which then form along the cell membrane. New insights on the bacteria Oleispira antarctica are important to understand their adaptation to low temperatures and could help in mitigation strategies for oil spills in polar seas or the deep sea, according to comments made by an international team in the peer-reviewed journal Nature Communications.

Concluding part of a report from the Helmholtz Centre for Environmental Research (UFZ) in Leipzig

Alcanivorax borkumensis is a marine bacterium, owing its name to the place where it was discovered – the island of Borkum (in spite of its worldwide distribution). It is considered to be one of the most important organisms with the ability to degrade oil spills in marine systems. Nevertheless, up until now there had been a lack of information on the growth and physiology of these bacteria in relation to hydrocarbons with different chain lengths. The recent investigations found that the bacterium were particularly effective at processing alkanes with carbon chain lengths of between 12 and 19 carbon atoms. "The cell growth confirmed that this bacterium is not only able to take up the intermediates of fatty acids in its own body but also to convert them", explains Heipieper.

By contrast, for the significantly colder polar seas or the deep sea Oleispira antarctica would be the more suitable bacterium. It can survive at temperatures around 5 degrees Celsius that are typical for example on the seabed of the Gulf of Mexico. With eleven protein crystal structures it has the largest quantity of structures under the cold-loving microorganisms and it clearly has more negative charges at the surface than microorganisms in moderate temperatures. Even if most of the enzymes of this bacterium no longer work optimally under cold weather conditions, they still work sufficiently to accelerate growth and outdo other competitors, if a hydrocarbon diet from crude oil suddenly becomes available. The persistence of these bacteria is proof of their ecological competitiveness in cold environments, therefore making them good candidates for the development of biotechnological solutions for oil pollution mitigation in polar regions. The new insights about the two bacteria are a small, but important step forward in the search for alternatives to the toxic dispersants that have been used so far. Tilo Arnhold

Helmholtz Centre for Environmental Research Source document, Publications and Further information

NEXT OIL SANDS THREAT: CRACKING CAPROCK

Risks of steam-assisted bitumen recovery are too little discussed, experts say.

Photo: Clean up operation of a steam release at Devon Energy, 2010.

A *recent blow-out* at Canadian Natural Resources Ltd.'s Primrose facility in northern Alberta sheds light on a serious but little discussed topic in the oil sands industry: caprock integrity.

The blow-out allowed more than 10,000 barrels of steamed bitumen to seep into the boreal forest through ground fissures as long as 159 metres, putting groundwater at risk.

While highly technical, the issue is a critical one, with high stakes for investors and the province alike.

Approximately 80 per cent of Alberta's bitumen deposits lie deeper than 75 metres and cannot be mined. As a consequence, these deep deposits, all capped by rock, are currently being heated to as high as 300 degrees Celsius with highly pressurized steam.

Industry uses either a steaming tool called steam-assisted gravity drainage or cyclic steam stimulation to melt a resource as hard as a hockey puck.

The overlaying caprock acts as a primary but not always impermeable seal that keeps steamed bitumen from seeping into aquifers, neighbouring industry wellbores and other geological formations, as well as the forest floor and lakes.

In general, industry tries to keep the pressure significantly low enough to ensure the caprock does not break -- but high enough to push the melted bitumen out.

It is a very fine line. In 2006, French multinational company Total blew a 300-metre crater in the forest while trying to steam up a shallow formation of bitumen.

Although regulatory reports on the event weren't published until four years later, the "catastrophic event" put caprock integrity on the agenda and forced Total to abandon its project. *The Tyee* Read more

Contributed article

A serialised article contributed by Carlos Sagrera M.Sc., MISCO.

Carlos Sagrera is an independent oil spill control and environmental advisor in onshore and offshore activities with 20 years of experience in Latin America. He has been an ISCO Member since 2012 and is the author of this paper, initially written in September 2012, and adapted for the ISCO Newsletter in October 2013. Views expressed are the author's own comments and opinions.

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PART 1 - CONTROL AND PREVENTION OF OIL SPILLS: SOME OUTLINES OF A REACTION IN LATIN AMERICA ON THE DWH INCIDENT

Two years and a half from the "campaign of the Deepwater Horizon (DWH)", as Admiral Thad Allen called it, the oil-industry and state sector of Latin America have had a slow reaction and the adjustments to their procedures and response capabilities are in line with their circumstances, which implies the disasters to come.

