

# THE REPORT

SEPTEMBER 2019  
ISSUE 89

The Magazine of the International Institute of Marine Surveying



**IMO Sulphur Cap  
regulation joint industry  
guidance published**

**Osmosis is  
a process not  
a defect**

**Losing control of the  
beach was just the  
icing on the cake**

**Prospects for  
long-life batteries  
in waterway  
transportation**



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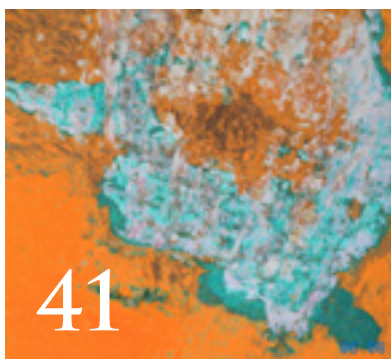
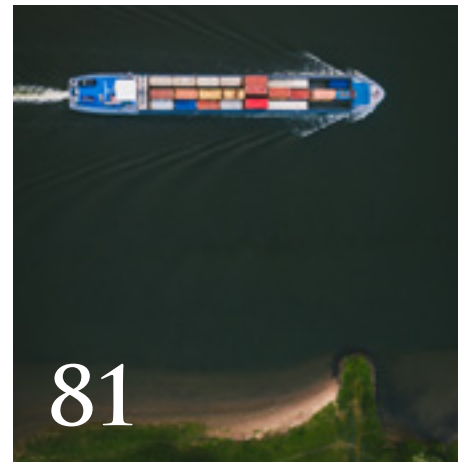
# THE REPORT

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# EDITOR'S LETTER

**Dear Member**

Welcome to edition 89 of The Report Magazine.

Being on the road and meeting members in Australia and Singapore in the past few weeks has reminded me of one thing. Marine surveying is fundamentally the same the world over and the challenges those engaged in the profession face are broadly similar. It is the sharing of knowledge and experiences that is so powerful and helpful. That is, of course, one of the very reasons why this publication exists.

On a sad note to start with news has reached the IIMS head office in recent weeks about the death of two long standing members, both memorable characters in their own right who will be missed. We have published obituaries for Caroline Rostant (page 40) and Tony McGrail FIIMS (page 38).

This issue has a mega box ship focus to it. The article entitled "Losing control of the beach was just the icing on the cake" by Mark Clark highlights the need for a savvy media strategy when a major catastrophe occurs. It is

an interesting read. Nick Haslam discusses the role of the Special Casualty Representative in the salvage of mega box ships.

With the 2020 Sulphur Cap just around the corner and heading our way the search for cleaner fuels is intensifying. With this in mind, Joseph DiRenzo takes a look at hydrogen's future in maritime (see page 50).

Vice President, Geoff Waddington, has written an excellent article entitled "Osmosis is a process not a defect". His motivation for doing so is simply because many surveyors are still unsure about osmosis and its impact on a vessel's structure. Read Geoff's insightful article on page 41.

Drones are no longer a new addition to the marine surveying backdrop, but their uses continue to develop further. DNV GL are using them in all manner of surveys, including allowing them to obtain steel thickness measurements. Tomasz Oledzki, Head of Section Fleet in Service at DNV GL Maritime takes up the story.

Harry Valentine has authored an interesting article about the prospects for long-life batteries in waterway transportation. You can read it on page 62.

The newly approved and fully funded UK Government Marine Surveyor 'Trailblazer' Apprenticeship Scheme was announced recently. IIMS has taken a leading role in this process. In this article you can learn all about the scheme, its purpose and the competencies the apprentice is expected to develop on page 16.

The Members' news pages are extensive this month. There is a review of a successful London Conference, as well as Brisbane and Singapore too. An extract of my dinner speech is published. And there are a number of new safety briefings to bring to your attention.

And finally, we have smart this, smart that and smart the other these days. So, what say you to smart fuel hoses? It seems they are set to enhance safety at sea and the article on page 48 sets out the reasons why.

Survey well.

**Mike Schwarz**  
Chief Executive Officer  
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## THE PRESIDENT'S COLUMN

### Dear IIMS Member

If it has been summertime for you I hope your summer has been as delightful as mine. I have just returned from a short motorcycling holiday covering three Baltic countries.

On my return, Mike Schwarz advised me that he had attended a very successful IIMS Australian conference at Brisbane supported by 50 surveyors and with a host of fresh initiatives coming from our Australian friends. IIMS has a special sentiment for our Southern Hemisphere fraternity; indeed the first ever IIMS international branch was formed in New Zealand back in 2008.

While on the subject of conferences, it's worth dedicating more thought to these events which are an important and growing area for the IIMS all over the world. I can only express my views on their value as a practicing surveyor who dedicates a substantial amount of time attending IIMS conferences and fraternity gatherings, whilst often preparing for a paper for presentation at one of the many maritime and offshore industry conferences.

An obvious question arises. Why spend a day or two attending

these conferences with a handful of other counterparts and competitors rather than being out in the field doing the job and earning a day rate? Is the trade-off worth it?

I am sure there will be as many views on this as there are IIMS members around the world, but here's my point of view:

I personally consider that attending a conference is worth so much more than deferring a planned nomination for work on that day but saying that, I would not be prepared to let go of a large casualty investigation, or time sensitive obligations of an ongoing assignment. The professional surveyor in me always gives priority to ongoing jobs which clients entrust me with.

I recognize however how important conferences are when I benchmark ours to other professionals such as lawyers, doctors or accountants. This is what professionals do, they learn from each other and listen to clients who stand up on the podium at such conferences and address professional service providers on what they expect from them.

We at IIMS have made it a conscious effort at all our

regional conferences to have at least one or two speakers who are direct employers or in some way influence our members' professional services.

With this strong support for attending conferences, I would like to extend a warm welcome to all our IIMS friends to fly down to Dubai on November 20th to celebrate the IIMS UAE Branch's 10th year anniversary conference onboard the legendary cruise ship QE2, now permanently docked at Mina Rashid.

I extend this invitation on behalf of the branch chairman, Capt Om Prakash, to all IIMS members free of cost as a membership benefit. I end with a note of thanks to the IIMS branch committee and the conference sub-committee locally who are tirelessly working towards making this conference the success I know it will be. In the meantime contributions from sponsors, delegate attendance and on-line logins will all make the effort worthwhile.

I look forward to being in touch with you all before November 2019.

**Capt. Zarir Irani**, *President*  
*International Institute of Marine Surveying*  
Email: [Capt.Irani@constellationms.com](mailto:Capt.Irani@constellationms.com)

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## CLIPPER VENTURES CALLS FOR INDEPENDENT INQUIRY INTO THE MCA AND MAIB

Following an investigation into the tragic death of Simon Speirs, Clipper Ventures has called on the Department for Transport to hold an independent inquiry to establish the full extent of the Maritime and Coastguard Agency (MCA) and Marine Accident Investigation Branch (MAIB) investigatory teams' failure of professionalism, impartiality and honesty.



*Simon Speirs was working forward and was caught by a wave, tragically his tether line hook distorted and released Image © Clipper Race*

On the 18th November 2017, Simon Speirs, a 60-year-old retired solicitor, fell overboard whilst helping to reduce sail. The yacht, CV30, owned by Clipper Ventures, was participating in an around the world race and was experiencing increasing winds and sea state in the Southern Ocean. Mr Speirs was tethered to the boat but fell overboard due to a freak failure of a tether safety clip. Mr Speirs was recovered but could not be resuscitated.

*Simon Speirs was lost overboard on November 18, 2017 in the Southern Ocean. Image © Speirs family*



The accident was investigated by both the MCA and MAIB, and their conclusions are the cause of considerable concern.

At a meeting between Clipper Ventures and the new CEO of the MCA held on 25 July 2019, it was revealed that, after a new enquiry into the actions of the MCA Enforcement Official who had initiated and headed up a number of investigations concerning Clipper Ventures, multiple errors and distortions of the truth had been discovered, as follows:

1. The MCA claimed there was a vessel within 60 miles of the yacht that could have taken the body home for burial. They have now admitted this was not true. The nearest vessel was 1500 miles away, or 5-6 days.
2. It was an MCA Enforcement official who told Mrs Speirs of this non-existent nearby vessel.
3. The MCA admitted that Clipper Ventures had advised the Department for Transport and the MCA prior to holding a burial at sea, but their official did not respond.
4. The MCA have admitted that in the circumstances Clipper Ventures were right to hold the burial at sea.

The MAIB report issued 20 June 2019 contained a number of errors, including stating Clipper Ventures had not carried out any of their recommendations, which is inaccurate. All recommendations in the report had been implemented, except for the inspection by the MCA which was due to the MCA's lack of resources. Clipper Ventures, therefore made the decision to have its systems assessed, and approved, by two independent auditors.

The freak failure of the safety tether on the 18th November 2017 is being examined by the sailing industry. The MAIB report acknowledged Clipper Ventures' investigation into safety tethers (which was carried out with the MAIB onboard), and its introduction of a double tether system exceed industry standards. However, the industry learnings have been diluted by a number of factual errors in the MAIB report.

The MCA and MAIB investigations followed remarkably parallel courses and it has to be suspected that significant and improper influence was applied to the MAIB investigation by the MCA team. Clipper Ventures has often complained of lack of impartiality at the MAIB, a belief now held more strongly than ever. The safety of its crew is the highest priority for Clipper Ventures and has been since the race was established in 1996.

THE FIRST LNG-FUELED SHIP WITH THE LATTICE PRESSURE VESSEL IS NOW IN SERVICE

LATTICE Technology confirmed on 1st August that the port cleaning ship with the first commercial lattice pressure vessel (LPV) was successfully delivered to Ulsan Port Authority; this means that it is ready for service from this month. Unlike cylindrical pressure vessels, LPVs have a box-like shape where the geometry is fully flexible in terms of width, height and length, and, most importantly, it is fully scalable in size.

When LATTICE Technology announced the first order of a LPV one year ago, it was real news to the market. It was noted that in this case the LPV increased the storage capacity by 50% over a cylinder solution within the same tank installation space. Thus, with the same design pressure and the same vacuum insulation the bunkering interval will be increased by 1.5 times. LATTICE Technology CEO Keunoh Park stated "As this ship is the first LNG-fueled vessel for public service in South Korea, the most stringent design rules for fabrication, inspections, and tests were applied and found to be in full compliance with the IGF code; in fact, the LPV smoothly passed all of them without any problem."

The LPV has been designed with for a pressure of 9 barg and volume of 15 m3. The tank was manufactured and delivered to the supplier of the fuel gas system and thereafter tested under KR's witness, and delivered as a combined package to Koryo Shipyard early this year. Over the last months, the system successfully went through the cold test with liquid nitrogen and the gas trial test with LNG. Director Jaeduck Kim of SNS Engineering, the supervisor of this project, said "From the beginning I paid a special attention to this innovative tank technology. As the project proceeded, I was impressed by the beauty of this technology and became confident of technical capabilities of LATTICE Technology. Except for the shape giving increased capacity, everything was the same and as simple as for a cylindrical pressure vessel."



Dr. Pål Bergan, CTO of the company, explains "Since it is a free-shape Type C tank technology, the LPV provides a wide range of benefits, especially the ability to fit any available space within a ship, and that this pressure vessel technology provides full scalability from a few cubic meters to tens of thousands of cubic meters. The ability to fit any space was well demonstrated by this project. When it comes to scalability, it is remarkable that the thickness of the structural component remains the same independent of size; clearly this is very different from cylindrical tanks for which the shell thickness increases proportionally with size. This feature enables us to design and fabricate very large size pressurized fuel and cargo tanks for liquefied gas."



Based on this commercial breakthrough, LATTICE Technology plans aggressively to offer applications of the LPV to other areas; this includes LNG-fuel tanks for large ships, cargo tanks for small-scale gas carriers and bunkering ships, fuel tanks for land vehicles, and fuel and storage tanks for liquid hydrogen. Recently, LATTICE Technology proposed a 50,000 m3 liquid hydrogen tanker with two 25,000 m3 cargo tanks with special vacuum insulation. Due to extremely low storage temperature and low density, liquid hydrogen transportation requires volume-efficiency of cargo tanks, vacuum insulation, and pressure-holding capability without BOG venting. These requirements exclude unpressurized Type B and membrane tanks as an option whereas the solution proposed by LATTICE Technology is believed to satisfy all formal requirements. Recently, a path towards commercialization, a 4 million USD research grant was provided in June of this year to fabricate three LPV tanks of 0.6 m3, 35 m3, and 350 m3 for liquid hydrogen storage.

Video (First LPV in commercial service): <https://bit.ly/2NzoOPW>



## MEGA BOX SHIP BULLETIN PUBLISHED BY STANDARD CLUB

As the size of container ships has steadily increased, so has the level of difficulty in handling casualties involving them. A special 32 page edition of the Standard Club bulletin has been published and looks at the different legal, technical and practical considerations.

Ultra large container ships, or mega box ships as they are commonly called, can have a carrying capacity in excess of 20,000 TEU (twenty foot equivalent units) and are frequently in excess of 14,500 TEU. This can have a considerable impact in the event of a casualty. In particular, the global shipping and insurance markets have expressed concern regarding the firefighting capability of these ships, which has not necessarily kept pace with their increasing size. It can be extremely difficult to find suitable ports of refuge to accommodate these ships and which have infrastructure capable of handling the number of containers on board.

There are also concerns about the difficulty and cost involved in carrying out a salvage or wreck removal of a mega box ship due to their size and the lack of suitable heavy-lift cranes/floating sheerlegs.

The Standard Club has had first-hand experience of dealing with container ship casualties, having handled the MSC Chitra, the MSC Flaminia and, more recently, the Maersk Honam. On 6 March 2018, the 15,000 TEU Maersk Honam (which was carrying 7,860 containers) caught fire whilst sailing in the Arabian Sea, which tragically resulted in the death of five of its crew. It took five days to bring the fire under control and a further seven weeks before the ship could be towed to a suitable port of refuge – Jebel Ali in the United Arab Emirates.

Download the special 32 page bulletin at <https://bit.ly/2XGYc5I>.



*Standard Club has published an invaluable bulletin about mega box ships*

## WAVEFOIL IS SET TO GIVE FERRIES WINGS TO OPTIMIZE WAVE POWER

The boat wings started as an unfinished idea in Eirik Bøckmann's head. Now they're being mounted on a ferry in the Faroe Islands. Actually, he doesn't call them boat wings, but wavefoils. Eirik Bøckmann won the regional finals of the NTNU Researchers' Grand Prix with a lecture on wave-propelled ships in 2013.



*Photo by Wavefoil*

### Perfect fit

Now, Bøckmann is CEO of the company Wavefoil, which is turning those ideas into reality. In a construction hall at Hofstad in Trøndelag county, a six-tonne heavy-duty wavefoil module is ready to be mounted onto a ship.

Read the story in full at <https://bit.ly/2Y4oKxa>.

The wavefoils on the front of the ship enable the waves to contribute to propelling the ship forward. This reduces fuel consumption. At the same time, the foils can dampen some of the pitching and heaving motion from the waves and provide a more comfortable journey.

The wavefoils are predicted to save about 4 per cent in fuel costs along the coastal route from Bergen to Kirkenes, which snakes its way between sheltered islands. But where there are more waves, savings of up to 15 per cent may be possible under ideal conditions. The rougher the waters, the greater the potential savings, in other words.

**ZERO EMISSION SHIPS IN UK WATERS GIVEN AMBITIOUS DEADLINE OF 2025**

All new ships for UK waters ordered from 2025 should be designed with ‘zero-emission capable technologies’, in ambitious plans set out by Maritime Minister Nusrat Ghani to cut pollution from the country’s maritime sector.

The commitment is set out in the Clean Maritime Plan published in early July. The government is also looking at ways to incentivise the transition to zero-emission shipping and will consult on this next year.

The plan also includes a £1 million competition to find innovative ways to reduce maritime emissions and is published alongside a call for evidence to reduce emissions on UK waterways and domestic vessels.

The Clean Maritime Plan is part of the Government’s Clean Air Strategy, which aims to cut down air pollution across all sectors to protect public health and the environment. It will also help deliver the United Kingdom’s commitment to be net zero on greenhouse gases by 2050.

The maritime sector has already taken significant strides to reduce emissions – hybrid ferries are already being used in UK waters, including in the Scottish islands and on cross-Solent journeys to the Isle of Wight. The Port of London Authority – where the Maritime Minister launched the Plan, also uses hybrid vessels.

Guidance has also been issued to ports to assist them in developing air quality strategies. This will both address their own operations and support improving air quality across the country.



*Maritime Minister Nusrat Ghani plans for zero emission*

**NEW ALLIANZ REVIEW REVEALS THE LOWEST SHIPPING LOSSES THIS CENTURY**

In 2018, the maritime industry saw the number of total shipping losses of vessels over 100GT falling significantly to 46, representing the lowest total this century, said Allianz in its new Shipping and Safety review 2019. To put it into context, there were 207 total losses reported in 2000. Cargo vessels were the ship type involved in a third of losses (15) during 2018.

Shipping losses declined by a record level of more than 50% year-on-year from 98 in 2017, driven by a significant fall in hotspots around the world and weather-related losses halving after a quieter year of hurricane and typhoon activity.



The 2018 loss year is exceptional compared with the rolling 10-year loss average of 104 (down by 55%).

Meanwhile, since 2009, (132), shipping losses have declined by 65%.

Of the 26,000+ reported shipping incidents over the past decade, more than a third (8,862) have been caused by machinery damage or failure – over twice as many as the next highest cause. Such incidents have increased by a third over the past decade and costs are rising as well.

Improved ship design and technology, stepped-up regulation and advances in risk management and safety are driving the sector’s longterm loss improvement. More robust safety management systems and procedures on vessels is also a factor in preventing breakdowns, accidents and other mistakes from escalating into total losses.

Click to download the Allianz Review in full at <https://bit.ly/2X4fIRx>.



Photo credit: Reuters

### MIS-DECLARED DANGEROUS CARGO POSSIBLE CAUSE OF KMTC HONG KONG FIRE

Port Authority Director of Thailand, Kamolsak Phromprayoon, has reported that the fire onboard the 'KMTC Hong Kong' containership was due to mis-declared chemical cargoes of calcium hypochlorite and chlorinated paraffin wax.

More than 130 people were transferred to hospital after an explosion and fire onboard the South Korean container ship 'KMTC Hong Kong' while berthed in Thailand's eastern Laem Chabang port.

The port Authority inspected 35 containers at the centre of the blaze and more than half of them contained chemical products.

According to local media reports Mr Phromprayoon and his team discovered 18 boxes that contained chemical cargoes. In the meantime, those investigating the containers found that thirteen containers had cargoes of calcium hypochlorite and five had cargoes of chlorinated paraffin. The shippers had not declared the dangerous cargoes and on Saturday it was believed the cargoes were dolls.

### ATTEMPTS TO MITIGATE THE IMPACT ON THE YACHTING INDUSTRY CAUSED BY TIER III REJECTED

The International Maritime Organisation (IMO) has rejected a proposal submitted by Turkey and the International Council of Marine Industry Associations (ICOMIA) that sought to mitigate the impact on the yachting industry caused by Tier III regulation.

Turkey and ICOMIA proposed an alternative standard for vessels currently covered under a delay provision which expires in 2021. Meeting this standard results in reduced guest cabin space as gas exhaust treatment systems have to be installed.

The consequence of this could render yachts just above the 24m threshold commercially unattractive, a segment that ICOMIA considers crucial for the marine industry.

Udo Kleinitz, secretary general of ICOMIA said that the council fought hard to advocate for the industry. "Having been involved with this file for the last 11 years, at this stage it is difficult to capture the impact this decision will have on vessel design, let alone our industry," he said.

"We are most grateful to those IMO member states who supported our proposal and would like to mention in particular Turkey for co-sponsoring this document and the associated lobbying efforts, as well as Malta for their efforts on the European stage.

Despite ICOMIA's significant efforts the proposal was rejected, meaning that the regulation will be implemented from 2021 for vessels below 500gt, with significant implications for the superyacht industry.

A description of Tier III

During MEPC 71, the IMO adopted Resolution MEPC.286(71), amendments to MARPOL Annex VI, introducing two new NOx Emission Control Areas (ECAs). These two new NOx ECAs – the Baltic Sea and the North Sea – will be enforced for ships constructed (keel laying) on or after 1 January 2021, or existing ships which replace an engine with "non-identical" engines, or install an "additional" engine.



**ICOMIA**  
INTERNATIONAL COUNCIL OF  
MARINE INDUSTRY ASSOCIATIONS

**SUNSEEKER APPOINTS ANDREA FRABETTI AS NEW CEO**

Andrea Frabetti has taken over as Sunseeker International CEO following the resignation of Christian Marti.

Andrea, formerly chief technical officer at Sunseeker, will work with chief financial officer Mike McMillan and chief operations officer Michael Straughan to form a new strategic committee focusing on developing a strategic framework for the business.

The committee will continue to work with the current executive management team of Adrian Powell, Sean Robertson, Barbara Baker (as interim HR director) and Sian Dodds on return from maternity leave, to formalise a more 'product-facing organisation structure and a robust global distribution network'.



John Zeng, the board representative for Sunseeker's majority shareholder, Dalian Wanda, thanked Christian for his leadership over the last few months: "On behalf of Dalian Wanda, we would like to thank Christian for his input, professionalism and leadership.

"Christian leaves Sunseeker in a very healthy position focussed on its future growth. We have worked with the Sunseeker Executive Management Team to create the Strategic Committee and we are confident that Sunseeker, with the continued support of Dalian Wanda, will be in an even stronger position to grow on its success."

**SWEDISH CLUB PUBLISHES BOOKLET ON PREVENTING WET DAMAGE TO CARGO ON BULK CARRIERS**

The Swedish Club has highlighted how to avoid wet damaged cargo on bulk carriers in a 32 page pdf booklet, which can be downloaded below. The Club says that heavy weather in combination with leaking hatch covers is the most common cause of wet damage on cargo. However, the main concern is the incorrectly applied and poorly maintained cargo hatch covers and sealing systems.

As a result of information collected from its claims handling, many cargoes of steel and steel coils, grain, peas and solidified cement were damaged by sea and rainwater enabling the report to be produced. In fact, 34% of all insured bulk carriers suffered a cargo claim in 2017 and this has increased by 75% since 2014. For 2017, the average cargo claim on a bulk carrier was almost USD 70,000.

These incidents make wet damage the second most common claim type on a bulk carrier and the most costly, while the average cost for a bulk carrier wet damage cargo claim is almost USD 110,000 says the Swedish Club.

