



ISCO NEWSLETTER

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ISCO & THE ISCO NEWSLETTER

The ISCO Newsletter is published weekly by the International Spill Control Organisation, a not-for-profit organisation supported by members in 45 countries. ISCO has Consultative Status at IMO, Observer Status at IOPC Funds and 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.

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International news

For more information on the events featured below, click on the banners

IMO: THE STRATEGIC PLAN FOR THE ORGANIZATION



The IMO Assembly, which meets once every two years, adopts the Strategic Plan for the Organization, which covers a six-year period.

The **Strategic Plan for the Organization for the six-year period 2018 to 2023** (Resolution A .1110(30)) sets out:

- the **mission statement**, which states:

"The mission of the International Maritime Organization (IMO), as a United Nations specialized agency, is to promote safe, secure, environmentally sound, efficient and sustainable shipping through cooperation. This will be accomplished by adopting the highest practicable standards of maritime safety and security, efficiency of navigation and prevention and control of pollution from ships, as well as through consideration of the related legal matters and effective implementation of IMO instruments, with a view to their universal and uniform application."

- the **vision statement**, which states;

"IMO will uphold its leadership role as the global regulator of shipping, promote greater recognition of the sector's importance and enable the advancement of shipping, while addressing the challenges of continuing developments in technology and world trade and the need to meet the 2030 Agenda for Sustainable Development.

To achieve this, IMO will focus on the review, development and implementation of and compliance with IMO instruments in its pursuit to proactively identify, analyse and address emerging issues and support

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International news (continued)

Member States in their implementation of the 2030 Agenda for Sustainable Development."

- the overarching principles, which should be taken into account in all of the Organization's work;
- the strategic directions:
 - SD 1 Improve implementation
 - SD 2 Integrate new and advancing technologies in the regulatory framework
 - SD 3 Respond to climate change
 - SD 4 Engage in ocean governance
 - SD 5 Enhance global facilitation and security of international trade
 - SD 6 Ensure regulatory effectiveness
 - SD 7 Ensure organizational effectiveness
- the performance indicators for measuring the Organization's performance against the strategic directions; and
- the list of outputs that are planned to be delivered by the Organization over a two-year period, thereby providing the linkage between the Organization's strategy, the work of the various IMO organs and the budget.

The document on the Application of the Strategic Plan (Resolution A.1111(30)) provides planning and management procedures to ensure uniform implementation of the Strategic Plan of the Organization by all its organs.

<http://www.imo.org/en/About/strategy/Pages/default.aspx>

International news (continued)

HELCOM MINISTERIAL MEETING TO DRAW UP COURSE OF ACTION FOR THE BALTIC SEA

March 1 - The 2018 HELCOM Ministerial Meeting will be held on 6 March in Brussels, Belgium, under the EU chairmanship of HELCOM. The Ministers of the Environment of the nine Baltic coastal states and the EU Environment Commissioner will gather to discuss the status and the future of the Baltic Sea marine environment. The outcome of the 2018 Ministerial Meeting is expected to revolve around new actions to meet the Sustainable Development Goals in the Baltic Sea, strengthening implementation of the Baltic Sea Action Plan by 2021, and adjusting the Baltic Sea Action Plan based on new knowledge and future challenges. More information on the [Meeting web page](#).

The Baltic Marine Environment Protection Commission, usually referred to as HELCOM, is an intergovernmental organization of the nine Baltic Sea coastal countries and the European Union. HELCOM has worked since 1974 to protect the marine environment of the Baltic Sea from all sources of pollution and to ensure safety of navigation in the region. HELCOM is the governing body of the "Convention on the Protection of the Marine Environment of the Baltic Sea Area," more usually known as the Helsinki Convention. *HELCOM* [Read more](#)

IOPC FUNDS AT 9TH OFFSHORE ARABIA 2018 CONFERENCE AND EXHIBITION

March 2 - The IOPC Funds' Director, José Maura, was invited to participate in the 9th Offshore Arabia 2018 Conference and Exhibition, alongside the IMO's Secretary General, Kitack Lim. The two-day event, which took place on 28 February and 1 March 2018, in Dubai, United Arab Emirates, covered a broad range of topics, including oil spills and environmental protection, regional and international shipping and future projects and technologies.

The Director gave a presentation on the recent developments in the international liability and compensation regime for oil pollution from tankers and had the opportunity to meet with H.E. Dr. Matar Al Neyadi, Undersecretary of the Ministry of Energy to discuss further cooperation between the UAE and the IOPC Funds. He also met with H.E. Dr. Abdullah Belhaif Al Nuaimi, Minister of Infrastructure Development and Chairman of the Board of Directors of the Federal Transport Authority for Land and Maritime. <http://www.iopcfunds.org/>

Incident reports (in chronological order)

USA: MAINE - WWII-ERA TUG SINKS AFTER COLLIDING WITH TUG

February 21 - On Thursday, the World War II-era Army tug Capt. Mackintire went down off Maine after colliding with the tug Helen Louise during a fuel transfer. No one was injured in the collision or sinking, and the Coast Guard is assessing the extent of any pollution potential. The Mackintire is believed to have about 4,000 gallons of fuel on board. *The Maritime Executive* [Read more](#)

CANADA: CANADIAN NAVY SHIP SPILLS NEARLY 8,000 GALLONS OF FUEL OIL INTO STRAIT OF GEORGIA

February 26 - Canadian authorities are working to clean up nearly 8,000 gallons of marine fuel oil that was spilled from the Canadian navy ship HMCS Calgary in the Strait of Georgia on Canada's west coast over the weekend.