It has been a disgrace for the US, but the DWH spill incident should be an opportunity for Latin American countries, and especially for those with similar prospecting offshore activities, that is to say in deepwaters, the inexorable trend in the 21st Century.

Of course there was not any capacity of autonomous response for anything of this magnitude, not only in Latin America but also worldwide. Nobody was prepared for something so exceptional. There was no equipment or sufficient human resources, not even the expertise. Not only did the responsible company, but also all US and worldwide levels involved have to appeal to their best technology, all of their resources and reserves, in order to solve this major problem of specialized oil engineering and its massive environmental consequences. The first big result of DWH is that the myth that nothing could be done in waters of such depths, directly inaccessible to man, has fallen. The rest of the world now has to bear a heavy burden (and added costs). This includes the nearby Latin America, at a time of opening towards offshore, in what there is surely interest from the multinational oil companies, forced to diversify by the reinforcement of controls and new regulatory requirements in prevention in the Gulf of Mexico. It is clear that in this natural derivation towards exploration and exploitation in Latin America's oil and gas offshore, the multinational and national companies shall implement the best of their state-of-the art oil and gas engineering, which includes the best international standards on terms of security and prevention for industry emergencies. Not doing this, betting on the endemic lags in Latin America in terms of updating prevention procedures and controls by the traditional national authorities concerned in the oil industry in each country (that includes the more recently arrived environmental authorities) would be a great strategic mistake from the concessionary companies, both multinational and national. This latter case is aggravated by the lack of systematic access to the essential know-how required for the sustainable management of these types of activities.

With National Contingency Plans (NCP) little used and generally outdated, with almost no reference to offshore, roles and decisions are in risk of being ineffective. Needless to say, the regional Clean Caribbean and Americas (CCA)[1] will be present in the operations within the frame of international cooperation in Latin America, although it remains to be seen how they are outlining their response strategy for this type of incident in deepwater platforms, away from the coast and with logistic requirements much greater than usual. Perhaps that was one of the principal reasons why the CCA merged with Oil Spill Response Limited (OSRL) early this year.[2] The expansion of upstream activities in Latin America and especially the offshore in deepwaters, made the merger almost inevitable.

The CCA was actively present during the response operations of DWH, through the provision of equipment for the use of aerial dispersants and expertise on Net Environmental Benefit Analysis (NEBA), so their accumulated contribution and recent experience should be very useful. The massive use of dispersants should be a priority strategy to consider, as its efficiency was proven in the DWH incident, although its acceptance will vary in the different countries according to the implementation policy of each one of them, and according to their degree of environmental sensitivity. Latin America has a long history of massive use of dispersants in the past decades, not always applied in the most adequate situations for the sensitive resources placed at risk, i.e., outside of the efficient temporal windows that the strategy requires, which is always closely attached to limited logistics in those times of opportunity.

We should also consider in situ burning, whose successful application in the DWH has marked a before and after in this response technique, so far barely referenced in the NCP of Latin America. With the aggregate value of being the most effective offshore response strategy in its cost-benefit relationship, DWH proved that in situ burning has to be rewritten in its procedures and standards, because its existing application schemes and even logistical and safety schemes are obsolete. The issue is justified further in this paper under the heading of response strategies, but being practically a military operation in its application, at least for the imaginary of the operational responsible parties in Latin America, in situ burning has become, after the DWH incident, a feasible response strategy with exclusively operational civil human and logistical resources, which will facilitate an effective response in offshore emergencies in the future.

Regarding prevention, there should also be strategic synergies with ARPEL (Regional Association of Oil, Gas and Biofuels Sector Companies in Latin America and the Caribbean)[3], the priority articulator of the requirements when it comes to security and prevention in the Latin American oil industry. In any event, upon analysing the publications and recent training courses, it should be noted that ARPEL has not prioritized offshore topics, at least specifically, three

Contributed article (continued)

years and a half after the DWH incident. This is a pending task for this regional oil organization in Latin America and there will surely be news in the next year, at the request of their own national oil partners