Leaking hatch covers are the most common cause of wet damage followed by heavy weather. These are usually closely inter-connected as seawater has entered the cargo hold through leaking cargo hatch covers during heavy weather. But there are often coinciding incidents as the cargo hatch covers may be washed over by green sea on deck when the vessel sails through heavy weather.



Download the 32 page pdf booklet at <https://bit.ly/2J8AdCv>.



*Superyacht leaders vow to reduce industry's carbon footprint*

## SUPERYACHT LEADERS VOW TO REDUCE INDUSTRY'S CARBON FOOTPRINT

Some of the biggest names in the superyacht industry have vowed to reduce their carbon footprint in support of the non-profit organisation, Water Revolution Foundation.

So far Benetti, Feadship, Heesen, Lürssen, Abeking & Rasmussen, Alexseal, Amels and Damen, MB92 and Rybovich have signed up to help reduce the carbon footprint of the superyacht industry.

The arrangement means the yachting companies have made a promise to reduce their greenhouse gas emissions. They will also make financial donations to help protect the future of the superyacht industry by ensuring it is more sustainable.

The pledge coincides with the objective set by the International Maritime Organization: to reduce greenhouse gas emissions by 50% by 2050 from 2008's levels.

Robert van Tol, Water Revolution Foundation executive, commented, "Sustainability is something we can no longer view as optional. But, more importantly, our industry is well positioned to take the lead with a smart and affluent clientele and our unique connection with the ocean."

"Our foundation is open to all industry companies. Sustainability is not a competitive advantage; it is a responsibility, a minimum standard that we need to continuously improve upon collectively," he added.

Water Revolution Foundation was set up with strong links to the superyacht industry and is led by a board of key industry figures, including Henk de Vries from Feadship, Peter Lürssen, Wayne Huizenga III from Rybovich and Philippe Briand.

## METSTRADE SET TO GET BIGGER STILL IN 2019

The expansion of the METSTRADE trade show is set to continue say the organisers with almost 1,500 companies signed up including newcomers Suzuki, Nuova Protex, NOCO and Nautinov.

The SuperYacht Pavilion, which was extended to three halls last year, has sold out and will host 334 exhibitors including first time participants, Inmarsat, Vedder, Pianeta Gemme and LuminellWhile.

Away from the SuperYacht Pavilion, space has been created on the METSTRADE floor for the 2019 event by removing and combining some show items and areas. In recognition of the success of the MaterialDistrict Pop-up and to enable growth for the Construction Material Pavilion, the MaterialDistrict will move to a new area.

The extra room in the Construction Material Pavilion has given an opportunity for new exhibitors to join, with Fibertech, AVEL Robotics, Fixtech, and Solico being among those to already sign up. Finally, the organisers' office, press office and VIP room will merge to maximise the effectiveness of each.

METSTRADE 2019 is free to attend and you need to register in advance and will be held on 19 – 21 November in Amsterdam.





## AMMONIA COMES UNDER THE SPOTLIGHT AS A POTENTIAL NEW LOW EMISSIONS FUEL

Ammonia can be safely and effectively applied as a marine fuel to reduce harmful emissions according to new research published by C-Job Naval Architects.

The ground-breaking research uses a new concept design, an ammonia carrier fuelled by its own cargo, to study the concept of using ammonia as a marine fuel and achieve a significant reduction in greenhouse gas emissions in shipping. It shows ammonia can be used as marine fuel if a number of safety measures are included in the design.

Niels de Vries, Lead Naval Architect at C-Job Naval Architects and research lead, said: "Reviewing all ammonia power generation options, the Solid Oxide Fuel Cell (SOFC) is clearly the most efficient. However, it does have practical challenges as the power density and load response capability are not on an acceptable level yet. "Therefore, in the short term applying the internal combustion engine is the way to go."

With the International Maritime Organisation goals to reduce total annual GHG emissions by at least 50% by 2050 compared to 2008 and eventually fully eliminate harmful emissions, it is of the utmost importance that the global maritime industry looks into renewable fuels like hydrogen, ammonia and methanol.

## DNV GL HAS PUBLISHED UPDATED BULK CARGO LIQUEFACTION GUIDANCE INFORMATION

DNV GL Classification society has updated its bulk cargo liquefaction guidelines. Originally published in 2015, the revised guidelines are based on feedback from readers and practical experiences that have arisen historically. The guidelines focus on design and operation of vessels with bulk cargoes that may liquefy.



Specifically, the revised guidelines provide additional material to better describe precautions to be followed during voyages or even the steps to be taken in the possibility of cargo liquefaction.

According to DNV GL, two new paragraphs have been added: 5.8 and 5.9. In addition, parts 4 and 6 have been updated to include the latest developments, including DNV GL's new class notation BCLIQ. We welcome your feedback on these new revisions.

Concerning the BCLIQ notation was launched in 2018, and reassures that a vessel is constructed to eliminate the free-surface effect, for example by featuring wide wing tanks and reinforced structural focus areas on the cargo hold side walls, and is consequently able to carry cargoes with a moisture content exceeding the transportable moisture limit (TML).

Download the guidance booklet at <https://bit.ly/2JbGFbJ>.

## TWO RARE VIKING-ERA BOAT BURIAL SITES FOUND IN SWEDISH DIG

Archaeologists in Sweden have uncovered two rare Viking-era boat burial sites during an excavation in Uppsala. It has been five decades since the last similar find in the area, and national archaeology agency Arkeologerna described the discovery as “sensational.”

The team stumbled upon the burial sites during the excavation of more modern ruins in Old Uppsala. The boat graves were buried beneath a well and a cellar from later eras. One of the two graves was quite intact, with remains of a man at the stern of the boat and those of a horse and a dog found towards the bow. Personal items – a sword, a spear, a shield and a comb – were also laid within the vessel.

According to the agency, this kind of grave typically dates back to the Vendel Period (around 550–800 AD) or the Viking Age (800–1050 AD), when it was generally more common to cremate the dead. Remains in boat burials were not cremated, so the graves are often very well preserved.

“It is a small group of people who were buried in this way. You can suspect that they were distinguished people in the society of the time since burial ships in general are very rare,” said Anton Seiler of the National Historical Museums in Sweden. “It is extremely exciting for us since boat burials are so rarely excavated. We can now use modern science and methods that will generate new results, hypotheses and answers.”

Some of the results from the dig will be displayed at Gamla Uppsala Museum and Stockholm’s Swedish History Museum.



*Image courtesy Arkeologerna*



*SIGTTO presents recommendations for management of cargo alarm systems*

## SIGTTO PRESENTS RECOMMENDATIONS FOR MANAGEMENT OF CARGO ALARM SYSTEMS

The Society of International Gas Tanker & Terminal Operators Ltd (SIGTTO) published the first output from the Human Element Committee, ‘Recommendations for Management of Cargo Alarm Systems’, recommending the implementation of alarm management philosophies for cargo alarm systems on gas carriers.

The purpose of these recommendations is to encourage owners to create an alarm management system that will address the design, management and operation of alarm systems. Owners may find valuable assistance from Classification Societies, alarm system designers and shipyards.

This document provides guidance for all types of gas carriers, from large LNG carriers to the smallest LPG carriers. All gas carriers will need to have alarm management processes, but less complex alarm systems will be easier to set up.

Thus, the recommendations are about cargo monitoring and safety systems on liquefied carriers.

According to SIGTTO, today’s cargo monitoring systems can be virtually programmed with an unlimited number of alarms. These systems are able to generate a large number of alarms, in the event of an unusual situation. This is also called ‘alarm flooding’. This can disable the alarm system and may contribute to incident escalation.

Download the guidance booklet at <https://bit.ly/2LQ9Ofs>.



# MARINE SURVEYOR 'TRAILBLAZER' APPRENTICESHIP SCHEME GIVEN UK GOVERNMENT APPROVAL AND FUNDING

IIMS has been part of a small but dedicated team that has worked hard over the past two years to develop the framework for an apprenticeship scheme for the marine surveying profession in the UK.

The working group has been chaired by Alan Cartwright, Blabey Engineering Ltd, with Mike Schwarz, IIMS CEO, in attendance from the outset. More recently, Alan Larsen, SCMS, joined the working group to help shape its direction. Di Fitch from John Moores University in Liverpool in conjunction with Mark Aberdein has been ever present and has brought her considerable specialist knowledge in the area of apprenticeship schemes and adult learning to steer and support the group in their at times challenging deliberations.

When asked to comment about the new apprenticeship scheme, Mike Schwarz, said, "This is an excellent piece of work and I am proud to have played a part and contributed to something that can help the next generation of marine surveyors to enter the market. My thanks to Alan Cartwright for his leadership and to those with specialist knowledge in the apprenticeship arena who have supported us all the way. It is now about encouraging potential apprentices to come forward and then, in time, ensuring that relevant employers know there is a talent pool available to them".

So let's have a look at this new standard in more detail...



## OVERVIEW OF THE ROLE

### **Inspecting marine vessels to ensure they comply with standards and regulations**

## DETAILS OF STANDARD

### **Occupation summary**

This occupation is found in the commercial and leisure maritime sectors, including maritime regulators, classification societies, small commercial vessel certifying authorities, port authorities, marine insurers, brokers, survey companies and consultancy companies, including large, medium-sized and small employers. The broad purpose of the occupation is to provide independent verification, by inspection or examination of a subject ship or other vessel, its structure, machinery, equipment and systems, to ensure compliance with established and known standards of, and regulations and rules for: construction, stability, outfitting, equipping, safety and operation. The purpose of the marine survey is to establish the condition of the subject ship or vessel (or parts, machinery, equipment or systems) and any potential or actual damage or repairs required thereto, and verify the subject ship's or other vessel's suitability and fitness to operate, including appropriate certification for same. The value of a subject ship or other vessel (or its constituent parts, machinery, equipment or systems) is also established through marine survey commissioned for such purpose. In their daily work, an employee in this occupation interacts with a wide range of marine professionals, including: the Master (Captain), Chief Engineer and crews of ships

or other vessels; client or subject company representatives (such as Marine Superintendents, Brokers, Administrators and Managers); maritime regulators (such as Maritime and Coastguard Agency (MCA) officials, Classification Society staff, naval architects and marine engineers and Certifying Authority specialists); insurance loss adjusters; and commercial or private clients and their representatives, including legal professionals. While much of the planning for a survey is undertaken in an office environment, the surveys themselves are undertaken onboard the subject ship or other vessel, either in port (alongside a quayside or in a dry dock) or, from time-to-time, during operations. A Marine Surveyor is expected to maintain a level of personal drive and fitness to work outside in all weathers, and to inspect all parts of a ship or small vessel, including safe working at heights and in confined spaces. An employee in this occupation will be responsible for providing professional services of expert survey (including close examination and inspection for verification of standards, regulations and rules) of ships or other vessels, constituent parts, machinery, equipment and systems, including planning for and safe conduct of the survey itself, and production and presentation of written and oral reports of the survey's results and outcomes. Such reports and presentations will require production of high-quality documents that will provide evidence, imagery, conclusions, recommendations and, where required by the purpose, relevant valuations. Marine Surveyors may

work alone, jointly with equivalent Surveyors from other interested parties, or in company with other surveyors for whom they could be responsible. Working to the instructions provided and from their own professional knowledge, the Marine Surveyor will have significant autonomy for the planning, completeness and safe conduct of, and reporting of the survey. In conduct of a survey, Marine Surveyor may have to manage their own work with due consideration of the environment and of other persons, including ship's staff or technical contractors.

### **Typical job titles**

- MCA Senior Executive Officer Marine Surveyor
- Marine Surveyor
- Ship Surveyor
- Surveyor
- Ship Classification Surveyor
- Flag State Surveyor
- Marine warranty surveyor
- Class A3 Surveyor
- Examiner
- Associate or Partner/Director of surveying company

### **Entry requirements**

Individual employers will set the selection criteria for their Apprenticeships. Entrants to the role should typically have an advanced level qualification (level 3) and experience of working in a maritime environment in roles such as Standards of Training, Certification and Watchkeeping (STCW) Officer Of The Watch (OOW), Engineering OOW, Electro Technical Officer, or equivalent knowledge and experience from a maritime background.



## OCCUPATION DUTIES

### Duties

**Duty 1** Plan a survey of a subject ship or other vessel, machinery or equipment.

**Duty 2** Undertake a condition survey on a ship or other vessel or constituent parts, in a safe manner, to verify the condition against relevant maritime rules and regulations, appropriate technical and operational standards, and recognised good maritime practice. Such surveys will include the vessel's structure, machinery, systems, equipment, life saving appliances, and documentation/certification.

**Duty 3** Record the objective findings, results and outcomes of the survey, and prepare and present high-quality written evidence reports of the survey and high-quality audio-visual presentations to stakeholders.

**Duty 4** Verify a ship's or other vessel's characteristics and safe behaviour under load and in an intact or damaged condition,

through checking the calculations of a ship's or other vessel's data, drawings and other information, from specifications, observations and measurements onboard, and present the findings. This will include but not be limited to calculation of tonnage, displacement, stability data and load line/freeboard requirements, including: Gross Tonnage (for large ships); Gross Tonnage (for small ships, which use a different process); Load Line; Static and dynamic stability characteristics.

**Duty 5** Undertake the estimated valuation of a subject ship or other vessel, or its constituent machinery, systems or parts.

**Duty 6** Determine whether the subject ship or vessel is fit to operate. Enforce upon ship's owners and operators the impact of the outcome.

**Duty 7** Undertake appropriate and relevant personal risk assessments for access to a ship or other vessel, for working safely on-board the vessel during survey and for safe

egress. This includes determination and application of appropriate safety risk control measures, including development of safe systems of work and use of safety instrumentation and personal protective equipment.

**Duty 8** Liaise and communicate effectively with clients, ship owners, operators and agents, ship's masters and staff, regulatory authorities, classification societies, insurers, and ship building yards and ship repair yards.

**Duty 9** Maintain awareness of the risks of a range of emergencies that may arise on-board a subject ship or vessel, and respond safely and correctly, for self-preservation and prevention of harm to others and the environment.

**Duty 10** Investigate marine casualties and breakdowns, such that diagnosis of causal factors and identification of actions necessary for avoidance of repetition are accomplished, communicated and reported.

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## KSBs

### Knowledge

**K1:** Contracting, contract law, setting expectations, request for services, the parameters of the role including liability and risk.

**K2:** Due diligence and risk assessment processes.

**K3:** Different types and purposes of surveys and the implications on planning timescales, budget and scope: e.g. in water, out of water, cargo, machinery, stability, towage, etc., and the impact of location and weather conditions.

**K4:** Vessel layout, construction and operation for a range of vessels of varying types and complexity, including types of vessel and area of operations (e.g. world-wide, coastal, domestic or inland), and terminology used for naming parts of ships, boats and other vessels.

**K5:** Types and properties of materials used in ship construction & repair such as wood, steel, aluminium, glass reinforced polymers (GRP) and carbon fibre.

**K6:** Principles of design, construction and operation of main propulsion, auxiliary, deck and other machinery, equipment and systems, typically used in ships, boats and other vessels.

**K7:** Relevant International Maritime Organisation (IMO) conventions and applicable regulations, appropriate standards and best operational practice (e.g. IMO Conventions on: Load Line, Safety of Life at Sea, Maritime Pollution, associated UK maritime regulations including but not limited to: UK Merchant Shipping Act 1995, Life Saving Appliances Regulations, Small Commercial Vessel Codes and regulations, Regulations and Rules for Lifting Equipment and

Lifting Operations, including testing and examination, Accident and Hazardous Incident Reporting Regulations. International Standards Organisation (ISO), European Norms (EN) and British Standards Institution (BSI) Standards relevant to ships and commercial and leisure vessels.

**K8:** Safe access to and egress from the vessel.

**K9:** Comparison of design, construction, outfitting, equipping, and operation of a range of subject ships or vessels with selected appropriate Classification Society rules and MCA Regulations and Codes for design, construction and upkeep of ships and vessels, to identify and heighten awareness of deficiencies.

**K10:** Tonnage, displacement and load line measurement and calculations, including international and UK Load Line conventions and regulations.

**K11:** Typical ship and vessel propulsion, auxiliary, ancillary and deck machinery and systems appropriate to the vessel to be surveyed.

**K12:** Rules, regulations and safe practice for the maritime carriage of passengers and specialist personnel

**K13:** Theory and practice, including calculations regarding hydrostatics, vessel handling and hydrodynamics including towage

**K14:** Marine environmental protection, including responsibility of the vessel to port, national or international jurisdiction

**K15:** Effective oral and written communication strategies; the terminology used in this occupation and the appropriate format of survey reports

**K16:** Effective audio-visual presentational strategies, techniques and systems.

**K17:** Knowledge of the effects of load and damage to a ship (or other vessel) and its operational characteristics.

**K18:** The ship and vessel market place and relationship between typical build/construction/supply costs and market prices for a range of different ship and vessel types, operational purposes and ages.

**K19:** The condition that would be expected from a fully compliant ship or vessel in good order and under competent management.

**K20:** The safety culture, safety management systems and practice onboard vessels to be expected from a fully compliant ship or vessel in good order and under competent management, as required by regulations and rules.

**K21:** The authority for detaining a vessel or, otherwise, prevent its departure or onward voyage, where the ship or vessel is not safe to operate.

**K22:** Theory and practice for hazard identification, risk assessment, appropriate risk mitigation and control, and development of appropriate safe systems of work.

**K23:** Purpose, structure and hierarchy within various organisations involved with ship design, building, upkeep and operations, including the MCA and Classification Societies.

**K24:** Action required and means of escape in emergency conditions (e.g. fire, flood, vessel instability).

**K25:** Failure mode effects analyses, investigative techniques and diagnosis of causal factors.

### Skills

**S1** Communicate effectively and professionally at all levels both internally and externally

**S2** Positively challenge stakeholders to effect change where appropriate

**S3** Assess requirements for the survey and organise and plan within the timescales and budget set

**S4** Manage time and resources effectively

**S5** Read and interpret drawings, data and other relevant information

**S6** Interpret appropriate engineering formulae and compare results with actual on-board readings, data / calculations submitted and survey findings.

**S7** Work competently and safely in the workplace to meet regulatory and legislative requirements

**S8** Apply engineering principles, regulatory and Classification Society requirements to the ship, vessel, machinery, equipment or system.

**S9** Advise on appropriate regulations and guidance relevant to the ship or vessel

**S10** Build, lead and manage multi-functional teams, interacting with

and influencing a range of internal and external stakeholders.

**S11** Produce succinct and accurate survey reports

**S12** Deliver effective oral and audio-visual presentations

**S13** Apply scientific calculation to various conditions of the ship (or other vessel) and the environment prevailing.

**S14** Assess the market and prevailing conditions, to calculate a value and price for the subject ship, vessel, machinery, equipment or systems.

**S15** Set out and impose a decision upon ship owners, managers, operators, master and staff.

**S16** Undertake effective hazard identification and risk assessment processes using recognised and appropriate procedures.

**S17** Identify causal factors and means of prevention of re-occurrence of ship, structural, machinery, equipment or systems failures.

### Behaviour

**B1:** Be self-motivated with the ability to work independently and with integrity.

**B2:** Able to take personal responsibility for their actions, demonstrate leadership and show resilience.

**B3:** Able to work under pressure to tight deadlines.

**B4:** Able to influence a range of stakeholders within the parameters of the role.

**B5:** Able to take account of other people's priorities and needs.

**B6:** Apply logic to progress of a survey or other work, to ensure efficiency of working.

**B7:** Personal resolution and determination in enforcing unpopular decisions.

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## IMPROPER OPERATION OF CRANE LEADS TO FATAL ACCIDENT

The US Coast Guard has published its report into the crane accident in the Coast Guard buoy yard in Homer, which resulted in the death of Chief Warrant Officer Michael Kozloski.

The investigation found improper operation of the shoreside crane was the direct cause of the mishap.

On 31 January 2019, at the USCG Cutter Hickory buoy yard in Homer, Alaska, numerous crewmembers were carrying out several yard clean up, maintenance and repair and organization tasks before a planned underway period.

A two person team was operating the Shuttlelift crane car, the Mishap Crane (MC), to move four distinct loads of Aids to Navigation equipment from the top of Container Express boxes to a location on the ground where they were subsequently moved via forklift to alternate locations.

The team was comprised of a rigger and crane operator. Neither of these members were qualified to perform these duties.

During movement of the fourth load, the MC tipped over, with the boom fatally hitting the unit's Chief Warrant Officer 2 Boatswain who was engaged in conversation with another crewmember within the crane operating envelope.

### Probable cause

The investigation found improper operation of the shoreside crane was the direct cause of the mishap. The investigation also indicated leadership deficiencies aboard the Cutter Hickory which contributed to inadequate crewmember training and complacency with shoreside operations.

Read the report in full at <https://bit.ly/2Xlaw6y>.

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## CRANKCASE BREACH OF PORT MAIN ENGINE LEADS TO FIRE SAYS NEW REPORT

The US National Transportation Safety Board (NTSB) has published an investigation report into the engine room fire onboard the towing vessel Leland Speakes on the Lower Mississippi River in February 2018.

A catastrophic failure and crankcase breach of the port main engine caused the fire.

On 21 February 2018, at 0740, the towing vessel Leland Speakes was pushing 21 barges upbound on the Lower Mississippi River when a fire broke out in the engine room at mile 520.6, south of Greenville, Mississippi.

The nine crew members onboard tried to fight the fire but, unable to control it, abandoned the vessel to a skiff dispatched from a Good Samaritan towboat.

The abandoned tow drifted 11 miles downriver until another towing vessel pushed it into a sandbar.

The fire burned until later that evening before being extinguished by fire response teams and vessels.

The damage to the Leland Speakes was estimated at \$4.5–5 million.

### Probable cause

NTSB determines that the probable cause of the engine room fire onboard the Leland Speakes was a catastrophic failure and crankcase breach of the port main engine resulting from failure of the caps that secured two piston connecting rods to the crankshaft.

Contributing to the severity of the fire was the vessel's lack of a fixed fire-extinguishing system for the engine room and lack of redundant fire pumps.

Read the report in full at <https://bit.ly/2YqNSew>.

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## MAIB REPORT INTO THE FATAL SINKING OF NANCY GLEN RECOMMENDS A REGULAR REVIEW OF SMALL FISHING VESSELS' STABILITY

At about 1750 on 18 January 2018, the prawn trawler Nancy Glen (TT100) capsized and later sank in Lower Loch Fyne, Scotland.

Weather conditions were benign, and rescuers were quickly at the scene; however, only one of the three crew survived.

Nancy Glen was trawling at the time of the accident and the combined effect of a turn to starboard at the same time as the starboard net filling with mud caused the vessel to rapidly heel to starboard, then capsize. Through life modifications to the vessel had reduced its stability, increasing its vulnerability to capsize.