According to initial reports, the HMCS Calgary was underway in the strait's shipping lanes when the spill occurred during an internal fuel transfer on Saturday morning. Approximately 30,000 (7,925 gallons) of F-76 marine fuel oil was spilled in the incident, Maritime Forces Pacific reported. *gCaptain* [Read more](#)

FIJI: OIL SPILL CONTAINED AT PORT DENARAU

February 27 - An oil spill at Port Denarau in Nadi on Saturday was contained a few hours after it was detected. It is believed the oil spill was from a leak in the diesel pipeline at the port that supplies fuel to vessels that berth there. *Fiji Sunonline* [Read more](#)

CHINA: PANAMAX AGROUND, SOUTH CHINA SEA

February 27 - Bulk carrier ran aground in South China sea off China coast on Feb 27, while en route to northern China port. Update Feb 28: As of afternoon Feb 28, bulk carrier is still aground – according to available information, she's hard aground, probably breached (not confirmed). *Maritime Bulletin* [Read more](#)

USA: ALASKA - COAST GUARD, ADEC ESTABLISH UNIFIED COMMAND IN RESPONSE TO OIL SPILL IN SHUYAK STRAIT



Photo: A Coast Guard Air Station Kodiak MH-60 helicopter crew and Marine Safety Detachment Kodiak pollution responders conduct an overflight in response to an oil spill in Shuyak Strait, 49 miles north of Kodiak, Alaska, Feb. 27, 2018. The Coast Guard and Alaska Department of Environmental Conservation established a unified command in response to the oil spill. U.S. Coast Guard photo.

February 27 - The spill reportedly occurred Monday morning after an abandoned building collapsed during extreme weather conditions. An oil fuel bladder located inside the building fell in the water releasing a max potential of 3,000 gallons of bunker C fuel oil.

Coast Guard, ADEC and Alaska Chadux Corporation personnel are currently responding to the fuel release. A Coast Guard Air Station Kodiak MH-60 Jayhawk helicopter crew conducted an overflight of the area. The Coast Guard opened the Oil Spill Liability Trust

Fund and contracted with Alaska Chadux, an oil spill removal organization, to provide necessary resources to assist with the cleanup efforts. *US Coast Guard* [Read more](#)

February 28 - UPDATE 1: Unified Command responds to oil spill in Shuyak Strait, Alaska. - A Unified Command consisting of Coast Guard and Alaska Department of Environmental Conservation personnel, continues their response to an oil spill in Shuyak Strait, 49 miles north of Kodiak, but efforts have been hampered by inclement weather.

Pollution responders have not been able to arrive on scene due to 45 to 60 knot winds, 8 to 12-foot seas, and freezing spray, which limits vessel operating capabilities and inhibits responder safety. A Coast Guard Air Station Kodiak MH-60 Jayhawk helicopter crew conducted an additional overflight Wednesday afternoon.

Alaska Chadux Corporation has been contracted out for personnel and equipment response. Chadux's vessels of opportunity, Cecil Marie and Sea Strike, are loaded with 330 feet of boom, a skimpac skimmer and an aquaguard system, in preparation for clean-up efforts. *US Coast Guard* [Read more](#)

News reports from around the world (countries listed in alphabetical order)

AUSTRALIA: VICTORIA - EPA RELEASE FLIPCHART FOR PETROL STATION OPERATORS

February 27 - The Environmental Protection Authority (EPA) Victoria has released a free resource for petrol and service stations in Victoria.

The resource is designed to assist with the protection of the environment and public safety within the community.

According to the EPA website, the Underground Petroleum Storage System (UPSS) resource is: "A handy guide with practical information designed to help service station operators and staff to prevent and manage leaks, spills and other hazards, often with simple actions that fit easily into their daily routine". *C&I Retailing* [Read more](#) [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

CANADA: B.C. ENVIRONMENT MINISTER UNVEILS OIL SPILL RESPONSE PAPER

February 28 - Pipeline operators and railways would be required to start assessing and cleaning up an oil spill within two hours if it is near a populated area or four hours anywhere else, under regulations proposed by the B.C. government Wednesday.

Environment Minister George Heyman released his ministry's intention paper on the beefed-up provincial spill response regulations that he and Premier John Horgan promised to "defend B.C.'s interests" amid the prospect of increasing oil shipments across the province.

The province is now seeking public input on the measures, which, without mentioning the company, are seen as an additional barrier to Kinder Morgan's \$7.4-billion Trans Mountain Pipeline expansion project. *Vancouver Sun* [Read more](#)



In the picture: Environment Minister George Heyman speaks to reporters Wednesday about B.C. opening up its spill response strategy to public input. (CBC)

February 28 – BC Government moves forward with public consultations on oil spill response following trade war scare – "waste of time" says Independent Contractors and Businesses Association.