With this scenario, it should be necessary to think regionally. For example, in the area of Central America, PEMEX itself should have a supporting role from their experience in handling these situations. But this is pure theory: in practice the agreements Mexico's national oil company with some countries in Central America has not left the paper. Meanwhile, in South America, PETROBRAS should play a supportive role in those latitudes, which can be expected especially with the loan of equipment and considering the replacement investments that it has made in the big multinationals in the oil industries, traditionally present in that region. Moreover, the governments of most Latin American countries face a paradox. On the one hand, they are ultimately the ones responsible for the environmental control and security of industrial activities and on the other hand, they are owners of partially or totally monopolistic oil companies that explore, produce and distribute the oil that they have in their seabeds and subsoils. It must be noted that the former MMS[4] was questioned in the US for its effectiveness in its dual role of technique controller regulator and collector of revenues from concessions of oil, gas and other mineral resources in the continental shelf. This caused its closure and the creation of an initial new controller agency in record time and in full emergency, such as BOEMRE.[5] Therefore, it is not difficult to understand that similar events occur in Latin America with national companies and complacent State organisms that affect the security and prevention of this and other types of major incidents. However, nowadays and after the DWH incident, there are signs in Latin America that indicate a higher pressure of the civil environmental authorities over oil companies, not only multinationals, but also over the hegemonic national oil companies. This is reflected in the public requirements of information; committees and multidisciplinary national agencies, which are independent from the direct interests of the oil companies; investigations that transcend the media; fines growing steadily worse; requests for changes in procedures; etc. This transparency culture grows little by little; it had never been seen before and it deserves to be highlighted, mainly in Mexico, which has been a pioneer for years, even with its endemic security situations in the national oil industry. It is also true that this is not the case in other countries in Latin America, such as Venezuela, as we shall see below, whose only release at the moment is the web.

With the DWH, a first lesson learned for Latin America should be one regarding the NCP and the direct responsible parties for their execution. They must be efficient and updated, with realistic risk assessments that contemplate the catastrophic scenarios, something we regard as deficient in the region. The DWH case should mark a before and after in that regard: the traditional NCP should have an exclusive paragraph for emergency situations in offshore platforms, adequately coordinated with the emergency plans of the platforms.

Footnotes

[1]Clean Caribbean and Americas (CCA). www.cleancaribbean.org

[2] http://www.oilspillresponse.com/about-us/2011-12-21-08-34-02/featured-reports/345-integration-of-clean-caribbean-a-americas-cca

[3] ARPEL. Events, Courses and Workshops 2013. Its list of current projects includes some about Oil Spill Management, in particular the application of the RETOS tool– a systematic effort by ARPEL-, without mention to the offshore incidents. https://arpel.org/courses-workshops/

[4] MMS. Minerals Management Service. This former agency was within the United Sates Department of the Interior (DOI) and was in charge of regulating oil, gas and other mineral resources of the outer continental shelf (OCS). 1982-2010.

[5] BOEMRE. Bureau of Ocean Energy Management, Regulation and Enforcement. www.boemre.gov.

It was created on October 1, 2010, and finished its tasks at the end of 2011. The new agency was responsible for issuing lease permits for offshore drilling operations, enforcing safety and environmental regulations and managing natural resources revenues. From 2012 the BOEMRE was divided into two agencies: the BOEM (Bureau of Ocean Energy Management - http://www.boem.gov/) and the BSEE (Bureau of Safety and Environmental Enforcement - http://www.bsee.gov/). The other function coming from the former MMS was the MRM (Mineral Revenue Management) and it was transferred to the Office of Natural Resources Revenue (ONRR - www.onrr.gov).

Cormack's Column

In this issue of the ISCO Newsletter we are printing No. 148 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 148: CAMPAIGN FOR KNOWLEDGE-ONLY ENVIRONMENTAL POLICY

While believers in acid rain were content to convert sulphur dioxide to calcium sulphate as a waste for disposal to land-fill (article 147), it was already known that the sulphur dioxide concentration of stack emissions simply could not cause damage in Norway after diluting across the North Sea or in Ireland after diluting across the Atlantic. However, while such power-station beliefs have gone out of fashion either due to the then 'dash for gas' or to the later belief in anthropogenic global warming, the belief in excess deaths has been retained in respect of the sulphur-content of the heavy fuel oil combusted by ships in port, though it is not known whether this is a cause-effect relationship or merely a belief-serving correlation which ignores the need for reality-validation of cause-effect, recognition of which differentiates science from pseudoscience.