Realising the seriousness of the situation, one crewman dashed to escape. However, the darkness, disorientation, rapid nature of the capsize event and inrush of water to the wheelhouse will have denied the other two crew members the opportunity to escape.

### Safety lessons

It is critical that fishing vessels have sufficient stability to meet their operating profile. Nancy Glen's stability was insufficient to overcome the circumstances of a net digging into the seabed concurrently with the vessel turning.

Recent modifications to Nancy Glen had a detrimental effect on the vessel's stability but no checks had been carried out to assess the effect on stability.

Although voluntary guidance was available, there was no mandatory requirement for owners of small fishing vessels to carry out stability assessments.

Read the story in full at <https://bit.ly/2ZKMvHK> or download the report at <https://bit.ly/2NsdV3K>.

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## TIGER ONE REPORT BY MAIB SAYS IMPACT OF COLLISION LESSENERD BY THE USE OF A KILL CORD AND ROBUST CONSTRUCTION

The MAIB has published its report into the incident on the River Thames involving Tiger One. At 1738 on 17 January 2019, the commercially operated rigid inflatable boat Tiger One hit a mooring buoy on the River Thames in London, England, at a speed of about 26 knots in darkness. Two passengers and the boat's two crew were taken to hospital with minor injuries. Tiger One was severely damaged.

Tiger One was one of two 12m RIBs owned and operated by 88 London Ltd that were used to provide sightseeing tours and charters on the River Thames. Tiger One was certified by the Port of London Authority (PLA) and permitted to navigate up to a maximum speed of 30 knots. The RIBs were purpose-built in 2008 by Ribcraft for personnel transport operations off Tunisia, but had been purchased and returned to the UK in 2017. The hulls were glass reinforced plastic fitted with 'puncture-proof' sponsons, and propulsion was via two 275hp inboard diesel engines with stern drives.

### About the incident

The skipper did not see the mooring buoy in time to take avoiding action. The buoy's light was possibly difficult to see against the back scatter of shore lights and might also have been obscured to some degree by birds. The skipper had limited experience of commercial passages in darkness in the area. He was navigating solely by eye and had either thought that Tiger One was closer to the centre of the navigable channel, or had forgotten that the buoy was there.

More serious consequences resulting from the collision were prevented by Tiger One's robust construction, seating arrangements, and the skipper's use of a kill cord. However, the circumstances of the collision indicate that there is significant potential for more serious consequences to result from similar high-speed accidents in the future.

Download the report at <https://bit.ly/2y45YaN>.

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## USCG RAISES AWARENESS ON TOWING VESSEL'S UNSAFE CONDITION

The US Coast Guard has published Findings of Concern 009-19, entitled Corrosion Caused Casualties. The purpose of this release is to bring awareness to unsafe conditions discovered during 2018 on a Louisiana towing vessel during a marine casualty investigation.

On September 25, 2018, an Inspected Towing Vessel (ITV), pushing a loaded tank barge, experienced a loss of steering and ran aground.

The marine casualty investigation decided the initiating event to the incident to be the port shaft propeller nut that was wedged into the rudder, which obstructed the free and full movement of the steering gear.

### Probable cause

The investigation concluded that the initiating event causal factors were:

- A material failure of the port shaft propeller nuts locking strap (missing);
- Lack of a secondary securing mechanism (second nut/cotter pin) on the port propeller nut;
- Inadequate corrosion mitigation preventative maintenance program.

In addition, visual analysis of the starboard shaft locking strap highlighted significant deterioration of the locking mechanism, which needed immediate replacement.

According to the analysis of this incident Marine Inspectors inspected the locking nuts straps of various ITV's during scheduled dry-dock exams which indicated similar corrosion issues.

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## LACK OF COMPLIANCE WITH PROCEDURES AND POOR MAINTENANCE LED TO FATALITY

Ireland's Marine Casualty Investigation Board (MCIB) has published an investigation report on a fatal incident involving the fishing vessel 'Aisling Patrick' 15 nm off Broadhaven, Co Mayo, on 10th April 2018. The accident resulted in one fatality. The report highlighted poor training and maintenance, as well as an inefficient EPIRB.

On the 10th April, 2018 at approximately 07.00 hrs, the 'FV Aisling Patrick' departed from Ballyglass, Co. Mayo, with three persons on board to fish for mackerel between Erris Head and Eagle Island. Around 12.30 hrs the vessel began listing to starboard. The Skipper entered the wheelhouse and the speed was reduced to ascertain the cause of the list. A wave struck the vessel on the port quarter which pushed the starboard bulwark under water and flooded the deck. Almost immediately a second wave struck the port side again and capsized the vessel.

The Skipper had commenced a mayday message after the first wave struck, but he had not completed it when the second wave struck and capsized the vessel. He swam out from underneath the capsized vessel. The other two crew members were thrown into the water. The liferaft surfaced from under the vessel and one crew member inflated it and climbed aboard. He threw a large fender towards the Skipper. The third crew member was in the water face down and did not make any attempt to swim or stay afloat. One crew member was in the liferaft, the other two were in the water drifting away.

### Conclusions

- There were at least two possible sources of water ingress identified on the starboard side of the vessel. One source identified was the multiple pipe connections between the oil cooler and deck water pump. Another source of water ingress was through a crack in the deck leading to the aft starboard compartment.
- The bilge alarm systems did not give an early warning of water ingress into either compartment. This indicates that the vessel had not been maintained to the requirements of the CoP as required in the CoP Section.
- The requirements set out in Sections 2.17, 2.18 and 4.3.2 and Annex 7 of the CoP could benefit from elaboration to assist owners in ensuring the installation and maintenance of effective bilge pump arrangements.
- The most probable reason the EPIRB did not deploy is that its hydrostatic release did not immerse to four metres.
- The distress message would have been complete had it been sent digitally by activating the DSC button on the VHF.
- The absence of any formal operational training for the crew of this vessel resulted in poor operational procedures and incorrect actions during an emergency situation.

Read the report in full at: <https://bit.ly/2J5Baws>.

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## FAILURE OF A HYDRAULIC HOSE FITTING LED TO VESSEL'S SINKING SAYS NTSB REPORT

The US National Transportation Safety Board (NTSB) issued an investigation report on a fire and explosion incident onboard the fishing vessel 'Hit List' while in Merrimack River off Massachusetts in August 2018. The investigation found that the fire was caused by failure of a hydraulic hose fitting. Meanwhile, the water used for firefighting efforts contributed to the vessel's sinking.

About 1725, on 24 August, a fire was detected in the engine compartment aboard the commercial fishing vessel Hit List, shortly after the vessel arrived at the Newburyport harbormaster's dock to offload its catch. The two owners on board attempted to fight the fire, but after smoke filled the cabin all four people aboard evacuated to the pier. The local fire department fought the fire using foam and water. The fire was extinguished about an hour later when the vessel partially sank alongside the pier.

Approximately 100 gallons of diesel fuel leaked into the Merrimack River. No injuries were reported, but damage to the vessel was estimated at \$550,000.

### Probable cause

The NTSB determines that the probable cause of the fire aboard fishing vessel Hit List was the failure of a hydraulic hose fitting that sprayed pressurized hydraulic oil onto the engine, eventually causing the oil to ignite. Contributing to the sinking was water applied during firefighting efforts and flooding through the rubber engine exhaust tubing, which the fire burned through.

### Analysis

After the fire, the fitting was found to be broken off from the hydraulic block, and it most likely sprayed hydraulic fluid when pressurized onto the surface of the main engine turbocharger and ignited when the exterior surface heated up while the vessel was underway.

The fire eventually spread to other areas of the engine compartment and filled the cabin with smoke.

Read the full report at <https://bit.ly/2NWRqo6>.

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## REPORT FINDS FIRE ONBOARD CARGO VESSEL WAS DUE TO LACK OF COMPLIANCE WITH SMS

The NTSB has published its report on the fire that took place on board the cargo ship Chipolbrok Moon on 23 May 2018. The fire occurred while the ship was moored at the Industrial Terminal West in Greens Bayou in the Port of Houston, Texas.

On May 21, the Chipolbrok Moon arrived at Industrial Terminal West in Houston. After the ocean voyage and before offloading the cargo, the steel sea fastener tabs used to secure the turbine components had to be removed by cutting, using an oxygen/acetylene torch.

The next afternoon, a marine chemist tested the atmosphere in cargo holds no. 2 port, no. 3 port and starboard, and no. 4 starboard for oxygen content and presence of flammable vapors to determine if it was safe to carry out hotwork.

After testing the cargo holds, the marine chemist issued a certificate concluding that the cargo holds were 'safe for workers and safe for hotwork' and noted that the scope of work was to 'high cut' sea fasteners, avoiding cutting directly on the decks.

### Probable Cause

The National Transportation Safety Board determined that the probable cause of the fire aboard cargo vessel Chipolbrok Moon was the crew's lack of compliance to the company's safety management system and the marine chemist's instructions pertaining to hotwork precautions. The latter allowed sparks and slag to fall through unprotected gaps between the removable decking pontoons and ignite the dust-protective covering of the transmission hubs.

Read the full story at <https://bit.ly/2Xmos57>; or download the report in full at <https://bit.ly/2LxNLKu>.

# The Annual Bond Solon Expert Witness Conference

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The largest annual gathering of  
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MEMBER BENEFITS UPDATE IN BRIEF



IIMS has recently added a large amount of content to the Podcasts page, otherwise known as “Train as you Travel” on the IIMS website - see: <https://bit.ly/2Pl4eQs>.

In addition, a number of new videos have been added to the IIMS YouTube channel, recorded at various recent events. These are free to view on the IIMS YouTube channel at <https://bit.ly/1jRuSje>.



The IIMS LinkedIn feed is now followed by more than 4,000 people and organisations. To join our other followers just go to LinkedIn and search for the International Institute of Marine Surveying.



A number of new safety briefings from around the world have been added to the special page on the website and are free to view. Just go to <https://bit.ly/2V4QgtP>.

More copyright free images have been loaded and are freely available but only to members via the password protected page on the website. Just go to <https://bit.ly/2ulpaIN>.

PURCHASE OF MURRILLS HOUSE CROWDFUNDING TOPS £10,000

Since opening up the opportunity for members to donate to the cost of repairs once the purchase of Murrills House is complete in 2020, it is hugely pleasing to say that over £10,000 has been pledged and/or donated.

In case you missed the launch of the crowdfunding opportunity recently, IIMS is reaching out to the members and supporters of the Institute to invite them to make a financial donation towards the purchase of Murrills House as the Institute’s new permanent headquarters. Any financial donation will not simply go to the bottom line of the business and get lost. Rather, we plan to invest it in paying for the stamp duty on the purchase with any balance left being put towards some of the maintenance work we will need to do, which includes a variety of minor works.



All those who choose to make a contribution (unless anonymously) will be recognised with a special, individual Founders Plaque for each person making a donation which will be displayed in the offices for ever more. And rest assured that any donation, no matter how small, will be very gratefully received. We have made it simple to do by setting up an online ‘Just Giving’ page, which can be accessed at <https://bit.ly/2VU4Qnr>. Alternatively you can simply transfer money to IIMS but please let us know beforehand if you intend to do so; or you may send a cheque directly to head office.

The opportunity to donate will remain open until 31st March 2020.



**YOUR NAME HERE**  
**YOUR COUNTRY HERE**



**IIMS SET TO EXHIBIT AT IBEX**

IBEX is North America’s largest technical trade event for marine industry professionals and is powered globally by METSTRADE, the world’s leading platform and community for professionals in the leisure marine equipment industry. IBEX is owned and produced by the National Marine Manufacturers Association and RAI Amsterdam and is taking place at the Tampa Convention Center on 1st to 3rd October in Tampa, Florida.

As an industry trade event for professionals working in the recreation marine industry, IBEX offers its attendees over 700+ exhibits in the halls, outdoor display space and on the IBEX Docks too. It also offers unparalleled training and education from industry experts and associations.

IIMS has a booth at IBEX. So, if you are planning to attend the event be sure to pop by and say hello.

**IIMS UAE BRANCH GEARING UP FOR ONE HELL OF A CELEBRATORY CONFERENCE**

The date for your diary is Wednesday 20th November 2019. The venue is the prestigious Queen Elizabeth II, moored permanently at Mina Rashid, Dubai. The occasion is the tenth anniversary since the formation of the IIMS UAE Branch and this is the sixth biennial Conference. There are no delegate fees to attend this celebratory event, which will also be broadcast via Zoom for online delegates.

*Confirmed speakers are:*

**Mike Schwarz, IIMS CEO**

Driving International surveying standards and Accredited Marine Surveying Practitioner

**Capt. Rahul Khanna**

Allianz Safety & Shipping Review 2019

**Tony Fernandez**

Due Diligence in Marine Hull Insurance – Myth & Reality?

**Capt. John Dolan**

Risk caused by misdeclared cargo on Container Ships

**Dr. Nippin Anand**

An Illusion called “Human Error”

**Capt. Porus Dalal**

Human error – The underlying root cause in accidents

**Richard Strub and Capt. Sanjay Bhasin**

Arbitration role play: Expert witness for a project cargo shipment on a breakbulk vessel

**Capt. Nick Sloane**

Ultra large container ship fires



**Capt. Rajiv Thakar**

Recovery from Carriers of losses suffered by Cargo Interest involving the negligent navigation defense

**Capt. Henrik Uth**

Survey on demand – the digitalization of the marine survey appointment

**Capt. Prakash Correa**

The Shipowner’s perspective

**Mr. Pradeep Luthria**

Cyber Resilience & Insurance

**Wednesday, 20  
November 2019  
08:30hrs -17:00hrs**

To reserve your place please complete the booking form at <https://bit.ly/2HdXm64>.



## UPCOMING IIMS EVENTS

### Monday 23 September:

Certifying Authority Autumn Training Day at the Village Hotel, Cosham, Portsmouth

### Thursday 26 September:

eCMID AVI Marine Renewable Energy Seminar, Amsterdam

### Monday 7 October:

Inland Waterways Working Group Training, Hertfordshire

### Monday 4 and Tuesday 5 November:

Scotland Large Yacht & Small Craft Working Group training

### Wednesday 20 November:

IIMS UAE Branch tenth anniversary Conference in Dubai aboard the QEII

### Monday 25 November:

Large Yacht & Small Craft Working Group training, Portsmouth area

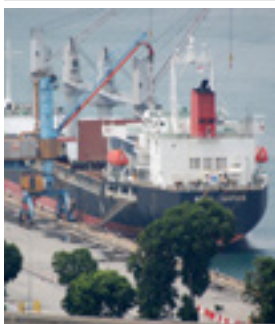
### Tuesday 10 December:

Marine Surveying International Fest II (Yacht & Small Craft Surveyors) - online only

### Thursday 12 December:

Marine Surveying International Fest II (Commercial Ship Surveyors) - online only

See online for more details on each event at <https://bit.ly/2niVUFS>.



## BOOKINGS NOW OPEN FOR THE FIRST ECMID AVI MARINE RENEWABLE ENERGY SEMINAR

The Marine Surveying Academy has organised an important one-day event on 26th September entitled the eCMID Marine Renewable Energy Seminar.

Bookings for the first eCMID Marine Renewable Energy Seminar on 26th September in Amsterdam are now open which is available to real time as well as online only delegates.

This event is open to eCMID AVIs, marine surveyors and inspectors plus those working in the renewable sector and/or those interested in learning more about this industry.

The eCMID AVI event is the day after the IMCA Renewables Seminar that takes place on 25th September in Amsterdam. If you plan to be in town for that one, why not stay over and be part of this special one day seminar which looks at the role of the eCMID inspector in the renewable energy sector? Alternatively you can join online and take a live feed of the proceedings.

The seminar is being held at Hotel Novotel Amsterdam, Schiphol Airport, Taurusavenue 12, 2132 LS Hoofddorp, Netherlands and will start at 09.00 concluding at 16.30.

### Speakers include:

**Mike Schwarz**, IIMS and MSA CEO: Opportunities presented by the growth in the Renewables sector

**Stephen Birt**, Technip FMC: Update on the work of the IMCA eCMID Committee and the perspective of a client

**Graeme Reid**, IMCA: The role of the DP accreditation scheme

**Peter Solvang**, DP & Marine Assurance: New developments in DP

**Marc van Dorth**, Seaway heavylift: Large construction vessels and small boat landings in the renewable construction industry

**Xavier de Meulder**, Siemens Gamesa: Developments in large construction vessels and other vessels

**Nicki Krejlgard**, Vattenfall: Topic to be confirmed  
Panel Discussion to end the day

To reserve your place go to <https://bit.ly/2KwnMRn>.



## BRISBANE CONFERENCE A RESOUNDING SUCCESS

A group of around 50 marine surveyors – some IIMS members, some not - met at the Novotel by Brisbane Airport on 1-2 August for what proved to be a very worthwhile event for all who attended.

Thanks to Kedge PTY Ltd for their support of the event.

Over the two days Mike Schwarz gave presentations with an update about IIMS head office activities, an introduction to the Marine Surveying Practitioner accreditation scheme and 19 tips for business success.



He was well supported by immediate IIMS Past President, Adam Brancher, who talked through the steps to achieving ISO 9001/14001/45000 certification with a helpful and practical guide to the process and why a surveyor should consider doing it.

Mick Uberti displayed his knowledge of the ISM code, a subject dear to his heart, as he spoke on the topic of "From the ISM Code to Marine Order 504 - Changes to Safety Management Systems for DCV's."

Veteran, Russell Fraser, known to many delegates, was on hand to talk through the new developments in NDT testing equipment and their application in marine survey with an overview of some of the other kit now available to surveyors, including infra-red cameras.

John Kavanagh (Pacific Maritime Lawyers) formerly a regulator himself, fully engaged the audience on the subject of the new regulatory landscape in Australia - RAV, SMS and Recreation which raised good discussion and much debate amongst the audience.

Nick Parkyn, author of an IIMS handy guide on Synthetic Rigging, displayed his in depth knowledge of this disruptive technology. He introduced the audience to the products, their strengths and the life cycle.

Steve Wicks stepped in at late notice and spoke about superyacht coatings, an activity he has been involved with for 40 years. His question and answer session proved very rewarding for all and stimulated much discussion around the group.

Graeme Normington, a north Queensland based surveyor, challenged the audience to truly understand their costs of surveying. In his presentation entitled "Converting hourly rate service fees into a profitable annual income" he gave examples of all the costs that need to be included before a rate can be worked out and then applied.

Nick Parkyn closed the event with a short overview of the General Data Protection Regulation and the importance of keeping data private, especially sensitive data.





## ECMID AVI AND IIMS SINGAPORE CONFERENCE REPORT

The number of attendees was down this year, partly it seems due to work commitments and also the proximity of the date to Singapore's National Day and long weekend celebrations. One for the organisers to be aware of and factor in next time!

Those who did attend were treated to a range of top-quality presentations covering a wide variety of topics.

On the eCMID day, (7th August), Mike Schwarz welcomed delegates and spoke about the eCMID AVI scheme four years on from launch, including giving a hint at what the five year revalidation process might look like when it comes into play mid-2020.

Alex Brabin (M3 Marine) spoke about the early success of the new IMCA DP Accreditation Scheme, launched earlier this year.

In a fascinating presentation, Capt Yves Vandeborn (Standard P&I Club) gave an overview of what a good safety management system should look like and how the Club evaluates them, including reviewing some case histories and sharing some horror stories.

Simon Ward (MatthewsDaniel) delivered an overview of what can and does go wrong in the pipe laying sector drawing on actual case studies.

A man with a clear vision, Edgare Kerkwijk, Asia Wind Energy Association, gave a succinct overview of the potential and likely future demand for wind energy in the Southeast Asia region and the many opportunities that will be associated with this. He explained that the supply of new vessels to service the wind sector was not meeting demand.

Mike Meade (M3 Marine) gave a short overview of the local regional news from IMCA, SSA and the Nautical Institute.

Jim Fortnum (Swire Pacific Offshore) provoked some intense debate when he questioned the value of the inspection and survey regime to a professional vessel operator.

Day two (8th August) was opened up with a review about IIMS head office activities followed by an intriguing presentation by Denis Welch, entitled Spiling the Ship for a Ha'poth of Tar.

Ken Livingstone MIIMS had researched the matter of the IMO 2020 Sulphur Cap in detail and delivered an excellent presentation on this most topical of subjects.

Murali Pany continued in a similar vein on the 2020 Sulphur Cap but suggested this may be an opportunity for surveyors to capitalise on. He also presented a collision case study from the legal perspective.

The infectious Capt Hari Subramaniam (Shipowners P&I Club) did not disappoint those present. In his usual ebullient style, Hari discussed the question "The Human Element – Are we on the right track?"

Peter Broad FIIMS (Broadreach Marine) gave something of a masterclass on the topic of LNG shipping technology past, present and future, something he is very experienced in.

It fell to Stefan Becker (Cordstrap Group) to bring the event to a conclusion which he did speaking eloquently and knowledgeably on the subject of improving CTU cargo securing to reduce risk.

Many of the presentations can now be found on the IIMS YouTube channel and are free to watch at your leisure – see: <https://bit.ly/1jRuSje>.

**NEW WEB VERSION OF THE IIMS MARINE SURVEYOR SEARCH APP TO BE ADDED**

eDot Solutions, the Institute’s App partner based in Goa, is developing a web-based version of the recently launched Marine Surveyor Search App for those who prefer not to use the applications for iOS and Android devices, which is due for roll out imminently.



The web version works in a very similar way to the smart phone applications with identical content and will, in time, replace the existing IIMS website search for a surveyor. Web users may use this version to perform a surveyor search and communicate with their chosen person without the need to register but will not have full access to all the App functions. Only by registering will they have complete access to features such as my favourite surveyors, recently viewed surveyors and so on.

The content is drawn from the current IIMS practicing surveyor membership database, which has been loaded in its entirety into the App - some 800 surveyors in over 100 countries worldwide.

Many members have yet to check their listing on the App for accuracy and to ensure it is displaying as they would like it to show with the correct details and so on. So, if downloading the App has been putting you off from doing this, look out for how to do this via the web coming very soon.

Yacht and small craft surveyors will be interested to know that they are now also able to show on their listing which harbours and marinas they operate in and this will be searchable by the user.