In its bid to protect B.C.'s coastal waters, the provincial government is looking for feedback from the public about regulations to improve overall oil spill readiness.

"We need to make sure British Columbians have their voices heard on the next steps in protecting our environment," said Environment Minister George Heyman.

This is phase two of the B.C. government's move to create more regulations to improve spill readiness. The province is looking for feedback in four policy areas:

- Response times, which ensure timely responses following a spill.
- Geographic response plans, which ensure resources are available to support an immediate response, taking into account the unique characteristics of a given sensitive area.
- Compensation for loss of public use from spills, including economic, cultural and recreational impacts.
- Maximizing application of regulations to marine spills.

CBC News [Read more](#)

FIFI: WORKSHOP ON OIL SPILL RESPONSE

Photo: Workshop participants after a demonstration at the Princess Wharf in Suva last Thursday. Photo: MSAF

February 28 - An oil spill could devastate the ecosystem around the spill site and have negative effects on other sectors such as tourism, says Maritime and Safety Authority of Fiji (MSAF) chief executive officer John Tunidau.

Mr Tunidau made the comment following MSAF's On-scene



News reports from around the world (continued)

Command Training Workshop funded by the Government of New Zealand and facilitated by experts from the Maritime New Zealand. The workshop was held at the FPCL Building from February 20-22, 2018 in Walu Bay, Suva. *Fiji Sunonline* [Read more](#)

FINLAND: INTERNATIONAL ARCTIC OIL SPILL RESPONSE EXERCISE AND SEMINAR WILL BE ARRANGED IN OULU 7-8 MARCH



March 1 - An international Arctic oil recovery exercise will be held 7 March at the Bay of Bothnia off the coast of Oulu City in Northern Finland. All interested are welcome to follow the exercise in real time video streaming in the internet. The exercise will involve an aircraft of the Finnish Border Guard, as well as several vessels equipped with mechanical brush skimmers that are suited for oil spill response in ice conditions. Parallel to the exercise is an international conference which focuses on pollution response aspects in the Arctic.

The [on-line exercise video](#) will be found in the seminar page www.syke.fi/projects/mospa2018 as well as other information. There will be interviews of the responsible officials and updates from situation awareness system BORIS as well as aerial pictures. No real oil will be used during the event. *SYKE* [Read more](#)

GUYANA: ENVIRONMENT AT RISK, EXXONMOBIL PSA ONLY WITH GENERAL ENVIRONMENTAL REGULATIONS

February 28 - All Production Sharing Agreements (PSA) speak to the obligations of the oil operator when it comes to protecting the environment. But the responsibilities of the contractor may vary from contract to contract. This is evident when one compares the PSA ExxonMobil signed with Ghana to that which it inked with Guyana.

In the case of Guyana, ExxonMobil is merely told that in the conduct of its operations, it is expected to take "necessary and adequate precautions" in accordance with good international petroleum industry practice, against pollution and the protection of the environment and the living resources of the rivers and sea.

But merely uttering these sentiments in a PSA was not good enough for Ghana. In fact, the Government of that African nation was careful to point out exactly what it expects ExxonMobil to do as it relates to environmental safeguards. *Petroleum World* [Read more](#)

HONDURAS: IMO OPRC COURSE III LEVEL HELD LAST WEEK IN SAN PEDRO SULA



March 1 - On February 19 to 22 the Environmental Protection Department (EPD) of the General Directorate of the Merchant Marine (GDMM) lead an IMO OPRC III Level Course in San Pedro Sula, Honduras. The course is designed to help Honduras to better prepare for what may happen in a real event. As part of his statement the General Director of the GDMM, Mr. Juan Carlos Rivera, concludes: "For the General Directorate of the Merchant Marine of Honduras, the culmination of this this OMI Model Course "OPRC

News reports from around the world (continued)

Level III" (Strategic Level) preparedness, response and cooperation against oil pollution represents the complete culmination of the OMI course cycle related to the Topics established by the aforementioned organization in the month of October 2016... It is rightly to detail that the Level III course had a greater focus for the Managerial level of Honduras and within them two reference levels. On the one hand, a majority of actors from the private sector, involved in this risk due to the handling of hydrocarbons or other harmful and dangerous substances with possible impacts on the aquatic spaces and the surrounding coastal areas, and on the other hand, were included as participants. All the government organizations that in one way or another have direct and specific participation in the National Contingency Plan of Honduras (<http://www.marinamercante.gob.hn/?pgeid=210>), at that level corresponds, meritoriously constituting an invaluable achievement for Honduras. It is worth pointing out that, the event that today concludes, has not only allowed for the first time all the actors can be brought together with active involvement in this subject, with defined roles and responsibilities, but that it has facilitated the interaction of the invited persons with qualified foreign and national instructors, endorsing with them the vision and work that the GDMM develops concretely".