As to belief-based regulation, however, we know that reality is not permitted to restrict its generation, and that its aspirations cannot always be satisfied in reality. Thus, as to operational discharges of oils from ships, we know that oil-water gravity separators were initially regulated to discharge water at oil-contents < 100ppm; but that instead of being satisfied with this having largely been achieved, the next and immediate belief-based requirement was for downstream filters/coalesces to achieve 15ppm, then 5ppm, with special areas and particularly sensitive sea areas requiring zero discharge. Indeed, all seas and oceans might already be reclassified as sensitive were this not to require the onshore reception which as yet has been only doubtfully adequate for contemporary regulations. In any case, we know that even the largest casualty-induced releases of oil never produce the species-extinction/ecological-disaster which inspires belief in the need for operational discharges to be zero.

Indeed, when Warren Spring Laboratory (WSL) first looked at bilge water discharges, it found that the oil-content averaged about 30ppm; that initial stages could be about 200ppm; that the final stages could be 10-15% for a few minutes; and that this variation arose because the oil which floats on the surface of the bilge water approaches and finally enters the pump inlet as the bilge water containing un-coalesced droplets at low concentrations is itself removed, the higher initial concentrations being due to oiling of pipe-surfaces in the final stage of the previous discharge. As to fuel tank ballast water, WSL found that the oil-content of the final stage of discharge varied over 9 cases from 0.12% - 91.70%; and that this stage lasted about 5 minutes and represented 1-10% of the total discharge time. Thus, WSL concluded that oil-water separation units could be presented with oil concentrations from the parts per million to the percentage ranges; that because the oily waste waters are pumped to the separator it could be presented with a wide range of droplet sizes; and that while the ballasting of bunker tanks could be discontinued, bilge water discharges could not; but that while the above discharges from bunkers and bilges could be locally inconvenient, they could never produce species-extinction/ecological-disaster.

However, WSL knew that gravity separation depends on the rate at which oil droplets rise through the water phase to coalesce to the floating oil phase; that small droplets rise more slowly than large; and that the smallest (secondary suspension) droplets do not rise at all in being subject to Brownian movement. Thus WSL investigated the droplet sizes produced by 10 different pumping principles applied to mixtures of water and 3000 sec Redwood No 1 heavy fuel oil, and recorded the results as the percentage of oil present as droplets < 254μm in diameter after passage through the pump. Thus, with all of the pumps except the diaphragm and flexible vane being of 10 tonnes h^{-1} nominal capacity for water, the results showed that de-rating all of them to 6 tonnes h^{-1} substantially increased the percentage > 254μm except with the high shear centrifugal principle which produced 56% < 254μm at both ratings; that positive displacement pumps produced the lowest percentage of small droplets; and that a 76.2mm Rotan gear pump of nominal capacity of 40 tonnes h^{-1} de-rated to 10 tonnes h^{-1} produced an effluent in which only 5% of the oil was in the size range < 254μm.

However, with theoretical considerations suggesting that seagoing gravity separators would be unlikely to separate droplets < 254μm; and with this size being considerably larger than that of the onset of secondary suspensions, WSL noted that if a pump produces more than 2% of the oil droplets < 254μm then an inlet concentration as low as 5000ppm (0.5%) is likely to result in an outlet concentration in excess of the arbitrarily selected 100ppm; and that such a limit indicated a need for shipboard tests. Thus, with the above heavy-oil/fuel-tank ballast effluents, WSL observed that with inlets to the separator ranging from 0.12% to 91.70% in 9 runs, the outlets were from 675-615ppm with a minimum of 227ppm over the inlet range of 0.19-32.60% and with a maximum of 881ppm at an inlet of 78.2%.. Later, laboratory tests with a typical separator supplied either by a reciprocal or a positive displacement (rotary gear) pump operating normally or in suction mode to avoid creation of small oil droplets, revealed that in normal mode the centrifugal pump outlet concentrations were < 100ppm until inlet concentrations rose to about 5000ppm (0.5%);; that with the positive displacement pump the outlet was < 100ppm until the inlet was > 12,000ppm (1.2%); and that with either pump in suction mode the outlet averaged 17ppm over 7 observations at inlet concentrations of from 200-20,000ppm (0.2- 2.0%).