**RECENT NEW IIMS MEMBERS**

**Full members**

Keith Oulds	<i>MIIMS</i>	France
Andres Correa	<i>MIIMS</i>	Spain
Lalith K L Kaliyaperumal	<i>MIIMS</i>	India
Islam Souliman	<i>MIIMS</i>	Egypt
Richard Richardson	<i>MIIMS</i>	UAE
Georgij Zarubin	<i>MIIMS</i>	Lithuania

**Associate members**

Akhil Joseph	<i>AssocIIMS</i>	UK
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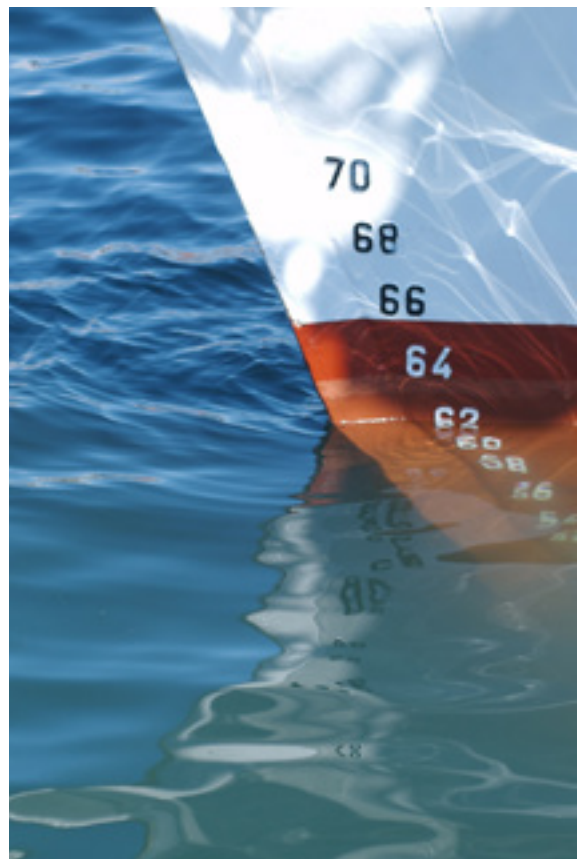
**Affiliate members**

Carlo Picciocchi	<i>AffIIIMS</i>	Italy
William Ackley	<i>AffIIIMS</i>	USA
Ross Corbett	<i>AffIIIMS</i>	Canada

*IIMS congratulates those students who have completed their studies:*

***IIMS Professional Qualification in Commercial Ship Marine Surveying - Blake Brunelle***

***IIMS Professional Qualification in Yacht and Small Craft Marine Surveying - Robert Burton***



# IIMS LONDON 2019 CONFERENCE, DINNER AND AGM REVIEWED

Great venues – Herringham Hall and Regent’s University and 10-11 Carlton House Terrace – none better. Brilliant speaker content on a range of relevant surveying topics on all three days. Meeting old friends and colleagues, networking and reconnecting with old chums and adversaries! Excellent food and the odd beer or two. What’s not to like about an IIMS London Conference? Those who attended have been most kind and wholesome in their praise of the event, which took the best part of a year to plan and deliver.

It would be wrong to single out any one presenter over another and IIMS is truly grateful to the speakers who came to present for the benefit of others! But, for example, Neale Rodrigues (Britannia P&I Club) reminded everyone of the importance of going back to basics and doing the simple things well. Who on earth would ever have thoughts about towing, or steering

an iceberg? Yet Nick Sloane showed us that anything is possible. Keith Chappell and Tom Montgomery taught us to be extra vigilant as far as cyber security is concerned. It is many years since the UK regulator, Maritime & Coastguard Agency, came to speak. So IIMS is appreciative that Bas Edmonds, representing the Agency, spoke openly about the challenges ahead.



*Capt Neale Rodrigues*

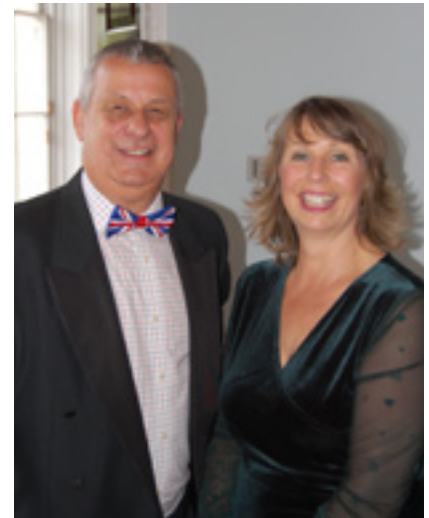


*Capt Nick Sloane*

Dinner at 10/11 Carlton House Terrace (just a stone's throw from Queen Elizabeth II's residence at Buckingham Palace) was splendid. A delightful venue in a magical setting proved to hit the right spot. The evening was much enjoyed

by all. After dinner speaker, Capt Andrew Moll, MAIB Chief Executive, kept guests amused with his anecdotes. An edited transcript of Mike Schwarz's dinner speech can be read elsewhere in this edition of The Report.

Donations at the Conference dinner for the President's chosen charity, the Jubilee Sailing Trust, made the sum of £363. IIMS has doubled this and has donated £726 to the Jubilee Sailing Trust in Southampton.





Key extracts from the Chief Executive Officer's speech delivered at the IIMS London Conference 2019 Dinner held at 10-11 Carlton House Terrace in central London.

*"Mr President. Past Presidents. Distinguished guests. IIMS members. Ladies and gentlemen.*

*After more than five years at the helm, I have learnt a considerable amount about this remarkable and vital profession in which most of you are engaged and earn your living from.*

*What I now realise is that IIMS has a louder international voice than ever before. We can and do articulate opinions and concepts that are increasingly heard both in the UK and on the world stage too - and not just by marine surveyors, but also by those who engage marine surveyors. Our network and reach as an organisation have vastly widened.*

*It is for these reasons that I feel IIMS is perfectly placed to develop and launch a minimum worldwide standard for marine surveyors. I refer of course to the Marine Surveying Practitioner accreditation scheme, voted in favour of by members at last year's AGM. The clock is ticking and roll out is approaching.*

*These are bold statements to make and a massive project to deliver.*

*Yet as I gaze back with pride at the huge strides we have made in recent years, and when I look ahead to the opportunities before us, I believe I can make these statements with a degree of comfort, if not certainty. IIMS is not frightened to lead in these vitally important and difficult areas; we seek to take the initiative and to break down barriers. The impending launch of the Marine Surveying Practitioner Accreditation scheme is all about improving standards – nothing more, nothing less. Many will have heard me talk about the importance of standards before. But they really matter in an ever evolving and regulatory world where we are all expected to be able to prove our competence in something or another by verification, certification, examination or accreditation.*

*The institute helps those entering the surveying profession through our education distance learning programmes. But that's just the start. Additionally, we provide opportunities for journey men and women surveyors to become better at their job helped by our regular training activities around the globe; and I believe we help good surveyors to become true professionals. That in my opinion is what the role of the Institute should be as the leading professional worldwide body for marine surveyors. Marine surveying is not a profession for incompetent fools who are long on promises, but*

*short on detail. We must take the initiative in driving standards ever upwards and we are.*

*This year like no other, we have pushed ahead with an aggressive strategy on many fronts, including expanding our digital platform, as we continue to grow our footprint in the sector.*

*In terms of member benefits, in the past year alone we have launched the new Marine Surveyor Search app, a copyright free photobank, a podcast page with access to over 40 audio presentations and have created a safety briefing page dump on the website with access to hundreds of incident and accident reports.*

*All of this activity requires some financial investment, but more importantly, it requires good people to make it happen.*

*I am lucky to be surrounded by a dedicated, first class team at head office. It is at this time of year that the job description and contracted hours simply go out of the window! Organising a London Conference is exhausting. My thanks particularly to Camella Robertson, Membership Secretary and Office Manager who has done so much to make this event work, supported by her team Lorna Robinson, Craig Williams, Tania Bernice and Dave Parsons. Jen Argent, Financial Controller is*

## Presentation of awards

After dinner came the presentation of awards. President Capt Zarir Irani handed the Honorary awards to Peter Harris (Honorary Member) and

Capt Nick Sloane (Honorary Fellow). Mike Schwarz presented one to Carey Golesworthy (Honorary Member) at a later date as he was not there in person.



*Peter Harris (left) receiving an Honorary Membership*



*Capt Nick Sloane (left) receiving an Honorary Fellowship*

currently on maternity leave. Thanks to her and Elly Bryant who run the accounts department. Additionally, Hilary Excell representing our subsidiary, the Marine Surveying Academy, is here this evening. She is supported by Pui-Si Chung and Sharon Holland back at base. They are doing fabulous work in the area of accreditation schemes.

Now I am quite sure that like me, Andy Moll also has days when he hates his job. The MAIB performs an essential service. We are always quick to publish and notify our members through our various communications channels when a new report is released, because we value the content and know how important it is. Andy, I am most grateful to you for speaking this evening and for sharing your considerable knowledge with us.

Tonight gives me the chance to thank those members who do so much for the organisation behind the scenes and who give of their time freely. I refer initially to the executive and management boards and President Capt Zarir Irani. My thanks also go to Capt John Noble, my boss, Chairman of education and administration, whose visits to the office are much looked forward to and not simply for the quality of biscuits he brings with him. Sadly, I have to inform you that tomorrow's AGM will be John's last official function as a board member and committee chairman

for he is standing down. John, you have given unstinting support to the organisation over many years and to me personally. I thank you for that and for your friendship. Fraser Noble, backed by a committee of experienced coding examiners, continues to give excellent service to the Institute as Chairman of the Certifying Authority. John Excell leads as Chairman of small craft surveying and runs our tonnage measurement training programme. The enduring Paul Homer who has his work cut out at times as the long-suffering Chairman of Standards. Captain Chris Kelly continues to perform the most valuable of roles as chairman of the professional assessment committee, who with his fellow colleagues ensure we keep out unsuitable members. My thanks also to our Regional Directors, branch chairmen and committee members around the world for all they do.

I would like to make special reference to Capt Bertrand Apperry, President from 2014 to 2016 and to mark his retirement from Institute duties. Bertrand has decided to stand down as an executive and management board member after many years' service. We will miss him and wish him well.

Talking about having good people around us, I am reminded that we have some brilliant partners who we work with and they with

us. One of our key partners is IMCA, the International Marine Contractors Association. We entered into dialogue with IMCA back in early 2014 and the result is the now acclaimed eCMID AVI accreditation scheme. I am proud that we have been able to play a vital role in cleaning up what was once an unregulated offshore inspection sector. It is testament that organisations such as Siemens, Vattenfall and Orsted, to name but three, have publicly backed the scheme.

So it is fitting that Mark Ford, IMCA's technical director, is with us tonight; and he has been alongside us since those early days when the scheme was but a mere pipe dream. From time to time we present a Blue Water Award to people who have helped make a difference to our business. It gives me great pleasure this evening, therefore, to present an IIMS Blue Water Award to Mark Ford.

I would like to conclude by saying to those Institute members present and to absent colleagues and surveyors in general around the world - your professionalism and dedication continue to make a major difference to the safety of life at sea. Survey well; but please stick to your areas of competency and stay safe always".

Mike Schwarz, 17 June 2019



Additionally, three Blue Water awards were presented. This award is given to someone externally who has made a significant contribution to the Institute. Mike Schwarz presented one to Mark Ford, IMCA Technical Director and others to Michelle D'Silva and Shreya Shirodkar, both from eDot Solutions, the company behind the various Apps that have been engineered for the Institute.



Shreya Shirodkar (left) and Michelle D'Silva (right) each receiving a Blue Water award



## The 2019 AGM

The AGM went smoothly. In truth there was not a great deal to vote on this year. Ursula Smith asked why we had not yet had a female President. Good question and food for thought. Watch this space! A positive update was given on two items voted through at the 2018 AGM. Firstly the Institute's intention was announced to acquire the freehold of Murrills House as our new permanent head office, all being well and good in Q1 2020. Secondly members were given an update on the progress towards the soon to be launched Marine Surveying Practitioner accreditation scheme. Members were asked to vote on two matters.

1. The motion to increase the 2020 annual membership by 3% Area 1 and Area 2 and 2% for Area 3 was approved.
2. The motion to ratify the management board's recommendation for three replacements was approved. They are Peter Broad, Sanjay Bhasin and David Pestridge.



## Comments from IIMS staff present at the event...



Said Hilary Excell, Director, Marine Surveying Academy, "Great to return to the superb venue at Regent's University with spacious rooms, loads of character

and atmosphere, and a welcoming team to support the IIMS Conference and eCMID AVI Seminar. The speakers were fascinating, everything from client expectations of surveyors to cyber security - what a mix. The eCMID AVI day was interactive as we have come to expect with lively detailed discussions all day long. It is always a pleasure to meet IIMS members and AVIs, putting names to faces, as well as catching up with old friends. We are now very much looking forward to our next two eCMID AVI events in Singapore on 7th and 8th August, and Amsterdam on 26th September."



Camella Robertson, IIMS Membership Secretary said, "Its great to see members from all over the world meeting each other and networking, some for the first time, and others who haven't seen each other for years reconnecting. The personal interaction for me was a highlight especially as most of our communications are done over email. I finally got to talk to them face to face."



Craig Williams, IIMS Graphic Designer, said, "The highlight of the conference for me was being in awe at an iceberg being delivered from Antarctica to South Africa (the country I grew up in) and the low point was finding out that it hadn't actually happened yet!"



David Parsons, Certifying Authority Administrator said, "It was hard to know what to expect from my first IIMS conference, but I was not disappointed. The dinner in particular was superb, a beautiful setting."



# The IIMS UAE BIENNIAL CONFERENCE 2019

## Theme

**“SAFE SHIPS, SAFE CARGO – THE INSURERS PERSPECTIVE”**

## Venue

**THE QUEEN ELIZABETH 2, DUBAI, UAE**

## Date

**20<sup>TH</sup> NOVEMBER 2019 – WEDNESDAY**

## OUTLINE

- 08:00 – 08:30 REGISTRATION
- 08:30 – 08:40 OPENING REMARKS
- 08:40 – 10:15 1<sup>ST</sup> SESSION
- 10:15 – 10:40 BREAK
- 10:40 – 12:30 2<sup>ND</sup> SESSION
- 12:30 – 13:30 LUNCH BREAK
- 13:30 – 15:00 3<sup>RD</sup> SESSION
- 15:00 – 15:30 BREAK
- 15:30 – 16:30 4<sup>TH</sup> SESSION
- 16:30 – 17:00 IIMS UAE MEMBERS MEETING WITH CEO AND IIMS BOARD OF DIRECTORS

## SPONSORS

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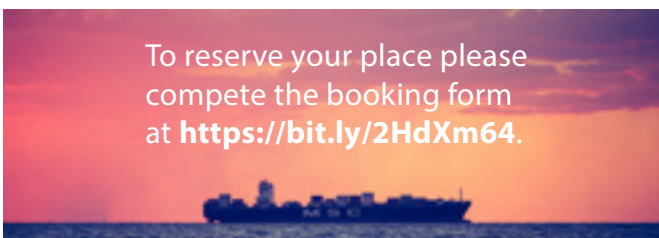
Media



Organisation  
Support



08:00 onwards	<b>Registration &amp; Networking</b>		
08:30 to 08:40	<b>IIMS Global President: Capt. Zarir Irani, FIIMS</b> Opening Remarks		
08:40 to 09:00	<b>Mike Schwarz, IIMS CEO</b> Driving International surveying standards and Accredited Marine Surveying Practitioner		
09:00 to 09:20	<b>Capt. Rahul Khanna</b> Allianz Safety & Shipping Review 2019		
09:20 to 09:40	<b>Tony Fernandez</b> Due Diligence in Marine Hull Insurance – Myth & Reality?		
09:40 to 10:00	<b>Capt. John Dolan</b> Risk caused by misdeclared cargo on Container Ships		
10:00 to 10:15	<b>Panel Discussion</b> (Question and Answer)	14:10 to 14:30	TBA
10:15 to 10:40	<b>Coffee Break</b>	14:30 to 14:50	<b>Capt. Henrik Uth</b> Survey on demand – the digitalization of the marine survey appointment
10:40 to 11:00	<b>Dr. Nippin Anand</b> An Illusion called “Human Error”	14:50 to 15:00	<b>Panel discussion</b> (Question and Answer)
11:00 to 11:20	<b>Capt. Porus Dalal</b> Human error – The underlying root cause in accidents	15:00 to 15:30	<b>Coffee Break</b>
11:20 to 12:20	<b>Richard Strub and Capt. Sanjay Bhasin</b> Arbitration role play: Expert witness for a project cargo shipment on a breakbulk vessel	15:30 to 15:50	<b>Capt. Prakash Correa</b> The Shipowner’s perspective
12:20 to 12:30	<b>Panel Discussion</b> (Question and Answer)	15:50 to 16:10	<b>Mr. Pradeep Luthria</b> Cyber Resilience & Insurance
12:30 to 13:30	<b>Lunch Break</b>	16:10 to 16:30	TBA
13:30 to 13:50	<b>Capt. Nick Sloane</b> Ultra large container ship fires	16:30 to 17:00	IIMS UAE Members Meeting with CEO and IIMS Board of Directors
13:50 to 14:10	<b>Capt. Rajiv Thakar</b> Recovery from Carriers of losses suffered by Cargo Interest involving the negligent navigation defense.		



To reserve your place please complete the booking form at <https://bit.ly/2HdXm64>.

# OBITUARIES

In the past couple of months news has reached IIMS Head Quarters of the death of two long standing members. IIMS would like to pass on their condolences to the families of both surveyors...

## TONY McGRAIL FIIMS OBITUARY

### **Anthony McGrail, my friend and colleague**

*By Keith Willis MIIMS*

I first met Tony in 2002 at Sunseeker in Poole where I was a warranty engineer at the time, just transferred back to Poole from Mallorca. It was a chance meeting between us, and it was Tony's infectiously 'happy to meet you', openness and charisma that got us talking. I was not happy with my lot that day, a trade-in vessel with heaps of issues and no time to fix them because the Surveyor was due to arrive - yes you guessed it, Tony. Well we got on like a house on fire and we laughed and chatted as we both worked on the same vessel.

I was intrigued as to how people started a career in surveying so being a blunt person, I asked Tony how one gets into surveying, not really expecting him to be so positive about my question. But he told me the process and said that I really should consider taking up marine surveying as a career; so after work we had a beer on Poole Quay and talked it through. His honesty and enthusiasm for the IIMS as the only group of surveyors worth joining was infectious and here, 17 years later, I am following a career I love having met some great people on the way thanks to Tony.

Tony was a constant, always positive, even about things he wasn't positive about and I suspect that like me, a lot of the IIMS members welcomed the sight of his face at meetings and events as you were always guaranteed some humour and a good chat. In this industry we all tend to work as individuals, but Tony was always there on the phone if you needed him. I gave up trying to email him many years ago!



My last meeting with Tony recently was at the same yard where we met 17 years ago, and despite being obviously not well and very candid about his condition, the mischievous twinkle was still there. We had a laugh over a snack and cuppa at Asda. I had no idea that would be the last time I would see Tony, but his character, humour and enthusiasm will remain strong in my memory for ever.

The Institute has a lot to thank Tony for and I have a lot to thank Tony for!

Once met never forgotten.

*Keith Willis MIIMS*



Other facts of interest about Tony as discovered on his Facebook page:

- Tony described himself as a yacht surveyor by day and a musician by night
- He was a vocalist, songwriter and played guitar
- He graduated with a degree from St Mary's London in 1978
- Tony restored Bloodhound (the classic sailing yacht previously owned by Prince Philip) between 2004 – 2008
- He fronted his band The Funkaholics, founded in 2008 and they completed a 13-track album called "We found the Funk" in 2011
- Tony wrote a book called "Holyshire" which was based on his remarkable late father's life
- He was thrilled to have finished a long standing project to build a Caterham type kit car
- Tony was an ardent Manchester United fan since his early childhood

Tony was a long standing and proud member of IIMS and is survived by his wife Cindy and their three children.

And finally Tony's memory will live on through a video of the Funkaholics playing live at a festival which can be found on YouTube at <https://bit.ly/2Yp4pmr>.

Rest in peace Tony McGrail (1953 – 2019).

This article was first published by The Telegraph national newspaper in the UK on 30th May 2007...



A 70-year-old yacht once owned and raced by Prince Philip has been restored to its former glory. Bloodhound, a 63ft wooden yawl, served the Royal Family for seven years during the 1960s and was the vessel in which both Prince Charles and Princess Anne learned to sail.

Tony McGrail, a yacht surveyor from Christchurch, Dorset, who has just completed a four-year stint refurbishing the craft, said: "Bloodhound is probably the most famous ocean racer existing and she is unique for a number of reasons.

"People go on about Princess Diana's dresses and Princess Margaret's jewels, but Bloodhound was part of the Royal Family's fabric. We are hoping that Prince Philip will come and visit, and perhaps sail her once again."

Bloodhound was built in the 1930s by Camper and Nicholson, the famous boat-building company, for Ike Bell, an American yachtsman who won several important races in her including the 1939 Fastnet race.

After the war it went through various hands until being bought by the Royal Family in 1962.

Having had to re-mortgage his home and take out numerous bank loans to pay for the refurbishment, Mr McGrail says that he cannot afford to keep the £1.5 million vessel, which is at present moored in Poole harbour.

His hope is to sell the craft to the nation, but he fears that it is more likely that it will end up in private hands.

Mr McGrail said: "This is my tenth major restoration project and by far the most important.

"She was extremely well made in the 1930s, but we have had to take her to pieces and put her back together again. It took twice as long and cost twice as much as I expected. But everything they ever said about her is true - she almost sails herself."

Tony's involvement with IIMS  
Tony was approved as an IIMS Associate member in 1998, being upgraded to a Full member just a couple of years later. He studied the IIMS Diploma in Yacht & Small Craft Marine Surveying, gaining the professional qualification in 2001. In the early years of his membership, Tony

was a regular participant at IIMS events and conferences.

For a number of years Tony was Chairman of the IIMS Certifying Authority, remaining as a valued member of the committee after he stepped down from that role before finally leaving in 2015. For his contribution in his role as Chairman, IIMS recognised his efforts by awarding him a Fellowship.

**Footnote:**

These days Bloodhound is on display alongside The Royal Yacht Britannia in Leith, Edinburgh and she is available for charter in the summer months.

## CAROLINE ROSTANT OBITUARY

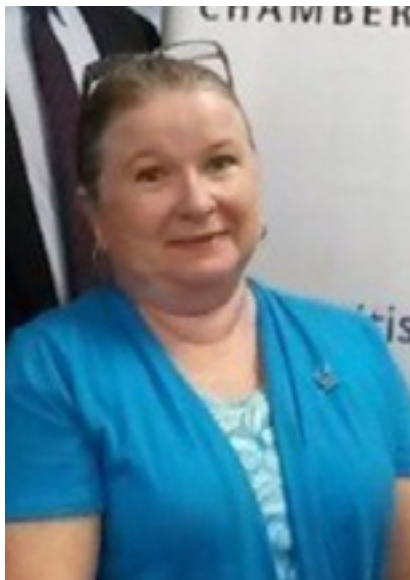
**Caroline Rostant**  
**8th August 1962 –**  
**10th July 2019**

*By her sister, Fiona Roffey*

Caroline Rostant was a DipMarSur, SuppIIMS, AffiMarEST - ISM Code Internal Auditor; ISM Code Designated Person; Designated Person Ashore and QMII.