The course was made with the technical support of OPCH (member of the OPC Group) and had involved about sixty one (61) managers level of all the key stakeholders and response partners of the NCP including twenty one (21) representatives of the private sector (Lufussa, Puma, Chevron, UNO, Gas del Caribe, Petroa, BIP, RECO, Petrosun, Operadora Portuaria Centroamericana, GTM, MATRA, Terminal Especializada de Honduras LOGRA, Inverquim, OLEPSA, Ocean Pollution Control Honduras (OPCH), twenty three (23) guests from the public sector (Empresa Nacional Portuaria, COPECO, Comisión Nacional Protección Portuaria, Fuerza Naval de Honduras, MiAmbiente, CESSCO, Ministerio de Salud, Fuerza Aérea de Honduras, Instituto Protección Áreas Protegidas y Vida Silvestre, Instituto Hondureño de Turismo), three (3) from NGO (Coddeffa Golfo de Fonseca), five (5) from de communities (Municipalidades de La Ceiba, Tela, Omoa, Guanaja y Trujillo), and thirteen (13) from the Maritime Authority (Capitanías de Puerto de San Lorenzo, Puerto Cortés, La Ceiba, Guanaja, Roatán, EPD).

The course presenters were Mr. Luis Vila (Argentina) as Course Director from the OPC Group & Mr. Carlos Sagrera (MISCO - Panama) as Instructor of the GDMM. See the web page: <https://marinamercante.gob.hn/?p=10044>

For more information: Call + 504 98273483 – Sara Zelaya – Environmental Protection Department GDMM

[Thanks to Carlos Sagrera, MISCO, Member of ISCO Council for Panama]

PANAMA: NATIONAL LIABILITY AND COMPENSATION WORKSHOP



March 1 - At the invitation of the Panama Maritime Authority, the IOPC Funds ran a two-day workshop on the international liability and compensation regime for tanker spills from 22 to 23 February 2018, in Panama City. The Director and the Head of Claims gave an overview of the legal framework and delivered presentations on the contribution system applicable to the receivers of contributing oil in the Republic of Panama. The workshop also gave the Secretariat an opportunity to address the implementation of the international Conventions into the domestic legal system. During that trip, a meeting was also organised with the Minister of Maritime Affairs and Administrator of the Panama Maritime Authority, Mr Jorge Barakat Pitty.

<http://www.iopcfunds.org/news-events/detail/item/904/>

UK: SHETLAND - 40 YEARS OF ENVIRONMENTAL MONITORING

March 1 - SHETLAND's environment is one of the most understood and best monitored ecologies in the whole of the UK thanks to a unique cooperation between the oil industry, the local authority and the academic world.

The Sullom Voe Terminal Environmental Advisory Group, or SOTEAG, celebrated its 40th anniversary in February last year, but it is only now, one year later, that the group has managed to lay on a series of events to mark the occasion.

SOTEAG was founded to carry out wide-ranging environmental baseline surveys in order to measure environmental damage, and recovery, in case of an oil spill.

The first and only major oil pollution at Sullom Voe Terminal, when the Esso Bernicia spilled almost 1,200 tonnes of oil into Yell Sound on 30 December 1978, helped to focus minds and reinforced the value of such an undertaking.

Speaking ahead of Thursday's events, SOTEAG chairman Dave Paterson said the organisation was unique in its set-up as being independent of the oil industry and, in addition, is today seen as a blueprint for other regions, such as the Falkland Islands, in preparing to accommodate the oil industry. *Shetland News* [Read more](#)

UK: INTERSPILL 2018: PROMINENT MEMBERS OF THE UN, EU AND OIL SPILL RESPONSE BODIES SET TO SPEAK AT 2018 INTERSPILL CONFERENCE & EXHIBITION IN LONDON

March 1 - Running between March 13-15 at the ExCeL in London, the Interspill London 2018 conference and exhibition affords oil spill industry professionals, academics and government officials the opportunity to network and exchange views and initiatives concerning potential solutions for future oil spills, focusing upon Spill Prevention, Preparedness, Response and Restoration.

For more information on the conference programme, registering to attend or booking a stand, see www.interspillevent.com

USA: ARKANSAS - MAYFLOWER OIL SPILL: FIVE YEARS LATER

February 28 - March 2018 will mark five years since a ruptured pipeline spewed well over 100 thousand gallons of crude oil into a Mayflower neighborhood. The small town was left to overcome what the EPA called a "major" spill in the Northwoods subdivision. Many of the affected families moved out. Five years later, those who stayed say they're not dwelling on what happened five years in the past. They're focused on the next five years and beyond. *Arkansas Matters* [Read more and watch the video](#)

USA: WASHINGTON - FIRST-EVER RAILROAD OIL SPILL RESPONSE PLAN APPROVED IN WASHINGTON

March 1 - Emergency response preparations for a major oil train spill took a big step forward today. The Washington Department of Ecology has approved the state's first oil spill response plan for the largest freight railroad company in the state, BNSF Railway Company.

BNSF owns 1,332 miles of track in the state and delivers oil to refineries at Cherry Point and Ferndale, truck racks in Seattle and Spokane, and terminals in Anacortes and Pasco. With the approved plan, BNSF meets Ecology's more protective requirements.