Thus, by investigating the quantities of oil likely to be discharged from bilges and ballasted fuel tanks, WSL concluded that the former contained oil in the low percentage range only in the last few minutes of discharge, while the latter were more significant; that neither would be more than locally inconvenient to the public were they to come ashore as coalesced slicks, and would certainly be incapable of causing species-extinction/ecological-disaster at sea or on shore whether as dispersed droplets or coalesced slicks; but that heavy fuel tank ballasting might be discontinued to minimise public inconvenience. Further to this end, WSL investigated kerosene-carried dispersants for small-scale cleaning of shorelines with the intention of reducing oil viscosity with the carrier to ease droplet formation by the dispersant, thus promoting natural dispersion and biodegradation. Had this work been sufficiently advanced for seagoing operations and scaled-up for shorelines by 1967, the *Torrey Canyon Incident* might not have incited the beliefs which have yet to be rejected by knowledge acceptance.

1 The *Rational Trinity: Imagination, Belief and Knowledge*, D.Cormack, Bright Pen 2010 available at 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.

Publications

FOR YOUR INTEREST – LINKS FOR RECENT ISSUES OF PERIODICALS

ASME EED EHS Newsletter	News and commentary on HSE issues from George Holliday	Most recent issue
Bow Wave	Sam Ignarski's Ezine on Marine & Transport Matters	Current issue
Cedre Newsletter	News from Cedre in Brittany, France	July-August 2013
The Essential Hazmat News	Alliance of Hazardous Materials Professionals	September 30 issue
USA EPA Tech Direct	Remediation of contaminated soil and groundwater	September 1 issue
USA EPA Tech News & Trends	Contaminated site clean-up information	May 2013 issue
Technology Innovation News Survey	From US EPA - Contaminated site decontamination	July 1-31 issue
Intertanko Weekly News	International news for the oil tanker community	No. 41 2013
CROIERG Enews	Canberra & Regions Oil Industry Emergency Response Group	October 2013 issue
IMO Publshing News	New and forthcoming IMO publications	Aug-Sept 2013
IMO News Magazine	News from the International Maritime Organization	No 3, 2013
Pollution Online Newsletter	News for prevention & control professionals	October 9 issue
EMSA Newsletter	News from the European Maritime Safety Agency	October 2013 issue
JOIFF "The Catalyst"	Int'l Organisation for Industrial Hazard Management	October 2013 issue
Environmental Technology Online	Environmental Monitoring, Testing & Analysis	October 2013 issue
HELCOM Newsletter	Baltic Marine Environment Protection Commission	May 2013 issue

Company news

ISCO MEMBER, MEKE MARINE SIGNS DEAL FOR OIL SPILL SUPPORT IN PAKISTAN

Byco Terminal Pakistan Limited and Coastal Refinery Limited, operators of the first and only Single Point Mooring in the country, have signed an agreement with MEKE AS, of Turkey for coverage of Tier-3 oil spill eventuality, a statement said.

By doing so, Byco Terminal Pakistan Limited and Coastal Refinery Limited have become the first oil installation facility in Pakistan to have acquired membership of an international oil spill response organisation, it said.

Byco's deep sea Single Point Mooring (SPM) facility was commissioned on December 26, 2012. The Byco Single Point Mooring has a capacity of 100,000 deadweight tonnage (DWT) with 28-inch, 14 kilometres pipeline that connects it to the onshore Byco oil refining complexes.

ISCO MEMBER, AQUA-GUARD SPILL RESPONSE PARTICIPATES IN BITUMEN SPILL STUDY

A Study of Fate and Behaviour of Heavy Crude Oils on Marine Waters - Kinder Morgan Canada Testing.

Aqua-Guard Spill Response and their RBS TRITON™ oil skimming technology achieved excellent results at a Kinder Morgan Canada "Fate and Behaviour" testing exercise with Diluted Bitumen.

As part of the proposed pipeline expansion project for their facility in Vancouver, British Columbia, Kinder Morgan Canada-TransMountain Pipeline (KMC) requested that Western Canada Marine Response Corporation (WCMRC), Polaris Applied Sciences (Polaris) and Witt/O'Brien's conduct research to determine the behaviour of heavy petroleum oils when spilled into a marine environment.

See more at http://aquaguard.com/news/a-study-of-fate-and-behavior-of-heavy-crude-oils-on-marine-waters-at-kinder

The same model skimmer was used extensively during the Kinder Morgan DilBit oil spill into Burrard Inlet in 2007 and was the only oil skimmer at that time to be used successfully by WCMRC to recover spilt DilBit.

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), **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 Psaraftis** (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 Sardessai** (USA). More info on Executive Committee and Council Members can be found on the ISCO website at www.spillcontrol.org