Caroline started her career in 1995 with Tsunami Marine, Trinidad as the Operations Manager, involved in marine surveying and certification in accordance with SOLAS 1974 as amended 1988, MARPOL 73/78 and Caribbean Cargo Ship Safety Codes, along with Industrial Inspections and reports for BUREAU VERITAS DE VENEZUELA SA within the Southern Caribbean, Latin America and the Guyanas.

She branched out on her own in 2007, and eventually founded her own Company, Pivot Media Caribbean, in 2011, recently renamed Rostant Maritime Services. As a one-woman operator she provided consultancy work to the Maritime Industry in Trinidad and Tobago inclusive of Crew Management and Recruitment; Technical consultancy for Fire & Safety Control Plans; ISM Safety Management Systems, Designated Person responsibilities and facilitated ISPS MSO Training. Caroline was also the authorised distributor for IMO Publications and Deputy Registrar for the Republic of Palau International Ship Register.



Caroline has been acknowledged by her industry peers as the consummate professional in her field and shared her wealth of specialist maritime knowledge willingly to fellow colleagues across the maritime industry in Trinidad and Tobago but did not limit herself to her native country.

Despite her petite physique and being a lady surveyor, Caroline could walk into any room and achieve the desired outcomes even under toughest circumstances gaining the respect from CEOs, maritime professionals and staff alike. By her nature she was accommodating, no nonsense, yet respected everyone regardless of position or posting. Her uncanny sense of humour allowed her to diffuse any situation in an instant. Colleagues who have worked with Caroline have expressed their admiration of her ability to partner with and respect people from all walks of life; teaching them to always do their best and continue their education.

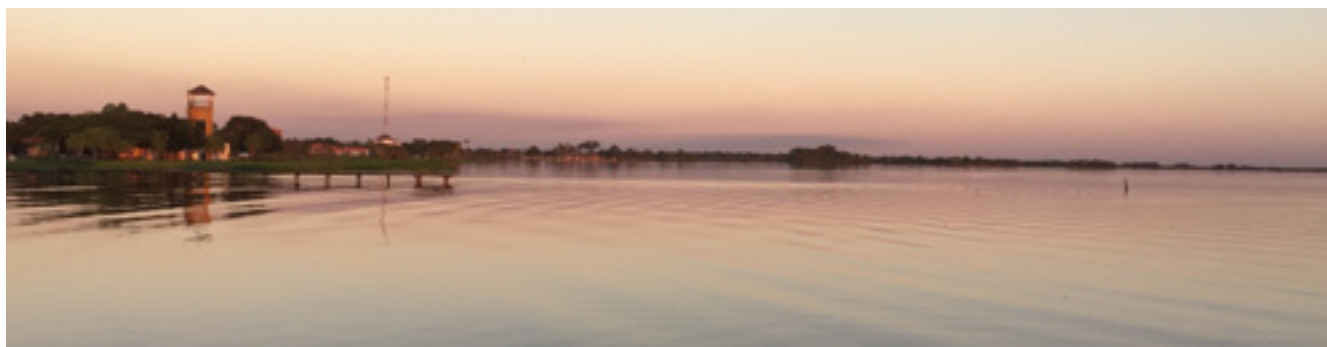
Outside of the maritime world, Caroline was the Honorary Secretary, Soroptimist International Port of Spain, Trinidad and Tobago - a non-profit organization geared towards assisting in the empowerment and upliftment of Women and Girls in Trinidad and Tobago; Honorary Secretary, The British Caribbean Chamber of Commerce, and more recently held the post of Assistant Secretary TTGF and member of Gymnastics for All Committee, with the Trinidad & Tobago Gymnastics Federation.

Introduced to the sea by her father from an early age, Caroline was a competent sailor, and could also cook a feast at the drop of a hat. She was an excellent organizer, adventurer, free spirit, an avid reader – with a notable ability to finish 2-3 books a day given the chance - very artistic and creative and a very generous person. The word “No” was not in her vocabulary. Her two sons, Nicholas and Alec exemplify her qualities of kindness to all they meet and possess a steadfast work ethic, complemented with a wonderful sense of humour.

It would be fair to say that anyone who had the honour of coming into contact with Caroline, both personally and professionally, is a better person for it.

Caroline is survived by her husband Graham and her two sons Nicholas and Alec.

IIMS would like to express their condolences to Graham, Nicholas, Alec, sister Fiona and Caroline's wider family.





# OSMOSIS IS A PROCESS NOT A DEFECT!



BY **GEOFF WADDINGTON** FIIMS & IIMS VICE PRESIDENT

Even after all the articles and papers raised on the subject it has come to my attention following some recent involvements with other surveyors some of who were IIMS members that there is still an underlying lack of knowledge regarding the process, causes and even identification of FRP blisters and defects. One argued that the hull was to be considered without defect and not suffering from 'Osmosis' because the moisture meter readings were low.

In the 1980's I bought my wife a new crash helmet, not a cheap polycarbonate one like mine but a posh expensive GRP one. Having children led to the helmet being put on the top shelf in her wardrobe where it lay unused for many years. When we took it out it was covered in blisters, having never been wet nor even suffered the effects of sunlight. Later a GRP shower tray I fitted also suffered from blisters, I have seen blisters in topsides, superstructure, decks and of course outer bottoms, the point I am trying to make is that

there are no hard and fast rules to this problem. A wet hull may have no blisters at all but another dry hull could be covered with them. The reason being is that the defects are built into the hull when it is manufactured and later circumstances dictate how and when these defects will come to light.

**History** – Up until the late sixties wood was the preferred boat building material, then the advantages of moulding boats using GRP (as it was), became the preferred method of boat construction. During the seventies and early eighties problems became apparent in the form of hull blisters and the term **Osmosis** was wrongly but widely attributed to the problem and the term stuck.

**Osmosis** – This is the **process** of a fluid passing through a semi-permeable membrane from a low density on one side (Sea Water), through to a higher density on the other side, (the Laminate or in effect the WSM's within it).

**Hydrolysis** – This is the **defect** caused by the formation of acidic compounds from the chemical breakdown, (decomposition) and splitting of a bond between compounds due to reaction with the addition of Hydrogen such as found in water.

**Background** – Basically, the laying up of a GRP (FRP) hull involves using a mould into which a coat of release agent or wax polish is laid. Over this a layer of Gel coat is applied, (the membrane), when this is still not fully cured a layer of fine CSM, (Chopped Strand Mat), well wetted out with resin is applied, followed by further layers of well wetted mat to a pre-determined thickness and including reinforcement by layers of woven mat as necessary.

Sandwich construction was also used by some manufacturers using end grain Balsa Wood Core material or foam core, which forms a double skin effect, reducing to single skin in way of skin fittings or timber or other reinforcement to prevent

compression in way of fittings, bringing with it another range of potential defects and failures for the surveyor to identify.

Here we are considering the single outer skin of a moulding.

In the early years Orthophthalic Polyester Resins were the norm, these were the cheaper resins, which continued to be used deeper in the laminate even on more modern lay ups to save costs.

In the 1980's Isophthalic resins were used, some with Propylene Glycol, (commonly used as a food additive) and more especially those with Neopentyl Glycol, (NPG) and these were more blister resistant, but at increased cost.

A further development was the Vinylester Resins, which have better bonding, improved water resistance, better fatigue properties and allowed for improved secondary bonding, I.E the attachment of internal stiffening, bulkheads etc. but again there was an increase in cost.

Boat Manufacturers dealt with the potential increased costs of construction in different ways. Some embraced the technology and used the best materials throughout and usually advertised the fact, others used the more expensive materials sparingly and only in the outer laminate and used the cheaper materials where their effects would be less apparent for example deeper in the layup.

## THE PROBLEM

### Water Soluble Materials

GRP laminate is not water proof. Without getting too technical, the Unsaturated Polyester Resins (UPR) containing Maleic Anhydride use Organic Peroxides as a catalyst, Polymeric Amine or Cobalt Soap in Styrene Solution as hardener and Organic Acids and Polyhydric Alcohols' as solvents plus other materials depending on the requirements of the cured resin compound.

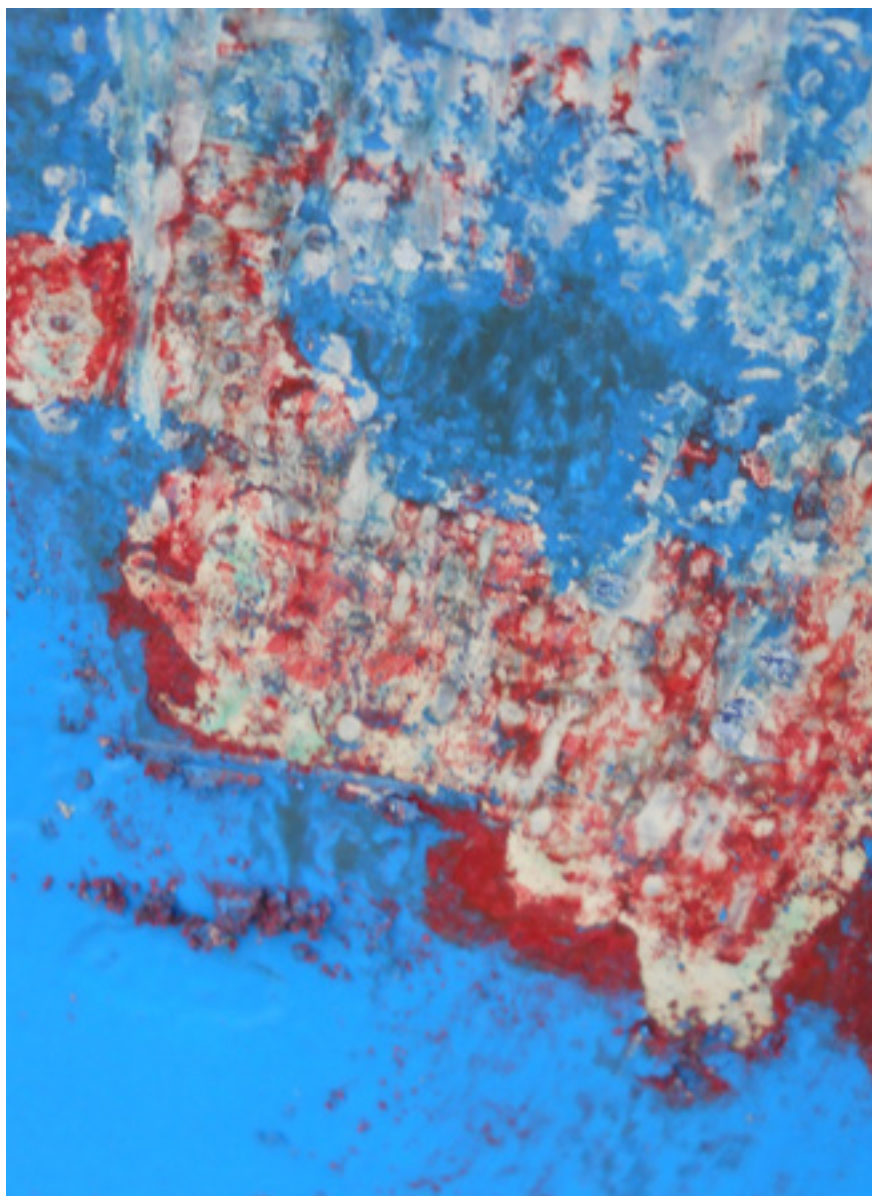
**WSM's** (Water Soluble Materials). These are amongst the accepted level of 1% to 5% of WSM's present in cured resin, some of which are Hydroscopic (attract and absorb moisture), which could include:

- Catalyst Elements (Organic Peroxide)
- Solvents (Polyhydric Alcohols) Methanediol or Methylene Glycol
- Shelf Life Inhibitors (Quinones Aminel)
- Ultraviolet Stabilizers
- Colourants / Pigments
- Binders (Polyvinyl Acetate Emulsions)
- Thickening Agents
- Fillers
- Fire Retardants
- Wetting Agents
- Impurities (including free moisture)

The water outside the hull will be attracted to any of these **free** WSM's, present within the laminate as a result of any of the following manufacturing defects:

- Incomplete Cure
- Overheating (cooking)
- Chemical Reactions
- Poor mixing

Voids / Bubbles / Air Pockets - These are the result of poor wetting out of the laminate resin, or is beginning to cure during the laminating process or where the mat has failed to follow the contours of the mould. Moisture will condense within these voids and attract WSM's from the surrounding laminate / resin.



## The Process

The mixing of these WSM's, with an additional molecule of Hydrogen such as found in water forms a typically acid solution, (the vinegar smelling liquid, which you find when you burst a blister). The

moisture could be from within the laminate or from outside, through the process of Osmosis.

If you wish to go technical there was a study conducted by, 'Thomas Rockett, Ph.D' at the University of Rhode Island in 1987, which goes

into much greater detail, copies are available on line and from Amazon.

## THE DEFECTS

The defects are of course:

The formation of blisters  
(see below)



Some large



Some Small



Moisture readings were low but careful inspection revealed the presence of tiny blisters beneath the paint. The underlying defects revealed by sand blasting (above), show classic gel blisters (left), where air bubbles were trapped when rolling the gel into the mould, typically when burst the gel can still be seen at the back of the blister, some have been filled in the past

as can be seen from the red dots, this is all that is required. On the right the burst blisters show the underlying laminate, these are therefore between the gel and the laminate; both these have little or no effect on hull strength but the latter if extensive will require gel peeling and re-gelling of the hull.

The larger blisters, which have an outer layer of laminate are more serious as they are within the laminate itself and are therefore causing a loss of hull strength. These also require gel peeling to reveal the extent of the problem but repair will require re-laminating as well as gel replacement.

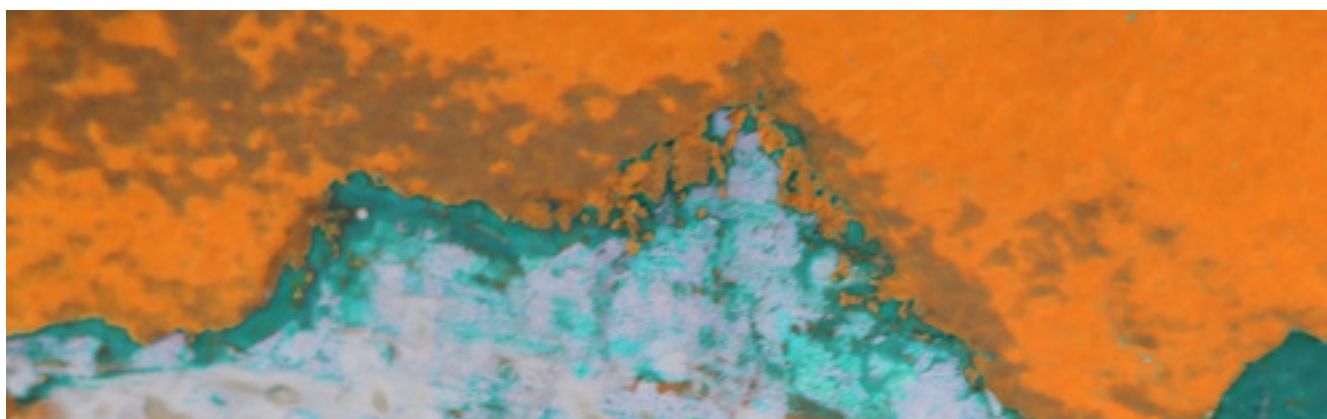


The photographs above show the previous top right blistered hull when peeled and the layers of repair, the void within the laminate has been filled and the hull prepared and laminated with glass cloth prior to fairing and then re-gel coating.

#### Other Defects

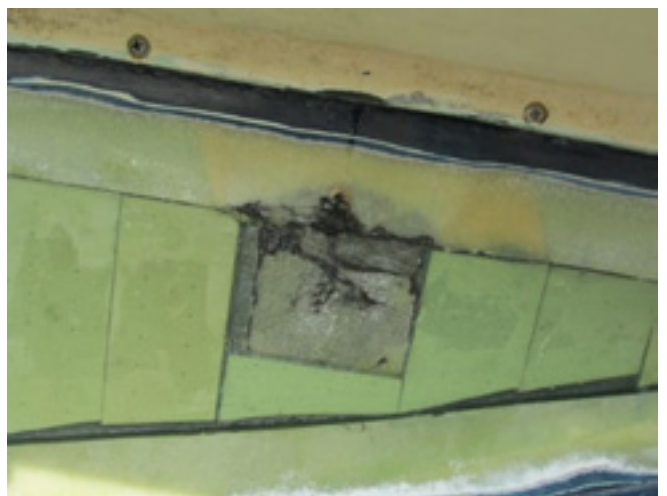


No Osmosis here, dry laminate left, where there has been little or no wetting out of the CSM (Chopped Strand Mat), fibres and on the right wicking where moisture has travelled by capillary action through the hollow underlying dry glass fibres causing them to swell, turning white.





*No Osmosis here either, this is delamination as a result of poor wetting out and consequently a lack of bonding between the layers of laminate in the hull of a brand new motor yacht straight from the factory; just because it is a new boat with a dry hull does not mean that it does not have an underlying problem.*



*Above left a 95 foot motor yacht with underwater hull modifications, which had not been gelled, with the underlying mat strands clearly visible. Above right with the outer skin removed the damage of water ingress into this foam core can be clearly seen, local moisture readings and hammer soundings identified the presence of this defect.*

The point I am trying to make is that the surveyor should know what he has found and also how to present this information in his report. Great care must be taken to avoid missing these defects because to do so can lead to a claim against you or even leave you open to legal action. Randomly removing paint from the outer bottom is very hit and miss, relying on your moisture meter alone is fraught with danger and tapping with your hammer is dependent on your interpretation of the sound, the 'Mark 1 eye ball', is all very good but not if you cannot see what is going on under the paint or inside the structure, you should behave like a forensic scientist looking for clues at the potential scene of a crime,

use 'all the means at your disposal' to draw a picture of what you may be facing.

For example on one occasion a surveyor identified an area of high moisture in a hull port side, forward at the turn of bilge, after removing the paint and then the gel and eventually the outer laminate without result. This caused him to suspect some other cause, which turned out to be internally moulded in ballast, 'Oops'. On another occasion I was requested to give a second opinion to a surveyor's findings of a serious defect giving high moisture readings along the whole port bilge chine of a motor vessel. When I inspected the vessel I found that all the battery and power

supply cables were run internally along the bilge chine as far as the bow thruster and this was affecting the meter readings he had obtained.

There have been many more examples over the years, but to conclude, it is wise to say what you see and essential that you understand what you find and also to ensure that the client is aware of what you could not see and therefore do not know.

Explain the Limitations of Survey and the Circumstances in your report, also ensure that if you fail to find any signs of hull blistering or serious defects this does not preclude the possibility of these arising in the future.



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# MAKE SURE YOU KEEP UP TO DATE AS AN EXPERT WITNESS

BY **MARK SOLON**, CHAIRMAN WILMINGTON LEGAL, FOUNDER OF BOND SOLON

An out of date expert witness is a dangerous expert witness and can create considerable risks for the instructing party. So, what do solicitors look in terms of currency for before instructing a potential expert?

Expert witnesses obviously need to be up to date in their professional field, but they also need to be up to date in their role as an expert witness. Experts do have a sell by date and so those that have retired will have a limited time as an expert witness. Solicitors look for current practice and credibility.

The due diligence process solicitors go through before formally instructing an expert should include checking that the expert is registered with their professional body and this by implication will confirm that the expert is up to date with continuing professional development.

They also look for consistency in the way the expert's details are presented to the public. Experts need to regularly review their websites, LinkedIn profiles, CVs, directory entries, lecturing profiles on university sites, expert witness organisations etc to ensure they are consistent and accurate. Any inconsistencies may be picked up by the other side to show incompetence and potentially discredit the expert. Experts should make sure areas such as attending training courses, attending and speaking at conferences, writing

articles and publishing papers, research work and other activities are current. Solicitors will go through what is in the public domain to make sure there is consistency before the other side does. Experts should also make sure any photographs are current. I saw one elderly expert who still used a photograph of herself with a sixties beehive hair style taken many years ago.

In terms of their work as an expert witness, the expert will need to ensure that their reports are consistent with current court and arbitration rules, practice and protocols. If reports are not compliant, then the instructing solicitor will need to guide experts, but this could have the unfortunate consequence of a suggestion of influencing the opinion. Better that the expert knows what is needed and gets things right first time.

Experts need to keep up to date with the law relevant to experts and this is best done through regular training either online or by attending specialist courses. Experts also need to hone their oral evidence giving skills. Many cases settle, so actual oral evidence giving in court or at an arbitration can be infrequent and challenging. Solicitors do not want their expert to learn the hard way on the case in hand. Practice in a training session can be very valuable, less damaging and will give comfort to the solicitor that their witness will not

collapse under real pressure. Case law changes daily and although solicitors are expected to be up to date with the law, experts can find this difficult and again specialist training programmes are the answer.

Solicitors may ask for references from previous solicitors who have used the expert. Experts should themselves make sure any references from solicitors are current and have these available anyway.

There is a decided case, *Jones v Kaney* that states expert witnesses can be liable in both contract and negligent for the opinion given so it's vital to be up to date to avoid litigation against you.

## BILLBOARD BOX

The Annual Bond Solon Expert Witness Conference will return to Westminster on Friday 8 November 2019. This is the largest gathering of expert witnesses in the UK. Lord Justice Gross will be the keynote speaker for this year's conference. This is an event you don't want to miss. For more information or to book please visit <https://www.bondsolon.com/expert-witness/conference/>

# SMART FUEL HOSES SET TO ENHANCE SAFETY AT SEA



**“A fire in the engine room is any seafarer’s worst nightmare,”**

says Tom Backlund, Wärtsilä’s General Manager Large Bore Engines.

This is especially true when it comes to fuel leakages in vessel engine rooms. This is why the International Convention for the Safety of Life at Sea (SOLAS) regulation, enforced by the International Maritime Organisation (IMO), stipulates a number of minimum safety standards for operations throughout the vessel, including the engine room, with a strict limit for splash guards’ surface temperatures that could ignite liquid and cause fires.

Wärtsilä continuously delivers improvements to its engines and has introduced a variety of new solutions to comply with the hot surface requirements. It has also developed barriers that prevent any fuel leakages from spreading to hot surfaces. Launched in January 2019, the smart fuel hose is Wärtsilä’s latest fire safety enhancement.