"This plan is a significant step forward for the protection of Washington's communities and environment," said Dale Jensen, Ecology spills prevention program manager. "Oil by rail has expanded significantly in recent years, and it's imperative railroad companies are prepared to work with the state to respond to a spill in a rapid, aggressive, and well-coordinated manner." *NBC* [Read more](#)

ISCO news

ISCO AT INTERSPILL IN LONDON – 13-15 MARCH, 2018 AT EXCEL

You are invited to visit the ISCO stand at Interspill. This year ISCO will be co-located on Stand S100 with UK Spill and Spillcon 2019. This puts us in a prime location and also helps cement our good relationships with UK Spill (the organiser of Interspill) and Spillcon (who will be organising the next triennial conference to be held in Perth, Australia in May, 2019).

ISCO Secretary Matthew Somerville and Committee Member Capt. Bill Boyle are looking forward to seeing you.

People in the news

AUSTRALIA: AUSMEPA CHAIRMAN CAPTAIN WARWICK NORMAN APPOINTED AS A MEMBER (AM) IN THE ORDER OF AUSTRALIA



In recognition of his years of outstanding service to the international shipping industry, Captain Warwick Norman has been appointed as a Member (AM) in the General Division of the Order of Australia.

The announcement was made on Friday 26 January 2018, Australia Day. The Order of Australia is an order of chivalry which recognises Australian citizens or others for exceptional achievement or meritorious service, and the General Division acknowledges service in a particular locality or field of activity or to a particular group. *Rightship* [Read more](#)

From the AUSMEPA website – "Congratulations to AUSMEPA Chairman Captain Warwick Norman who was appointed as a Member (AM) in the Order of Australia on Australia Day this year. What a wonderful achievement and we couldn't think of a more deserving person. We are so proud!" *AUSMEPA* www.ausmeпа.org.au



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SENSORS FOR OIL SLICK DETECTION AND THICKNESS MEASUREMENT

The researchers who worked on the two sensors described below, under a BSEE contract, are Dr. Imad H. Elhajj (Project Manager, ie05@aub.edu.lb), Dr. Daniel Asmar, PhD Student Mahdi Saleh, and Engineer Ghassan Oueidat. A detailed report of both sensors will be published later this week on BSEE website. The work was completed at the American University of Beirut (AUB). Established in 1866, AUB is an institution of higher learning founded to provide excellence in education, to participate in the advancement of knowledge through research, and to serve the peoples of the Middle East and beyond.

Capacitive Sensor for Oil Slick Thickness Measurement

During a response to an oil spill, one of the key features impacting the effectiveness of the cleaning techniques is knowing, in real-time, the actual thickness of oil in a slick area. To enhance the efficiency of the currently used cleanup processes, the Bureau of Safety and Environmental Enforcement (BSEE) Oil Spill Preparedness Division (OSPD) contracted the American University of Beirut (AUB) to build an oil-thickness measurement device that improves situational awareness and guides response operators during oil recovery operations.

The Capacitive sensor is designed to provide near real-time measurements for cleanup operations during oil spill incidents. This sensor measures the thickness of various crude and refined oils on water, and wirelessly communicates thickness information. This sensor relies on measuring the capacitance of a set of conductive electrodes immersed in the oil/water mixture and uses this data to estimate the oil thickness. Based on the relative differences between the capacitance values acquired by each of sensor electrodes, interfaces separating different liquid and gas layers are detected. After detecting the air/oil and the oil/water interface, the oil thickness is calculated based on the count and geometrical dimensions of the electrodes immersed in the oil layer. The current prototype was designed to measure a range of 3mm to 100mm, but this range could be extended with design changes.



Above left: Figure 1: Capacitive sensor (handheld)

By relying on the relative capacitance differences instead of the actual capacitance values to measure the thickness, this sensor does not require any calibration against different oil/water types before operation. Furthermore, the Capacitive sensor is designed to work in a dynamic environment, where it can travel through waves and measure the oil thickness in varying water conditions. This sensor is implemented on a low-cost multilayer PCB, and is equipped with an RF communication module to transmit the measured oil thicknesses wirelessly to a base station within a range of 200m. The sensor is provided with a GPS module to acquire and send sensor position coordinates during operation. Several installation options are available for the sensor, including, vertical attachment to a skimmer, boom, or floating buoy.

It could also potentially be mounted on Unmanned Surface Vehicles (USV); to provide oil thickness distribution data within an area of interest.

Below right: Figure 2: Capacitive sensor (skimmer-mounted)

To evaluate the performance of the capacitive sensor, exhaustive testing was carried out at the Ohmsett Facility, between November 27 and December 1, 2017. The testing included three rigorous tests:

- indoor tank dipping tests using four test oils (Diesel, Hoops (weathered), Hydrocal 300, and Calsol 8240),
- outdoor dragging tests at three speeds using the movable bridge mounted over the main tank in calm water conditions using two test oils (Hydrocal 300, Hoops (weathered)), and
- outdoor wave testing with the sensor attached to a



- commercially available oil skimmer in the main tank and subjected to multiple wave conditions using one test oil (Hydrocal 300).

During the experiments, the capacitive sensor showed very good accuracy in the indoor setup, where the average absolute error ranged from less than 1mm to around 5mm in the worst-case scenario (dynamic motion). Also, the sensor showed good accuracy during the bridge-mounted dragging tests, where the average absolute error was approximately 6mm. During the skimmer-mounted tests with waves, the capacitive sensor showed acceptable accuracy in most of the cases where the absolute average error was less than 10mm. The reduced accuracy was due to difficult conditions (aggressive harbor chop waves), and heavy oils types, which caused significant oil-fouling.

Based on the experimental results, several improvements for the sensor design were suggested and will be applied in future designs, including enhancing the sensor performance during harsh dynamic-liquid conditions, and to further decrease the fouling effect of the oil on the sensor.

LED-based Spectrometer Sensor for Oil Slick Detection and Thickness Estimation

In addition to the capacitive sensor described in the previous article, a second sensor was developed with the goal of detecting and measuring thinner oil films ranging from 100 μ m to 3mm. The LED-based Spectrometer (Figure 3) sensor detects the presence of thin oil sheens floating on the water surface and measures the oil thickness based on the principle of light-absorption. Oil thickness is estimated by analyzing the intensity of the absorbed light passing through the oil/water mixture. This sensor uses blue-light LEDs located underwater to emit a focused light beam that penetrates the oil layer, and a photo-diode sensor array located above the oil surface to measure the received light intensity. Before operation, the sensor is calibrated in order to obtain the relation between the received light intensity and the oil thickness. The sensor is equipped with RF and GPS modules, used to send, in real-time, the sensor position coordinates and the measured oil thicknesses wirelessly to a base station within a range of 200m. The LED-based Spectrometer is mounted on a free-floating buoy, and is used mainly for oil spill tracking and volume estimation. A number of these devices can be deployed to form a network which monitors and tracks oil spills.

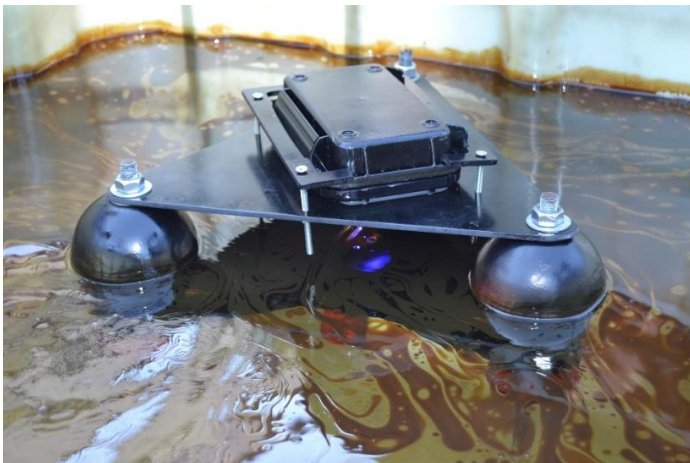


Figure 3: LED-based Spectrometer sensor mounted on free-floating buoy

To assess the performance of the LED-based Spectrometer sensor in realistic scenarios, extensive sensor testing was performed at the Ohmsett Facility, between November 27 and December 1, 2017. Indoor tank testing was performed using two test oils (Diesel, Hoops Crude (fresh)) using a set of slicks ranging from 100 μ m to 3mm. Free-floating testing was performed within an open-water testing area in calm and several wave conditions. The sensor was calibrated for each oil type by taking measures at 0mm, 1mm, and 3mm.

The testing was successful in detecting the presence of oil slicks floating on the water surface. For oil thickness measurement, very good accuracy was obtained during the indoor tests, especially while dealing with transparent oil sheens such as diesel, with an average absolute error of less than 400 μ m. During the free-floating tests, despite the high standard deviation of the thickness measurements caused by waves, the sensor overall accuracy was also acceptable, with an average absolute error of around 500 μ m. However, it was observed that the sensing range of the sensor was decreased to less than 1mm when dealing with opaque oil types such as HOOPS (fresh). Also, oil-fouling of the sensor lenses impacted the accuracy of the sensor, especially at very thin oil thicknesses.

It is important to note that the experiments encountered a limitation in validating the ground-truth thickness since it was challenging to obtain uniformly-distributed oil sheens at thin oil thicknesses (below 500 μ m). Based on the experimental results and aiming to enhance the performance of the LED-based Spectrometer device, several suggestions were made in the hope of decreasing the oil fouling effect, and to enhance the stability of measurements in dynamic conditions.

Events

AT A GLANCE – SOME EVENTS DURING MARCH AND APRIL 2018

To get more detailed info on events mentioned below, use the links provided in the Upcoming Events Summary Page 12

FINLAND: OIL SPILLS IN ARCTIC AREAS –SEMINAR

March 6-8. The event will consist of both an oil recovery exercise in ice conditions and parallel international conference focusing pollution prevention aspects in the Arctic

UK: INTERSPILL CONFERENCE & EXHIBITION - LONDON

March 13-15. Interspill 2018 will be the forum to showcase the wide range of leading-edge initiatives which are improving global readiness and demonstrate why oil spill preparedness and response remains relevant to its multiple stakeholders, adding true value to those attending.