## **What makes the smart fuel hose so smart?**

The Wärtsilä Smart fuel hose is a multi-layered hose based on state-of-the-art rubber material, strengthened by embedded steel wires, with a minimum burst pressure that is five times higher than the nominal fuel pressure of a low-pressure fuel pipe. What makes the new fuel hose so smart is the cutting-edge, leakage detection system fitted in the space between the two hoses. This facilitates the monitoring of the condition of the hose, as well as maintenance management.

“This safety feature makes it possible to identify leaks before they become a problem,” says Backlund. “If the fuel hose breaks, there is another hose on top of it to prevent the fuel from leaking out or spraying, and, in the meantime, an alarm will go off to alert operators to the problem and allow them to fix it.”

What is more, Backlund explains that the smart fuel hose requires no complex installation or significant investments.

“It’s effectively a ‘plug-and-play’ solution that can be installed where the old fuel hose used to be, without any major modifications,”

he continues. “Furthermore, this fuel hose delivers a service lifetime that is almost twice as long as the previous equipment – and that’s before you even start taking the considerable safety benefits into account. It really is a no-brainer.”

Thomas Dirix is a Principal Engineer with DNV GL, one of the world’s largest maritime classification societies and one of the driving forces behind the SOLAS initiative. He says Wärtsilä has used its unique position as the interface between engine maker and shipyard supply, to address an issue that is well known in the industry but has often been overlooked.

“Wärtsilä has listened to the industry and created a standard solution, which both contains and detects fuel leakages,” he says.

“As a company, Wärtsilä has consistently demonstrated its willingness to come up with solutions that address what the industry needs. Its new smart fuel hose is one such example, along with its work on other components, either through new designs or retrofit solutions,” continues Dirix, adding that he believes the maritime industry still needs to take further steps to improve safety at sea.



### Safety first and foremost

DNV GL is constantly updating its rules to ensure that fire prevention and fire-fighting arrangements are sufficient for the equipment installed. For example, its fire safety rules were recently updated to cover the increased use of non-metallic piping in engine rooms, as a result of the introduction of Exhaust Gas Cleaning Systems.

That's not all. DNV GL recently introduced a new class notation F(M-P) aimed at engine room fire prevention through barrier management. Dirix acknowledges that this class notation sets the bar high and, as such, might be a stretch goal for some sectors, but he says DNV GL hope that it can serve as an important starting point for discussions between ship owners and shipyards on how to design and implement safer engine rooms.

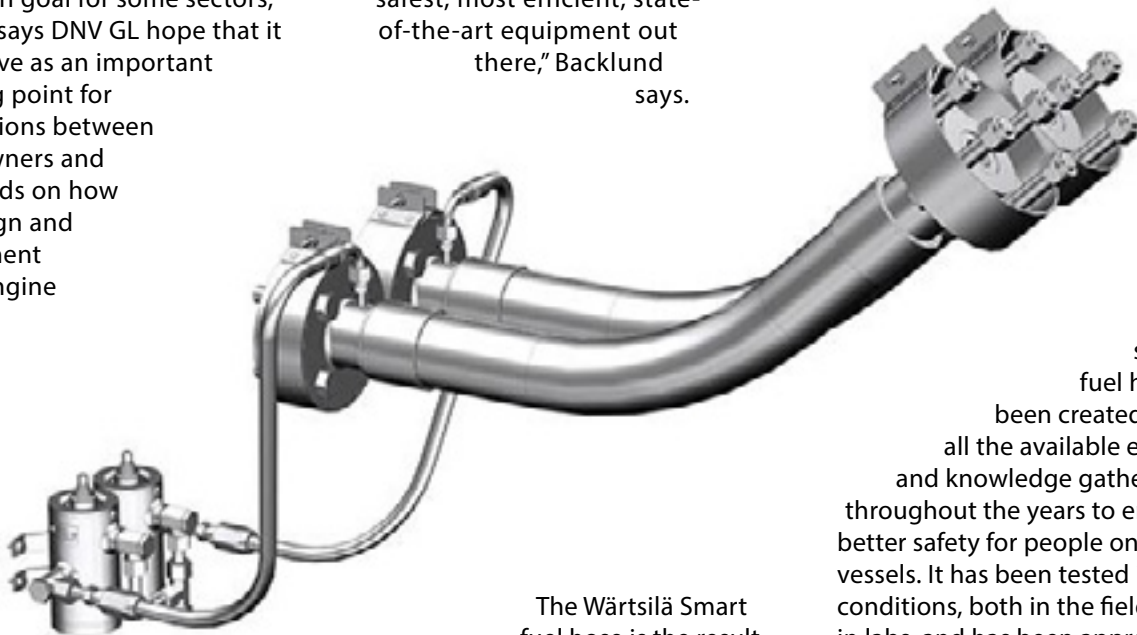
"By making products with increased fire safety more readily available, the associated costs will be reduced, and I believe the fire safety standard in the engine room will be raised," he says.

"The consequences of shipboard fires to life, property and the environment far outweigh the cost associated with increasing the fire safety on board. In many cases, a relatively inexpensive component upgrade or the introduction of a cost-free on board procedure could increase the fire safety considerably," Dirix concludes.

### A product of extensive research and development

Wärtsilä's research and development work do not end when a product is launched on the market. Instead, the company seeks continuous co-creation with its customers to develop and implement improvements during the entire lifecycle of the product.

"Our engines are in use for up to 40 to 50 years, and it's our ambition to continue to partner with our customers throughout that lifecycle. We are constantly introducing new safety features and innovations to ensure that our products continue to be the safest, most efficient, state-of-the-art equipment out there," Backlund says.



The Wärtsilä Smart fuel hose is the result of two years of focused research and development work, during which time Wärtsilä partnered with suppliers, DNV GL and several customers to create the optimal product.

"The smart fuel hose is a co-creation project between Wärtsilä, Royal Caribbean Cruise Line, DNV GL and Wärtsilä's long-term supplier DunlopHiflex part of Alfacomma Group," continues Backlund. "It was a long journey that required time and resources to test and identify the right materials and structure."

Once the product was developed it also underwent extensive field tests lasting almost a year, on board a vessel operated by a Norwegian ferry company, before its market launch at the start of this year.

"The smart fuel hose has been created using all the available expertise and knowledge gathered throughout the years to ensure better safety for people on board vessels. It has been tested in harsh conditions, both in the field and in labs, and has been approved by classification societies. It is also a drop-in replacement for the old hose, making installation easy. What could be smarter than that?" asks Backlund.

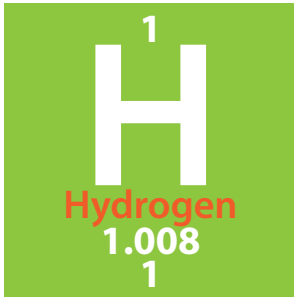


# HYDROGEN'S FUTURE IN MARITIME

Joseph DiRenzo is a technical project manager and professional engineer with close to 10 years' of maritime experience in the US Coast Guard. With a strong interest in renewable maritime technology, he received a Fulbright Scholarship in 2012 to study maritime Natural Gas Technology at the Norwegian University of Science and Technology in Trondheim, Norway. He has written a number of articles in trade publications and academic journals on the use of LNG in the maritime sector.



BY **JOSEPH DIRENZO**



With an ongoing push by the maritime community to reduce ship emissions to satisfy IMO MARPOL Annex VI regulations and limit the sulfur content of ships from 01 January 2020 to 0.5 percent world-wide, many ship owners are starting to consider hydrogen fuel cell technology to satisfy evolving emissions regulations. To date, hundreds of millions of dollars have been spent on research programs to utilize hydrogen fuel cells for transportation. Several maritime powers including the European Union, the United States and Japan have initiated pilot programs to assess the feasibility of maritime hydrogen to reduce emissions while maintaining cost parity with traditional propulsion technology.

A leading voice in the field is Dr. Joseph Pratt, CEO and CTO of Golden Gate Zero Emission Marine (GGZM), who is an internationally recognized expert on maritime hydrogen. GGZM is one of several companies making the transition from feasibility study to vessel construction and operation.



*Dr. Joseph Pratt, CEO and CTO of Golden Gate Zero Emission Marine (GGZM)*

## FIRST COMMERCIAL HYDROGEN FUEL CELL VESSEL IN NORTH AMERICA

After completing a keel laying ceremony for the Water-Go-Round in November last year and an anticipated launch in September of this year, GGZM is on track to become the first commercial hydrogen fuel cell vessel in North America. The Water-Go-Round will be a 70-foot catamaran built by Bay Ship & Yacht Co. capable of carrying up to 84 passengers in the Bay Area.

According to Dr. Pratt, once launched the vessel will operate in San Francisco Bay for three months while Sandia National Laboratories, a national lab at the forefront of hydrogen fuel cell technology, conducts performance testing on the vessel and gathers data. The vessel will carry a tank array of up to 242 kilograms of compressed hydrogen at 250 bar (approximately 3600 psi) which will provide enough fuel for up to 2 full days of operation. The Water-Go-Round will be propelled by two 300 kW (400 horse power) shaft motors with a 100 kilowatt hour battery to provide speeds up to 22 knots.

Some of the initial funding for the Water-Go-Round project comes from California Climate Investments, which is a cap and trade program aimed at reducing Green House Gas emissions in the state of California.

Dr. Pratt commented that the successful launch of his business and the building of the Water-Go-Round “was a long time in the making” growing organically out of a partnerships he developed while managing the SF-BREEZE and other studies at Sandia National Labs.

“The feasibility report showed that it could be done, but we wanted to prove it. When looking at the business side [of the company], we saw a really big demand for hydrogen fuel cell vessels”.

Once the Water-Go-Round project is complete, GGZM will focus its

efforts on taking lessons learned from the project to develop “ready to go” hydrogen fuel cell power systems which could be used for new vessel construction and retrofits around the world.

One of the oft-quoted challenges is the “chicken and egg” dilemma when a disruptive propulsion technology enters the maritime market. Critics will claim that ship owners are reluctant to deploy new technology in new vessel construction, like hydrogen fuel cells, until the port infrastructure is in place. They will also claim that port infrastructure will not develop until there is a strong demand from ship owners creating a “chicken and egg” dilemma.

For Dr. Pratt, the answer is “clearly the chicken needs to come first... the chicken is the proof”.

Noting that the US produces more than 10 million metric tons of hydrogen annually (US DOE), Dr. Pratt believes the necessary ingredients for a rapid expansion of maritime hydrogen fuel cell technology already exists in many industrialized countries across the world.

He quipped that instead of producing an endless number of feasibility studies, it was necessary to “get the boats on the water” to prove to the international maritime community that hydrogen technology could be economically feasible.

Dr. Pratt asserts the biggest factor in determining which parts of the world will adopt this technology is “whether [ship owners] can get hydrogen”. At the moment, not all countries throughout the world have easy access to hydrogen. Moreover, the majority of vessels will require liquid hydrogen based on their required endurance since liquid hydrogen has a considerably higher energy density than compressed hydrogen gas. Because of the mature network of hydrogen suppliers in North America, Dr. Pratt believes that North America will continue to be a strong market for this type of maritime technology.

## WHERE DOES HYDROGEN COME FROM?

One important distinction when discussing the emissions reduction potential of hydrogen fuel cell technology is the way in which the hydrogen is produced. Methods like steam-methane reforming and partial oxidation produce hydrogen using methane as a feedstock, generally from natural gas. According to the US Department of Energy (DOE), steam-methane reforming and partial oxidation produce hydrogen by combining high temperature steam (700 to 1000°C) with methane in the presence of a catalyst. A report by DNV GL titled Assessment of Selected Alternative Fuels and Technologies points out that hydrogen produced in this manner has a well to tank CO<sub>2</sub> emissions equivalent of 90 grams per Mega Joule (MJ) which is more than both HFO and MGO. At the writing of this article, the majority of the world's hydrogen is produced using these methods.

Another method which is gaining attention is the use of electrolysis to produce hydrogen. During the electrolysis process, electricity is used to separate water into hydrogen and oxygen.

This is achieved by a number of different electrolyzers including Polymer Electrolyte Membrane (PEM), Alkaline, and Solid Oxide Electrolyzers which vary in material, production temperature and how reactions take place within the process. Electrolysis is considered "green" when the electricity used to power the equipment comes from renewable energy sources like wind, solar, nuclear, or bio-gas.

Although the Water-Go-Round project is still undecided on its hydrogen supplier and associated hydrogen production method, Dr. Pratt believes that the adoption of 100% renewable hydrogen "will need to occur in steps". In order to gain widespread adoption, he believes "the solution has to be economically viable...it has to be market driven, not supported by government funding initiatives. Currently, renewable hydrogen is more expensive than conventional hydrogen".

"While renewable hydrogen is the goal, it doesn't provide an economically viable solution today". Dr. Pratt's current strategy "is to start with the vessel and conventional hydrogen, which can be economically viable, then transition



to higher renewable content as that achieves a cost level making it viable as well. If we attempt to do both today, the overall effect may be a delay in acceptance of the technology in general”.

### CAN HYDROGEN BE ECONOMICAL?

When discussing the economic feasibility of hydrogen fuel cell technology in the context of the Water-Go-Round project, Dr. Pratt points out that “the main value proposition for hydrogen fuel cell vessels is in the overall cost reduction for the vessel. Vessel owners will never need to do a complete ‘re-power’ again. First you’re going from a mechanical engine with hundreds of moving parts to the solid-state system of a fuel cell. Second, at end of life you do not need to swap engines; rather you just need to replace separate fuel cells once they have exceeded their life cycle. Overall this can result in maintenance reduction and down time reduction” which would ultimately reduce the overall operations and maintenance cost of the vessel.

Dr. Pratt also noted that a secondary value proposition of switching to a hydrogen fuel cell system is that the vessel is much quieter than comparable diesel engines and has no on-board pollution. This opens up many

possibilities, for example ship owners can take on non-traditional charters for passenger vessels like “cooperate meetings” and “nature excursions” because of the reduced noise and air pollution.

### THE FUTURE

With the Water-Go-Round project close to its first voyage and other projects like the HYSEAS III project in the United Kingdom or the HYBRIDskip project in Norway at different stages of execution, it is clear that maritime hydrogen technology is rapidly progressing from concept to creation on a global scale. Similar to the mainstream acceptance of liquefied natural gas (LNG) as a marine fuel, hydrogen will likely achieve similar widespread adoption. Dr. Pratt asserts hydrogen fuel cell vessels will initially cluster in areas with stricter emission controls, like the Emission Control Area established in Annex VI of MARPOL, among vessels with a fixed route such as ferries, tug boats, and coastal traders. As hydrogen production spreads worldwide, larger vessels with more variable routes like container ships may start to adopt this technology. Noting the economy of scale of a container ship, Dr. Pratt is quick to note that “one container ship could justify a new hydrogen production facility” in a port suggesting the global adoption of this technology may be just on the horizon.





# MAN Energy Solutions, Corvus Energy and DNV GL present results of HYCAS study on hybrid power generation

Speaking at the CIMAC conference in Vancouver recently, Dr Alexander Knafl, MAN Energy Solutions, presented the results of a new study which examines the potential of hybrid power solutions in light of tightening regulations on greenhouse gas (GHG) emissions. The result of a cooperation between MAN Energy Solutions, Corvus Energy, and DNV GL, HYCAS examines the cost effectiveness of hybrid power solutions in a 1,700 TEU container feeder vessel.

The pressure is on for the world to reduce its greenhouse gas emissions to avert a climate crisis. The IMO has set the maritime industry the ambitious task of reducing shipping emissions 50% by 2050, as compared to 2008. To work towards this challenge, MAN Energy Solutions, Corvus Energy and DNV GL studied the potential of using batteries in a container feeder vessel, to assess if it is possible to both reduce emissions and save operational costs.

“There were several factors that went into the selection of a container feeder vessel for the study,” said Hans Anton Tvette, DNV GL. “We were looking at where hybrid systems could offer significant efficiency gains, which pointed to operational states with fluctuating power demand. This typically occurs with large consumers such as cranes, pumps, ventilation fans, or manoeuvring equipment, especially in port. Container feeders, with their frequent port stays and increased

time in port, are ripe for efficiency gains through the use of hybrid solutions. Also, as this fleet is aging, new tonnage is likely to be on order in the near future,"Tvete said.

"Focusing on a container feeder vessel we were able to generate a typical propulsion power profile from vessel speed data, as well as an artificial time-resolved electrical load profile from the according electrical load table. These are the most important inputs for the MAN simulation tool ECO-ESS. Together with the specific battery and engine characteristics, it is possible to optimize the size of a battery in a hybrid propulsion system for the 2020 and 2030 scenario as an optimum of additional CAPEX and OPEX savings." says Carina Kern, MAN Energy Solutions.

The study explored two main scenarios, a vessel built in 2020 with a 500kWh battery system replacing one genset used for peak shaving and as a spinning reserve, and a vessel built in 2030, using a much larger 11MWh hybrid system for zero emission port entry and exit. Under the first scenario, with the hybrid power train resulting in an approximately 13% total cost for the vessel, payback times are as low as two to three years. However,

the larger system increases the costs of the vessel significantly, meaning that only with a combination of lower prices for the battery system and higher fuel costs than today would the system be economically attractive.

"It is our hope that these study results will increase cargo shipowner confidence in seeking out new energy solutions, as a good economic rationale already exists for supporting auxiliary loads with a hybrid configuration," said Sean Puchalski, Corvus Energy. "As for the future propulsion scenario, perhaps we will not have to wait until 2030. We are already seeing strong demand for high capacity energy storage systems in passenger vessels. With the right leadership from cargo owners, we may see this translate to the merchant sector sooner than later."

"Energy storage has proven to be a highly successful way to reduce emissions for several categories of ships," said Tommy Sletten, Corvus Energy. "If we speed up the adoption of green technology for vessels transporting goods, then we will really get results! Container vessels are often 'low cost' vessels and there is

a reluctance to invest in green technology without other initiatives in place," continued Sletten. "To reach the global goal of 50% carbon emission reduction by 2050, strict regulations and various governmental initiatives are required. Initiatives such as funding for new buildings, slot priority in harbors and reduced port fees for vessels with improved environmental systems will help greatly."

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# Joint industry guidance for the supply and use of 0.50% sulphur fuel



Disruptive change facing the shipping industry is fast approaching in the form of the IMO Sulphur Cap regulation, which comes into force from 1 January 2020. Although the picture is still far from clear, those in the know expect a number of vessels and operators to be non-compliant come January. Where this leaves things and how authorities will react, only time will tell. And worryingly, is it already simply too late for some organisations to do what they need to do in time to ensure compliance?

To aid those operating in the sector who 'need to know', a number of shipping, refining, fuel supply and standards organisations have collaborated in order to produce Joint Industry Guidance on the supply and use of 0.50% sulphur marine fuel, which was released on 20 August 2019.

## **Background**

In October 2016, the International Maritime Organization (IMO) established a global limit for sulphur in fuel oil used on board ships of 0.50% m/m to apply from 1 January 2020. The implementation of this regulation is expected to have significant implications throughout the marine fuel supply chain and will require detailed consideration by all parties associated with the production,

distribution, storage, handling and use of these fuels. For this reason, a Joint Industry Project (JIP) has been established to raise awareness of these issues.

This guidance document is one of the first results of the JIP and it provides guidance on the technical and safety implications of the new requirement for max. 0.50%-sulphur fuels. It offers advice to personnel involved in the marine fuels and shipping industries, from fuel blenders and suppliers through to end users.

What's more, it provides a background to the MARPOL Annex VI regulation as it impacts the change to a new marine fuel regime, and addresses issues such as fuel compatibility, fuel stability, and fuel handling and storage, together with the operational factors that can affect safety.

In addition, it frequently addresses IMO, CIMAC and ISO documents which should be consulted as necessary. Moreover, the partners to the JIP are using this guidance as the basis for developing an e-learning course module for relevant stakeholders.

An e-learning course will be released in October 2019, aiming to:

- Provide an understanding of MARPOL Annex VI and its potential impact on the management of fuels on board ships;

- Raise awareness of and offer solutions to potential fuel management issues.

The publication contains various important messages, which can be summarized as following:

1. Ensure fuel quality by ensuring that blend components are suitable for bunker fuel production, with particular attention being given to ensure that the final product is stable.
2. Fuel suppliers and purchasers should provide adequate information to the ship concerning the fuel as supplied to enable ship crew to identify and manage potential safety and operational issues associated with certain fuel properties and characteristics;
3. Fuel characteristics are expected to vary considerably between bunkers. The ship's crew will need to adopt a more proactive approach to fuel management. They will need to know the fuel characteristics as loaded and be able to respond to the requirements, especially in terms of on-board temperature requirements and any commingling;
4. While compatibility between fuels from different supply sources can be a concern in today's environment, assessing compatibility of 0.50%-sulphur fuels from different sources will be key. To the extent possible, fuel should be loaded into an empty tank. The available space for new bunkers to be loaded should be taken as the capacity of the empty tanks in order to avoid commingling on loading;

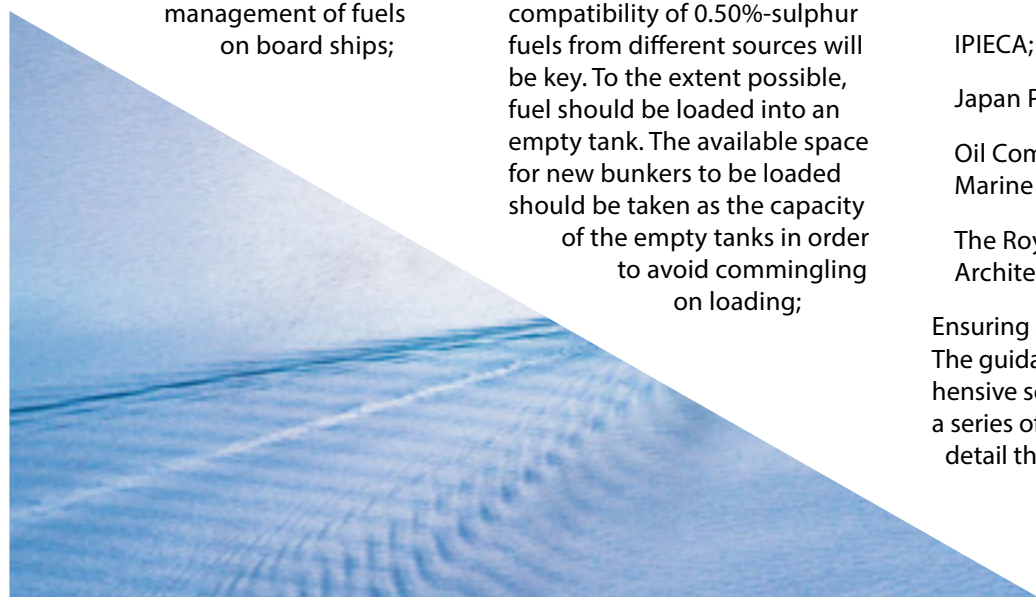
5. Ship operators and fuel suppliers should review operational practices to allow sufficient time to test for compatibility between existing and proposed bunker fuel delivery, especially if no "empty" dedicated storage tank is available on the ship.