FRANCE: CEDRE INFORMATION DAY

March 16. Cedre's Information Day "Amoco Cadiz, 40 years of developments". Cedre is bringing together various local, national and international stakeholders for a day of meetings to discuss 40 years of evolution since that event.

RUSSIA: BALTIC SEA DAY INTERNATIONAL ENVIRONMENTAL FORUM

March 22-23. The agenda of the Forum, based on proposals to be developed by key stakeholders, will reflect the latest issues concerning the Baltic Sea environment and current regional activities, including involvement of municipalities, assuring good environmental status of the Sea and environmental safety in the region.

BELGIUM: CONCAWE OIL PIPELINE OPERATORS EXPERIENCE EXCHANGE SEMINAR

March 22-23. The agenda includes Regulation of pipeline operation, Analysis of recent incidents and causal factors, Product theft from pipelines and EU operator response, Preserving pipeline integrity, New operational challenges.

KUWAIT: 3RD OIL SPILL CONFERENCE

April 3-5. Professionals will highlight and discuss sound sciences, practical innovations and best practices across the spectrum of prevention, preparedness, response and restoration. The conference will showcase case studies on some of the world's worst oil spills, and their associated risks faced by Governments, Industry, Users and the Public, it is an ideal environment to exchange ideas and learn lessons from actual spill responses and research around the world.

USA: CLEAN WATERWAYS CONFERENCE

April 4-5. The CLEAN WATERWAYS Advisory Committee has programmed fourteen conference sessions that cover some of the most pressing topics while remaining unique to rivers. With that in mind the program will touch on the patchwork of State and Federal regulations, hazardous materials and unconventional oil transportation, and working in a challenging operating environment.

UK: NORTHERN IRELAND – CASTLE ARCHDALE INLAND RESPONSE TRAINING

April 11-12. The programme includes dealing with domestic heating oil spills and in particular oil which has migrated below house foundations.

UK: IMO MARINE ENVIRONMENT PROTECTION COMMITTEE MEETING

April 9-13. The agenda includes Implementation of the OPRC Convention and the OPRC-HNS Protocol and relevant Conference resolutions; Technical co-operation activities for the protection of the marine environment.

UK: IMO & IOPC FUNDS WORKSHOP ON THE HNS CONVENTION

April 26-27. The IMO and IOPC Funds are jointly organising a two-day workshop on the 2010 HNS Convention which will take place at the IMO Headquarters.

Links for recent issues of other publications (in alphabetical order)

AMSA Aboard	News from the Australian Maritime Safety Authority	December 2017
Newsletter from George Holliday	News and commentary on HSE issues from George Holliday	On request via email
Bow Wave	Sam Ignarski's Ezine on Marine & Transport Matters	Current issue
Cedre Newsletter	News from Cedre in Brittany, France	December 2017
CROIERG Enews	Canberra & Regions Oil Industry Emergency Response Group	October 2017
EMSA Newsletter	News from the European Maritime Safety Agency	February 2018 issue
EUROWA Newsletter	European Oiled Wildlife Response Assistance Module	October 2017
IMO News Magazine	News from the International Maritime Organization	Winter 2017 issue
IMO Publishing News	New and forthcoming IMO publications	February 2018
Intertanko Weekly News	International news for the oil tanker community	March 2, 2018
JOIFF "The Catalyst"	Int'l Organisation for Industrial Hazard Management	Q1 2018 issue
Maritime Executive Magazine	Often contains articles of interest to the spill response community	Jan-Feb, 2018
MOIG Newsletter	News from the Mediterranean Oil Industry Group	January 2018 issue
NOWPAP Quarterly	News from the North West Pacific Action Plan	Quarter 2, 2017 issue
Ocean Orbit	Newsletter from the International Tanker Owners Pollution Federation	August 2017
OCIMF Newsletter	News from the Oil Companies International Marine Forum	February 2018 issue
PEMSEA E-Updates	Healthy oceans, people and economies in the East Asian Seas	January 2018
Pollution Online Newsletter	News for pollution prevention & control professionals	February 28, 2018
Safe Seas, Clean Seas	Quarterly Newsletter from Maritime New Zealand	August 2017 issue
Sea Alarm Foundation Newsletter	Oiled wildlife Preparedness and Response news from Sea Alarm	December 2017 issue
Spill Alert	Newsletter from the UK Spill Association	Jan. 1-15, 2018
Technology Innovation News Survey	News from US EPA – Contaminated Site Decontamination	June 2017 issue
Transport Canada Newsletter	News and articles re transport of dangerous goods in Canada	July 2017 issue
UK NCEC	News from the National Chemical Emergency Centre	March 1, 2018
USA EPA Tech Direct	Remediation of contaminated soil and groundwater	

Your editor depends on regular receipt of updated links for listed publications. If these are not received, relevant entries may be discontinued

Upcoming events summary

COUNTRY	2018	TITLE OF EVENT	LOCATION
For more information click on Title of Event			
AUSTRALIA	March 6	2018 National Major Hazard Facilities Forum	Sydney
FINLAND	March 6-8	Oil Spills in Arctic Areas -seminar	Oulu
UK	March 8	Land Condition Symposium 2018	London
UK	March 13-15	2018 INTERSPILL Conference and Exhibition	London
UK	March 13-15	Oceanology International 2018	London
UK	March 14	UK Spill Members' Meeting at Interspill	London
FRANCE	March 16	CEDRE Information Day	Brest
UK	March 20-22	Flood & Coast Exhibition and Conference	Telford
USA	March 20-21	SCAA Annual Meeting & Conference	Arlington VA
RUSSIA	March 22-23	Baltic Sea Day International Environmental Forum	St. Petersburg
BELGIUM	March 22-23	CONCAWE Oil Pipeline Experience Seminar	Antwerp
SOUTH AFRICA	March 26-29	National workshop and training on Incident IMS 300	Cape Town
KUWAIT	April 3-5	Kuwait Oil Spill Conference	Kuwait
USA	April 4-5	Clean Waterways Conference	St. Louis, MO
UK	April 11-12	Castle Archdale 2018 Inland Response Training	Enniskillen, N.I.
LITHUANIA	April 10-12	HELCOM Response Working Group Meeting	Klaipeda
UK	April 9-13	IMO Marine Environment Protection Committee	London
FINLAND	April 17-20	Arctic Shipping Forum	Helsinki
UK	April 26-27	IMO & IOPC Funds w'shop on the HNS Convention	London
UK	Apr 30-May 2	April 2018 IOPC Funds meetings	London
NEW ZEALAND	May 1-3	NZ 5th Contaminated Land Conference	Christchurch
CHINA	May 3-5	IO Expo China	Shanghai
EQUATORIAL GUINEA	May 7-10	National workshop on contingency planning	Malabo
USA	May 7-11	13th Int'l Effects of Oil on Wildlife Conference	Baltimore, MD
UK	May 15	IMO 70 High Level Forum	London
BELGIUM	May 16-17	European Environmental Ports Conference 2018	Antwerp
USA	May 22-24	Inland Boom Shop 2018 (Hands-on Training)	Carmi, IL
UK	May 23-24	HAZMAT 2018	Stratford on Avon
NAMIBIA	May 29 – June 1	Sub-regional w'shop shoreline response to oil spills	Namibia

ITALY	June 20-22	INTERTANKO Annual Event 2018	Rome
USA	June 19-21	Clean Pacific Conference and Exhibition	Portland, OR
UK	June 25-28	Int'l Harbourmasters Assoc. Congress & Exhibition	London
INDIA	July 5-6	Oil Spill India 2018 Conference & Exhibition	New Delhi
SWEDEN	August 27-30	HELCOM BALEX DELTA 2018 spill recovery ex'cise	Karlskrona Area
UK	Sept. 12-13	9th Maritime Salvage & Casualty Response	London
UK	Sept. 12-13	Contamination Expo	Birmingham
SINGAPORE	Sept. 25-26	Salvage & Wreck Asia	Singapore
CANADA	October 2-4	AMOP Tech. Seminar on Env. Contam'n and Response	Victoria, BC
UAE	October 2-4	EI Middle East HSE Forum	Dubai
AUSTRALIA	October 2-4	Ecoforum Conference & Exhibition	Sydney
UAE	October 9-10	RECSO EnviroSpill Conference & Exhibition	Abu Dhabi
UK	October 22-26	IMO Marine Environment Protection Committee	London
USA	Nov. 13-15	Clean Gulf Conference and Exhibition	New Orleans, LA

To request posting of an event of interest to the Spill Response Community please send details to the Editor

Company news from ISCO members

ISCO MEMBER NIGEL BENNETT FOUNDER OF AQUA-GUARD SPILL RESPONSE INC.

IOSC member Nigel Bennett founder of Aqua-Guard Spill Response Inc, has published a book covering his 35 year history and experience growing up and evolving in the global oil spill response industry. The book describes his adventures in local and foreign lands and what he did to keep his feet on the ground while building a business and raising a family of global citizens.

His book *Take That Leap: Risking It All for What REALLY Matters* is now available for order on Amazon.com. 100% of the profits from the sale of this book will go to various charities he and his family support, including groups that help protect our oceans and coastlines. [Check out all the charities we support.](#)

[Click here.](#) Buy a copy (or more).

Use this moment to make a positive difference. Help spread the word about *Take That Leap* far and wide. So please write a review and maybe even buy a few extra copies for friends and family.

ISCO MEMBERS ATTENDING INTERSPILL 2018

Corporate Members & Industry Partners	Stand No.		Stand No.
Ayles Fernie International Ltd.	T400	Lamor	T300
Braemar Response Ltd.	T100	Meke Marine	S551
Castalia Consorzio Stabile SPCA	S351	Norlense	S200
Cedre	S500	National Response Corporation	U302
Desmi Ro-Clean A/S	S400	Oceanpact	T250
Elastec	T502	Oil Spill Response Ltd.	U400
Environmental Protection Engineering SA	W310	Sea Alarm	U400
Fast Engineering Ltd.	S403	UK Spill Association	S100
IOPC Funds	S151	Vikoma International Ltd.	U350
Koseq	U350		

Briggs Marine & Environmental Services is exhibiting at Oceanology on Stand J501

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