However, it must be noted that it does not discuss compliance with Flag State, Port State or IMO rules or guidelines, or alternative means of compliance (such as scrubbers) and does not include a discussion of other fuels, like liquefied natural gas (LNG), hydrogen, methanol and so on.

The publication has been compiled and developed by a number of leading cross-industry organisations. They are as follows:

- African Refiners Association;
- Concawe, Environmental Science for European Refining;
- Institute of Marine Engineering, Science & Technology;
- International Association of Classification Societies;
- International Bunker Industry Association;
- International Council on Combustion Engines;
- International Union of Marine Insurance;
- IPIECA;
- Japan Petroleum Energy Centre;
- Oil Companies International Marine Forum;
- The Royal Institution of Naval Architects.

Ensuring correct use of the new fuel  
The guidance presents a comprehensive set of responsibilities under a series of sub-headings. In more detail these are:





## Responsibilities of fuel suppliers

Suppliers are expected to deliver a fuel which meets the parameters agreed between the supplier and the buyer. The fuel supplier is the party responsible for the delivered quantity and quality either directly or through subcontractors. Likewise, 'meeting the needs of the ship' means that the fuel supplied should be stable in regular handling, homogeneous across the entire delivery and fit for purpose after appropriate on-board treatment.

The supplier is also responsible for maintaining appropriate documentation to help identify product origins, including the manufacturing source and the various links in the supply chain, to allow traceability. Monitoring fuel quality at each step of the supply chain will also be crucial to identify points of entry of any extraneous or harmful materials if these are discovered when the fuel is being used. If suppliers get components from other suppliers, they should obtain assurance that appropriate supply chain quality control steps have been taken.

It is important that the supplier delivers accurate information so that the ship operator can characterize the fuel supplied and take the appropriate initial steps in setting up procedures for the handling, treatment and use of that fuel the guidance highlights.

This information would be added to the required provision of the representative commercial samples, MARPOL delivered sample, material safety data sheets (MSDS) and bunker delivery notes (BDNs). The additional information would be in the format of a comprehensive certificate of quality (CoQ) or equivalent documentation.

## Quality control during production of bunkers

The bunker supplier should ensure control of individual blend component quality. This includes knowing the components' individual properties through accurate data, and the component origins supported by relevant documentation as agreed between the buyer and seller of the components.

Blend components should also be of known suitability for bunker fuel production, with particular attention being given to ensure that the final product is stable. The fuel should not include harmful or damaging materials in concentrations that may cause damage as defined in Clause 5 of ISO 8217:2017 and Regulation 18.3 of MARPOL Annex VI. This does not preclude the use of additives intended to improve specific fuel characteristics such as cold flow or combustion properties. Any additive used should have a proven track record and should be thoroughly evaluated to ensure that it is fit for use in marine fuel applications.

Furthermore, the supplier should ensure that the final blend, whether produced at a refinery or in a tank terminal, is tested at an accredited (e.g. ISO or equivalent certification) laboratory.

## Transport, storage and transfer

The quality of a bunker fuel or blend components may change compared to its origin during transportation, transfers and storage. The supplier should oversee the transportation of the fuel, blend components and additives to make sure that product contamination does not take place in tanker ships, shore tanks, pipelines, road tankers or barges prior to delivery. The supplier is expected to have in place a QMS (ISO 9001 or equivalent) to monitor, manage and assess the quality of the products they are supplying throughout the above processes.

When arranging delivery, the supplier is expected to ensure that the product is supplied without cross-contamination from any other grade being supplied to the ship, or from any other material previously handled by the delivery facility. This is especially important where delivery facilities are used to supply different grades of fuel and/or different sulphur specifications.

## Delivery

If over one grade of bunker fuel is to be supplied, the order in which the grades are supplied should be agreed between the supplier's representative and the ship's master or officer in charge of the bunker operation. To prevent contamination of product during delivery, the report suggests that the lighter/lowest sulphur grade is supplied first, followed by the heavier/higher sulphur grade. Where necessary, segregated pipelines/hoses and bunker connections for supply of materially different types of product should be provided, and for high and low-sulphur bunkers, to avoid cross-contamination of products. The use of multiple bunker barges or other delivery facilities to discharge a single product in 'series' adds complexity to the delivery and will require additional management and oversight. For this reason, such operations should be avoided to the greatest extent possible.

## Sampling

Representative samples should be drawn during the bunker delivery for retention by both the receiving ship and the supplier, in addition to the MARPOL delivered sample which is a statutory requirement. The sampling process should be witnessed by representatives for both the supplier and the receiving ship. The sample containers should then be sealed at least once (and countersealed if requested by the receiving ship) with tamper-evident seals that have a unique means of identification. They should also be labelled, signed and countersigned by representatives of both parties.

Sampling should take place at each point of product custody transfer throughout the supply chain. The supplier should retain the bunker transfer samples for at least 30 days. If a dispute regarding the fuel quality occurs, samples should be kept until the dispute has been resolved. The above should be documented in the supplier's QMS. This is a key part of a QMS, as it enables transparency and traceability, and helps the supplier identify the origin of potential problems and taking steps to remedy and prevent further quality issues.

It should be recognized that, in many ports, the contractual barge loading sample is often taken from the shore tank and not at a subsequent custody transfer point.

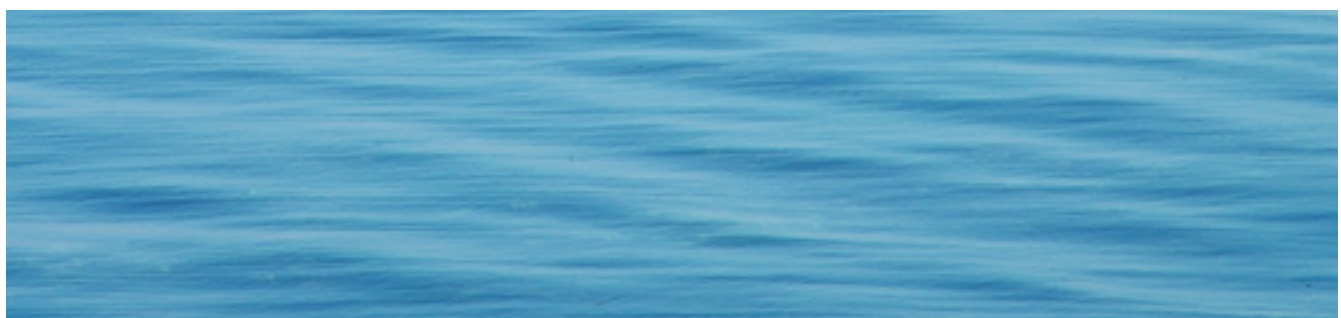
## Responsibilities of fuel users

Fuel purchasers are expected to order fuel of a quality or grade suitable for the receiving ship, taking into consideration its intended trading area as well as the capabilities of the ship to receive, store, handle and use the fuel, including the ability to segregate different batches of fuel to safeguard against incompatibility issues. The fuel purchaser and the end user (the ship) should take note of the following:

- On-board fuel management is an essential element of preventing operational issues. Improper handling of fuel on board may lead to non-compliance with MARPOL requirements on fuel quality and safety, even if the fuel received was compliant;

- Once fuel is delivered on board, ships should have documented procedures for the safe handling and use of the fuel. These procedures should form part of the company's Safety Management System (SMS) which should be in place as a measure of good practice and/or as required by the International Safety Management (ISM) Code, as applicable, supported by equipment operating and maintenance manuals;
- Each ship should have in place fuel switching procedures (where applicable). The ship's crew should be familiar with implementing these procedures;
- Marine fuel which fully meets statutory requirements and purchase specifications such as ISO 8217:2017, will nevertheless still require treatment before it meets most engine manufacturers' requirements;
- Where a ship is exempted from some of the provisions of MARPOL Annex VI under Regulation 3 of the Annex, or will comply with the requirements of the Convention using an equivalent means of compliance under Regulation 4 of the Annex, fuel oil purchasers should consider any conditions attached to the exemption or equivalent means which may affect fuel purchasing.

Download the 64 page pdf document at <https://bit.ly/32hvQNr>.





# THE IIMS UAE BIENNIAL CONFERENCE 2019

## Safe Ships, Safe Cargo – The Insurers Perspective



The Queen  
Elizabeth 2 Hotel,  
Dubai, UAE

Wednesday, 20  
November 2019  
08:30hrs - 17:00hrs

### RSVP

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secretary@iimsmideast.com  
chairman@iimmideast.com

The current  
line-up of speakers:

**Mike Schwarz, IIMS CEO**  
Driving International surveying standards and  
Accredited Marine Surveying Practitioner

**Capt. Rahul Khanna**  
Allianz Safety & Shipping Review 2019

**Tony Fernandez**  
Due Diligence in Marine Hull Insurance –  
Myth & Reality?

**Capt. John Dolan**  
Risk caused by misdeclared cargo on Container Ships

**Dr. Nippin Anand**  
An Illusion called “Human Error”

**Capt. Porus Dalal**  
Human error – The underlying root cause in accidents

**Richard Strub and Capt. Sanjay Bhasin**  
Arbitration role play: Expert witness for a project  
cargo shipment on a breakbulk vessel

**Capt. Nick Sloane**  
Ultra large container ship fires

**Capt. Rajiv Thakar**  
Recovery from Carriers of losses suffered by Cargo  
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# Prospects for Long-Life Batteries in Waterway Transportation

Harry Valentine has a degree in mechanical engineering from Carleton University, Ottawa, Canada specializing in thermodynamics (energy conversion) and transportation technology. He has worked as a technical journalist for the past 10-years and has more than two decades of research in the transportation industry.



BY  
**HARRY  
VALENTINE**

Until very recently, the short useable life expectancy of electrochemical batteries and their high replacement cost deterred companies engaged in inland waterway transportation from investing in electrical vessel propulsion. New developments in grid-scale vanadium-oxide flow batteries and in molten metal battery technology now offer the sector batteries capable of delivering 15 to 20 years of service.

Ongoing development in electrical battery storage technology seeks to increase both the storage density along with useable life expectancy. For stationary application, large grid scale batteries combine large physical size, low storage density and greatly extended useable life

expectancy. The sheer size, weight, low storage density along with low tolerance to vibration and jolts makes these batteries unsuitable for railway and road transportation applications. However, maritime vessels that operate at low speed along inland waterways and that do short-distance passenger excursion and sightseeing service have comparatively low power requirements and can be partially recharged during short layovers.

A waterway vessel sailing at a speed of 12-miles per hour along a narrow channel requires 3.375-times the propulsive energy as the identical vessel sailing at eight miles per hour. There are jurisdictions where hydroelectric power and nuclear-electric power sells at a fraction of

the price per kilowatt hour as diesel fuel for propulsion engines. During overnight off-peak periods when market demand for electric power is minimal, it becomes feasible to recharge grid-scale energy storage technology at far below market prices, including batteries aboard vessels that are assigned to daytime short-distance maritime operation.

## COMPETING LONG-LIFE BATTERIES

Cell-Cube™ is the manufacturer of the long-life vanadium oxide flow “redox” battery that recharges the electrolyte and that offers a deep-cycle recharge-discharge capability of 20,000-cycles. Each unit is built to the same dimensions as 40-foot shipping containers and offers 200kW to

500kW output over three to eight hours. The competitor Ambri™ offers a liquid metal battery of equivalent life expectancy and built to comparable dimensions to 20-foot shipping containers (20-foot length by 10-foot width by eight-foot height) with 500kW output capability. Both technologies avoid the cycle-to-cycle fade that plagues some electrochemical storage battery technologies.

The vanadium-oxide flow battery can operate with ambient air temperatures between -20-deg C and 50-deg C with 400-volts output and a specific energy density of about 14Wh/Kg. Given that barges have ferried sections of laden freight railway trains across rivers, a tug could be built to carry the filled weight of vanadium-oxide batteries as well as the weight of molten metal batteries that operate at over 300-deg C. Adapting liquid metal battery technology to waterway operation would require innovation in insulation, such as using sections of zirconium-oxide to secure the battery to the vessel structure.

#### ADVANTAGE OF SCALE

A tug and also a battery powered vessel involve a much larger scale of transportation technology than road going or railway vehicles. The larger scale and comparatively low travel speed allows for viable use of long-life grid-scale battery technologies that would otherwise be impractical for road and even railway transportation. A maritime vessel that sails the inland waterways will outlast road and railway commercial vehicles, enhancing the viability of investing in grid-scale battery technology to store propulsive energy. Commercial waterway vessel operators have competing battery technologies from which to choose for their unique applications.

#### BATTERIES AND VEHICLE TECHNOLOGY

Battery powered road vehicles expend additional energy carrying the weight of the energy storage

system to climb to higher elevation, requiring light weight batteries with very high specific energy density in excess of 50Wh/kg. Commercial road vehicles such as school buses only operate during AM and PM periods for three to four hours per weekday. Battery powered city transit vehicles can undergo regular partial recharges throughout the service day at terminals and stations. In terms of energy consumed per unit of vehicle weight, road and railway vehicles are less efficient than maritime transportation.

Commercial electric battery propelled waterway vehicles do not have to carry the weight of the energy storage technology up gradients. When in transit to a different elevation at navigation locks, there is scope to partially recharge the batteries. Due to sheer physical size and weight carrying capability, battery powered waterway vehicles can utilize long-life grid-scale batteries with comparatively low specific energy density of 10 to 20Wh/Kg. At the present time, none of the battery technologies applied to road and railway propulsion can offer the extensive useable life expectancy of grid-scale batteries that can be adapted to waterway propulsion.

#### EVOLVING BATTERY RESEARCH

Research into flow batteries undertaken by the Materials Engineering group at National University of Singapore (NUS) has focused on increasing the energy storage density of redox flow batteries, including higher storage density from vanadium based flow batteries that can apparently hold up to double the energy and at temperatures of up to 80-degrees C. Flow batteries include large tanks of aqueous electrolytic solution of materials such as vanadium oxide and even salt solutions. Pumps flow the aqueous solution through stacks of cells to deliver electric power.

NUS research into Redox flow lithium batteries has focused on offering up to five times the storage

density of vanadium flow batteries which if applied to vessels sailing along inland waterways, should allow for up to five times to sailing distance. A flow battery concept still subject to research and further development at NUS uses two tanks, one tank of titanium oxide with a second tank of lithium-iron-phosphate with potential of holding up to 10 times the storage density of vanadium redox flow batteries. If the research is successful, the technology might find maritime propulsive application.

#### TUG BARGE ON WATERWAY

Depending on geographic location, barges of 35 feet (10m) beam sail along waterways with a draft of six feet (1.8m) to nine feet (2.7m). The tug pushing an navigating the barge sails in the hydraulic shadow of the vessel ahead of it, allowing the tug to sail an almost identical cross-sectional profile and allowing the weight of grid scale batteries to be spread of a large area of floor surface. A 180-foot tug could carry 12 grid-scale batteries built by Cell-Cube to the same dimensions as a 40-foot shipping container and placed three lengthwise by four widthwise.

Each vanadium-oxide flow battery could deliver 200kW to 500kW for three to eight hours meaning 2400kW (300-Hp) to 6000kW (8,000-HP) with deep-cycle recharge-discharge capability of over 20,000-cycles. Stopping to transit navigation locks provides opportunity to partially recharge the batteries as the tug-barge assembly changes elevation. To help accelerate tug barges and barge trains leaving some navigation locks, it may be possible to install a short distance of trolley cable along the channel bank to allow the tug barge to draw electric power directly from the grid, with batteries blending in as the assembly reaches its cruising speed.

#### WATERWAY TOUR BOATS

While mega-size ocean going tourist ships attract massive numbers of customers, a

percentage of the tour market chooses to take vacations aboard smaller vessels that sail the inland waterways. These vessels typically sail only during daylight hours and lay over at river ports during the overnight hours when it becomes possible to recharge onboard grid-scale batteries at off-peak power rates. Battery powered river cruise vessels could attract the eco-tourist segment of the market. These vessels also make stops at points of interest to allow customers to visit local attractions while batteries undergo a partial recharge.

The sheer weight of grid-scale batteries carried at low elevation in the vessel provides added stability during daylight sailing hours when the majority of passengers may occupy the highest elevations of the vessel. From such a location and courtesy of the low speed of sailing, the customers might enjoy more of the scenery along the passing coastline. The combination

of low-speed sailing, overnight stops and a few short duration daytime stops including at navigation locks allows the vessel to provide service to the customers while also regularly partially and fully recharging the batteries.

### SHORT-DISTANCE OCEAN SERVICE

The research underway at NUS offers the prospect of electrically powered ships sailing short distance ferry services across ocean, such as Dublin - Liverpool and Belfast - Liverpool across the Irish Sea, Helsinki - Tallinn across the Gulf of Finland, Helsinki - Stockholm across the Baltic Sea, Foo Chow/Amoy - Taiwan across the Taiwan Strait, Jeddah - Port Sudan across the Red Sea, Buenos Aires - Montevideo across Rio de la Plata, Wellington - Picton across Cook Strait, Victoria - Tasmania across Bass Strait and several Mediterranean ferry services such as Nice - Corsica, Athens - Crete,

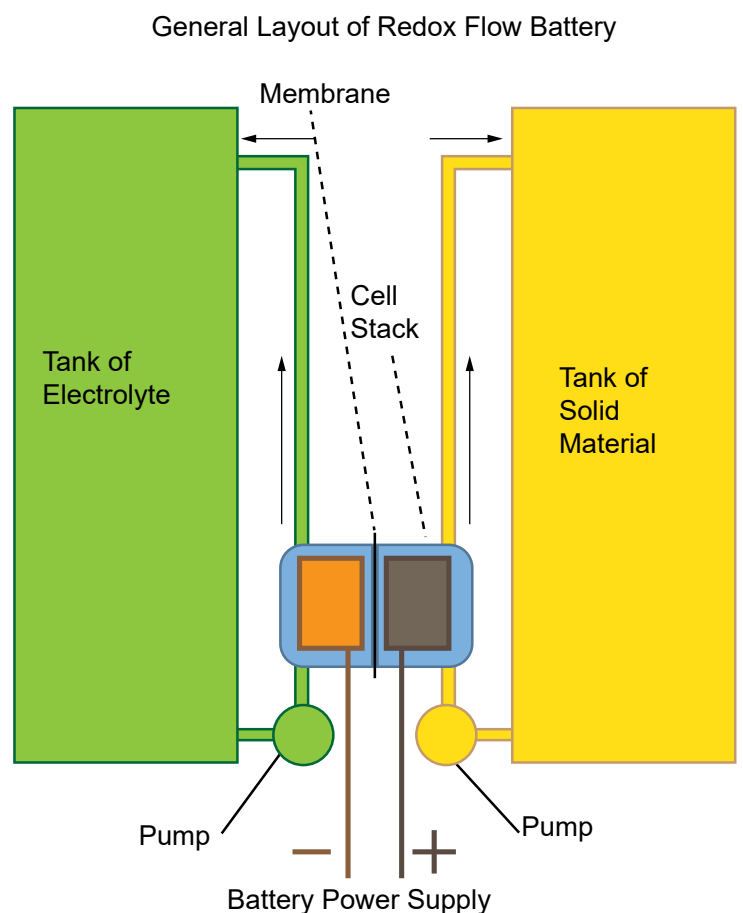
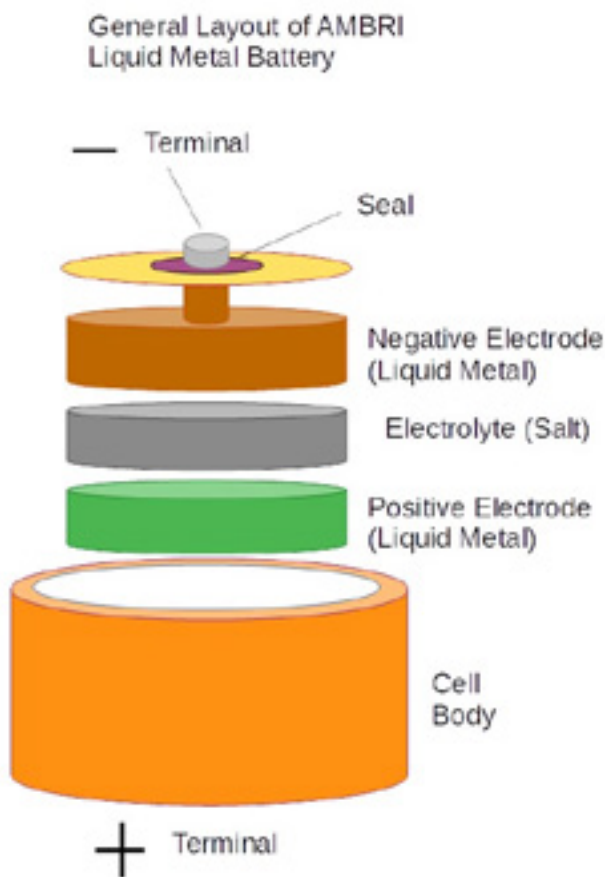
Rome - Sardinia and Barcelona/ Valencia - Balearic Islands.

### CONCLUSIONS

While makers of long-life grid-scale electrical storage batteries are focusing exclusively on stationary installations, the same battery technology may actually have a mobile application providing propulsive energy for a small variety of maritime vessels that sail the inland waterways. While flow redox batteries and molten metal batteries would be impractical for road and railway propulsion, these technologies might find application in maritime propulsion.

### WEB RESOURCES

- Ambri Battery:  
[www.ambri.com](http://www.ambri.com)
- Cell-Cube:  
[www.cellcubeenergystorage.com](http://www.cellcubeenergystorage.com)
- NUS (Singapore):  
<https://nus.edu/2XT71ZA>







GARMIN

HD

# Better Boats Begin at IBEX

## The International BoatBuilders' Exhibition and Conference (IBEX)

is just weeks away. The event, which will run from 1-3 October at the Tampa Convention Center in Tampa, Florida, will feature an even broader array of special events, seminars, and presentations, as well as more than 700 exhibits from the recreational marine industry's leading suppliers in the U.S. and abroad in 3 exhibit halls.

"Every year, we tailor our offerings to match what visitors and exhibitors tell us is of most interest to them," said Anne Dunbar, IBEX show director. "We've added a host of new educational seminars and sessions, as well as special events and so much more, which are all designed to help anyone attending IBEX get the most out of the show."

### IBEX Education Conference

The program starts ahead of the show's official opening with a series of Super Sessions, hosted by exhibiting companies and industry associations, that will offer in-depth training and hands-on learning. These pre-conference Super Sessions take place Sunday and Monday (September 29-30), prior to

the opening of the IBEX Exhibit Halls on Tuesday, October 1.

IBEX has expanded its Seminar Series. Held October 1-3 at the Tampa Convention Center, the IBEX Seminar Series offers a range of topics providing fundamental skills to cutting-edge advanced training for all industry professionals in 8 Specialized Tracks:

- Design and Engineering
- Composite Methods and Materials
- Marine Electrical Systems
- Marine Onboard Systems
- Marina and Boatyard Operations
- Survey and Repair
- Manufacturing Management Policy
- New for 2019: The IBEX Tech & Tool Lab is a dedicated room for seminars providing hands-on learning in topics such as vacuum bagging and 3D printing. There will also be seminars offering live feeds from offsite work run by ABYC and NMEA.



IBEX Special Seminar: "Return to Thunderboat Row" on Tuesday morning at 11 am in the Design and Engineering track, will be a lively panel discussion including the men who built and drove the boats of the golden age of offshore powerboat racing, as well as a few who are still in the game. Participants will have the opportunity to meet legendary drivers, throttlemen, and builders Odell Lewis, Alan "Brownie" Brown, Steve Curtis, Bob Saccenti, John Cosker and Val Jenkins for scintillating tales of the good, the bad, and the bloody times of North Miami's historic Thunderboat Row, moderated by the editors of *Professional BoatBuilder*. The Seminar Series is produced by the show's education media partner, *Professional BoatBuilder* magazine, and industry partners ABYC, NMEA, ABBRA, AMI, and IBEX co-owner NMMA.

### **IBEX Events**

Several Special Events are planned prior to and during IBEX. Along with its Super Session on September 30, SNAME will hold its one-day, two-track Small Craft Technology Symposium, which will consist of technical paper presentations on a variety of subjects, including new design concepts, structural design issues, safety, and analysis techniques.

Twelve visionary designers will present their boat design concepts on Monday night as well. The PechaKucha presentation style allows each presenter 20 slides at 20 seconds each. This is a fast-paced event that includes networking breaks for open discussion and comments. There is no cost to attend. This event is produced by SPARKS Group, in association with *Professional BoatBuilder* magazine, and sponsored by Tides Marine. For more info visit [www.ibexshow.com/sparks](http://www.ibexshow.com/sparks).

### **IBEX Networking**

One of the most valuable aspects of IBEX is the ability to meet the entire industry in one place. The face-to-face interactions that take place at IBEX are unmatched in the industry. To foster these connections IBEX offers several networking events. The Opening Night Party will take place again on Tuesday night at 6 pm, when the exhibit halls close, at the newly renovated outdoor Sail Pavilion located in front of the Tampa Convention Center. This year's party music is sponsored by Wet Sounds.

The Exhibit Hall Happy Hour returns to IBEX this year. Sponsored by Gougeon Brothers in celebration of their 50<sup>th</sup> Anniversary, all three exhibit halls will have bars available and participating exhibitors will also join in the fun by offering drinks and snacks from their booths. The Exhibit Hall Happy Hour will take place from 5 - 6 pm on Wednesday, creating a casual atmosphere for conducting business and networking.

The Emerging Marine Leaders will host two networking events at IBEX this year; an On-The-Water event Tuesday evening and a discussion titled *Tips for Surviving and Thriving in the Marine Industry* on Wednesday evening. Registration is required for these events and details are available at [ibexshow.com/eml](http://ibexshow.com/eml).

### **IBEX Pavilions**

The specialty product and international pavilions are an important part of IBEX. This year's pavilions include the Marina & Yard on the first exhibit hall and the Compliance, Standards, and Education; Composites; and the NMEA Connected Boat Experience on the third floor. There are 5 Country Pavilions including Australia organized by AIMEX, Italy organized by UCINA, France organized by Business France, South Korea organized by KINTEX, and Slovenia organized by SPIRIT Slovenia.

*Exhibit hall badges are free through September 28th, and \$25 on-site. To register to attend or for more information about the show, visit the IBEX website at [www.ibexshow.com](http://www.ibexshow.com).*



## ACR Electronics launches next gen ResQLink Personal Locator Beacons

Incorporating first-hand feedback from survivors who have activated the beacons in real-life emergencies, the new ResQLink 400 and ResQLink View PLBs introduce user-friendly design innovations and add enhanced functionality to provide a range of adventurers with a trusted and affordable link to rescue in a life-threatening situation.

Bringing the benefits of ACR's unique digital display capabilities, the screen displays all the beacon's operational activities, including GPS coordinates, operating instructions, usage tips, transmission bursts, as well as battery power.



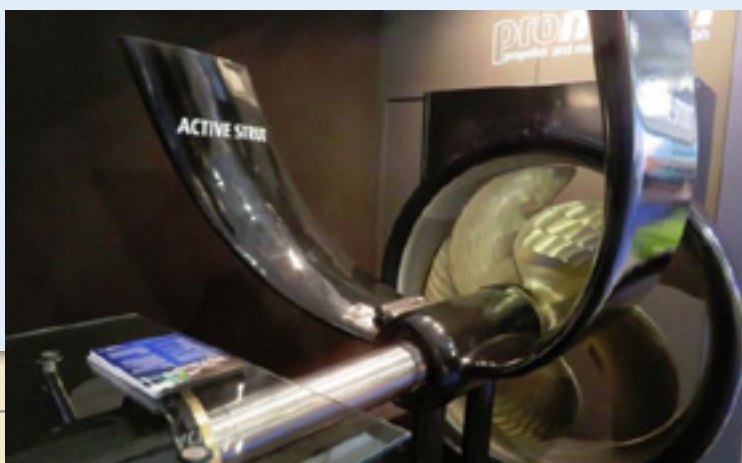
All the new design changes were suggested by members of the ACR Electronics SurvivorClub free beacon replacement program. The PLBs also include a new infra-red strobe light in addition to the ultra-bright strobe light to assist rescue crews using night vision goggles.

Using the next-gen network, anyone activating a ResQLink PLB can expect their beacon to be located within 100 metres (328 feet), 95% of the time, within 5 minutes of the distress signal. The new ResQLink series also incorporate a multi-constellation receiver utilising both the Galileo Global Navigation Satellite System (GNSS) as well as the GPS Satellite network for faster location and improved accuracy. Featuring built-in buoyancy, the ResQLink PLBs feature an operating life that exceeds 24 hours. Ideal for carrying in a pocket or attaching to a life jacket, the ResQLink View PLB weighs just 151g, while the non-display ResQLink 400 weighs 148g. Both measure 11.48cm x 5.16cm x 3.78cm.

## Promarin looks at new propeller shaft strut design

Propeller struts tend to be used on twin screw vessels to support the propeller shaft close to the propeller and they may be A or P brackets. Whilst the support is necessary, the struts create disturbance to the flow of water to the propeller and add frictional resistance so that they reduce efficiency. German company Promarin which specialises in propulsion systems for work vessels and ships has developed the concept of the Active Strut that contributes to the efficiency of the propeller rather than reducing it.

In the Active Strut, the struts supporting the propeller shaft are curved and also have an aerofoil cross section. They are rather like a half nozzle which is located in front of the propeller and serve to direct and speed up the flow of water into the top half of the propeller. Tests have shown that this can increase the efficiency of the propeller significantly and whilst exact figures are not available they are talking about the possibility of up to 5%.



The work on the Active Strut has been carried out in tank tests and the increase in efficiency comes partly from the improvement in the water flow into the propeller and partly from the reduction in resistance found versus conventional propeller brackets. The supporting struts in the Active Strut form almost a semi-circle, meeting the propeller shaft bearing at almost a right angle.

## NEW PRODUCTS

### Bison project outboard about to hit the water

Cimco Marine AB is developing the new generation Diesel powered outboard with a six cylinder, twin turbo, 3-litre diesel engine from BMW as a basis.

Internally the project is known as the Bison project. The next generation prototypes are currently being built and are scheduled to hit the water in early July. Start of production is scheduled for spring 2020.

“The Bison project is proceeding with unchanged intensity. Identified improvement potential from the first sea going concept prototype is now being fully implemented in the next generation prototype “Bison P1A”. The Bison P1A will be delivering 300hp on the propeller shaft, meeting the required emission standards and expected fuel consumption.

In the tests performed up to this point the OXE Diesel 300 is expected to consume about 40% less fuel than a 300hp petrol outboard. This reduction and the fact that it runs on diesel will significantly contribute to reduced environmental impact for the OXE Diesel 300.



### New rapid propeller manufacturing service launched

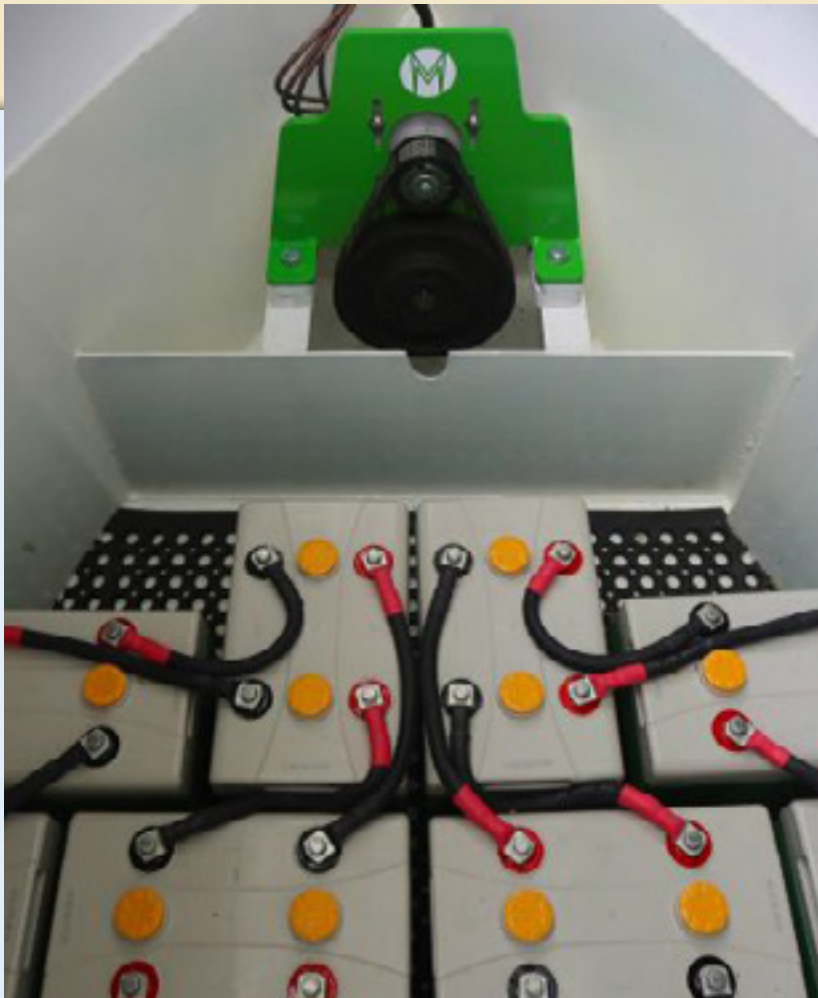
CJR Propulsion has launched a rapid design and manufacturing service to deliver bespoke, fully-machined Class S propellers in two weeks.

The move follows on from a £4m investment at its Southampton facilities and is for propellers up to 1.5m in diameter.

“Regardless of whether or not we have the original vessel

and engine data, we can reverse engineer any supplier’s prop and stern gear set-up,” explained Mark Russell, CJR Propulsion and CJR Fabrication MD. “Using the data we gather, we can accurately determine the vessel’s existing performance and understand what enhancements are available through our approach.”

The service can be used when a prop is damaged or for boats not meeting expected performances or where vibration or poor ride comfort are an issue.



### Electric narrowboat powered by DBS Leoch

UK battery company, DBS Leoch, has supplied 24 2V lead carbon batteries to Mothership Marine to store energy for its new solar electric narrowboat.

The ten solar panels onboard the 57ft Shine narrowboat can provide up to 1.89kW of power per hour which is stored in the 28.8kW bank of batteries supported by the DBS Leoch batteries.

Henry James, DBS Leoch MD said that electric power is an innovative technology for the UK marine sector. "Mothership Marine's brilliantly-designed solar electric and hybrid narrowboat is leading the way and we're

delighted that Mothership Marine has chosen our range of Lead Carbon batteries to power the narrowboat aptly named Shine," he said.

The Mothership solar electric narrowboat is a purpose-built solar powered boat with a 10kW electric motor and 6kW back-up generator. The boat includes upcycled timber throughout and William Morris-inspired interior designs.

### Humphree launches larger stabilisers

Swedish company Humphree has found an expanding market for its fin stabilisers that were developed from experience with interceptors. The range of fin stabilisers was developed to take advantage of the fast-acting electric servo motors that the company had developed to operate their interceptors. The speed of response of the motor is a vital element in any automatic stabilisation systems and Humphree quotes a response time of 0.7 seconds for their servo motors.

Currently the range of stabiliser fins available from Humphree extends to 1 sq.metre and for larger vessels the fins can be doubled up. The new fins planned to be introduced to the market in the next few months will be sized to meet the requirements of larger vessels and in the workboat sector one of the main applications is likely to be for survey and diving vessels which require a stable platform for their operations. The fins can operate to stabilise the vessel when underway as well as when stopped or operating at slow speed.



## NEW PRODUCTS

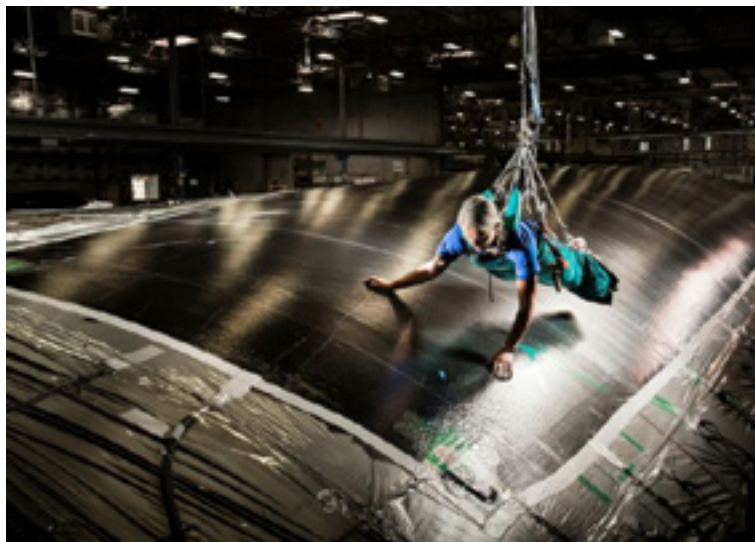
### First Voyage Data Recorder solution for inland shipping

Orolia has partnered with Radio Holland to develop the world's first Voyage Data Recorder (VDR) solution specifically designed for inland shipping.

The Inland NW6000R VDR solution will enhance safe navigation and ship performance and provide tools for understanding the cause of incidents. Radio Holland will also be installing Orolia's Netwave VDR NW6000 series as its preferred global VDR solution for retrofit and newbuild projects, while Orolia will utilise Radio Holland's established global network as one of its globally preferred service partners.

Paul Smulders, CEO Europe for Radio Holland, said: "The VDR is obligatory in Deepsea Shipping, but for inland shipping it is also a relevant tool to enhance safety and ship performance. The NW6000R VDR is perfectly suitable to monitor, measure and improve the performance of the ship."

The architecture of Orolia's renewed Netwave NW6000 VDR system is based on the latest ethernet technology, using PoE (Power over Ethernet) solution. This leads to reduced need for cabling saving in installation time. As an increased number of navigation and communication equipment with ethernet output will become available onboard ships, the NW6000 VDR can provide additional tooling for performance measurements. Next to the standard VDR function, the NW6000 VDR can be used for optimising ship performance.



### North Sails launches a suite of new sails

Rather than using traditional sailcloth the 3Di NORDAC is made by molding polyester into a unified composite structure giving a smoother shape which is said to be better at resisting stretch and distortion. In development for more than two years, the 3Di NORDAC is made much like a fiberglass sailboat - with a solid core of fused polyester meaning the sail will not delaminate and is heat, humidity and UV resistant.

North Sails 3Di technology is also put to use with a new jib for the Melges 20 designed using the company's

membrane software which simulates sail structure and design. "Simulating the data collected from the North team racing on the [Melges 20 world championship] circuit with our in-house software, we were able to create a new generation of jib," said class leader, Giulio Desiderato.

The new RJF radial jib for the Lightning sets and trims to match with the MF-2 (Fisher) mainsail. The goal was to develop a jib with similar shape to the JF-2, using a radial construction to maximise the sail's ability to hold its shape.



### Survitec's new boat launching davits

Engineered with its European-based partner the Survitec range includes different davit types suitable for liferafts, rescue boats and fast rescue craft. Designed and manufactured in Europe, to European standards, the davits have been created to withstand the harsh environments in which they operate.

Marine grade stainless steel is known for its resistance to corrosion, which is why

key elements have been made from the alloy, including the remote-control function, shackles, securing wires and cover plate. Further protection against corrosion is by way of a three-layer paint system that can adhere to Norway's stringent NORSEK standards developed for the petroleum industry.

A grooved drum guides the fall into the correct position and packs it tightly within the drum as the fall is wound up and down during the lifting and lowering of the raft or boat. This ensures that the top layers of the fall wires do not force themselves into the lower layers, avoiding abrasion and possible bights of the wire, thus eliminating any jerking or snatching motions when the liferaft or rescue boat is lowered.

The davits are supplied as a fully tested and assembled unit, which can be installed in or out of drydock. Providing the pedestals have been installed and tested, a Survitec technician can assemble and commission the davit when the ship is in port, reducing the ship's downtime and costs.

### Propeller concept unveiled by Teignbridge

Global propulsion designer and manufacturer Teignbridge Propellers has launched its revolutionary new modular propeller. The unique propeller is manufactured in aluminium bronze and is modular in design. Each blade can be removed and replaced if necessary. Known as the 'Clamp on Blade' design (CoB) it allows the vessel owner to store spare blades on board and if damage occurs, replace the blades without going to dry dock.

In addition, large propellers can be boxed or packed into a container for ease of transportation. The world-wide patent is pending, but the UK patent was confirmed this month.

According to Mark Phare of Teignbridge Propellers, on many vessels a damaged blade can be replaced by ballasting the boat to get the top blade and hub clear of the water. He recommends that a buyer of the new propeller system purchase one or two spare blades with the prop and keep them onboard for emergencies.



## NEW PRODUCTS

### Whale has launched a new 8 litre grey waste tank with Intelligent Control

The new 8 litre grey waste tank with Intelligent Control handles typical shower and galley sink waste up to 90°C even in complex multiple outlet systems. Models are available with a choice of one or two sensors. The double sensor option allows boat builders to fit an additional pump to one tank for a compact high capacity solution, or a high-level alarm.



“Working in close partnership with key boat builders, we see the key trends toward marine vessels with more and more complicated water systems and multiple outlets- sometimes even including dishwashers and baths on board,” explained Simon McFarland, Whale’s marine product manager.

“Whale has listened to the positive feedback on our 20 litre Grey Tank and continues to expand our marine range with innovative products, ideal for vessels with complex requirements.”

Whale’s triple seal technology prevents water ingress through three key features. Firstly, the electronics are housed in a single piece moulded lid design which incorporates the sensors. Secondly, a splash-proof seal prevents bilge water from entering the sensor housing and thirdly the sensors are fully encased in a highly adhesive potting compound.

### The new Supreme Pro battery charger series from WhisperPower

WhisperPower’s range of products now includes the Supreme Pro battery charger series, specifically developed to meet the increasingly stringent requirements that shipping installations impose on power electronics.

Nowadays, commercial ships and superyachts are all equipped with a growing number of more complex electronic devices that, even under the most extreme conditions, require a non-stop reliable power supply. As a result, increasingly higher demands are placed on the DC voltage stability, interference suppression and system integration with navigation and communication systems.

Roel ter Heide, director-owner of WhisperPower, explained the company has developed “a new range of safe and robust 24V WP-BC Supreme Pro chargers with the highest interference suppression Class B, standard UL conformity, and for the professional maritime sector, DNV, GL and ABS certification”.

He added: “The compact and silent Supreme Pro is equipped with the statutory alarms and a volt/ampere metre on the front and is the perfect main charger / power supply for a GMDSS system with backup battery.”





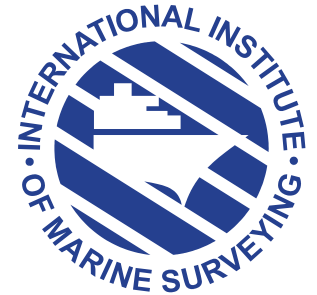
Professional Qualification in  
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# 2

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# Drones herald in new era of inspections



*Photo Credit: Mickael Brock AMI Studio*

Visual inspections and steel thickness measurements are key elements of renewal surveys. Preparing ships for these activities is time-consuming and costly. DNV GL has been pioneering using drone solutions to assist in and speed up the process for several years.

DNV GL has been using camera-equipped drones in surveys since 2016. The concept, the technique and the equipment were developed by the surveyor team in Gdansk in response to customer enquiries. A traditional survey requires rafting, roping or staging so the inspection personnel can reach all relevant structural elements. Rafting takes additional time to ballast and de-ballast the vessel; both roping and rafting often require voyage surveying. Setting up staging can even take days.

## NEW TOOLS FOR REMOTE SURVEYS

This disproportionate effort caused owners to inquire about alternative methods. In addition, staging often damages surfaces and coatings that must be repaired. In certain situations owners have to hire subcontractors providing rope access techniques, an especially hazardous type of work.

These conventional inspection methods put ships off-hire for weeks, which means lost income. Logically owners have an interest in keeping these times as short as possible. This led to the idea of using drones. "We started the drone project in 2015 to make

surveying smarter, more efficient and economical for the owner, and safer for surveyors,” says Tomasz Oledzki, Head of Section Fleet in Service (FiS) Poland at DNV GL Maritime. The first step was to attach a high-resolution camera to a drone so surveyors could take a close look at hard-to-reach places. Several off-the-shelf drone models were tested. The team ultimately chose a medium-sized model for interior inspections, and a larger, more powerful one for outdoor inspections where wind can make positioning and controlling the drone more difficult, for example on offshore platforms.

#### A NEW DIMENSION: THICKNESS MEASUREMENTS

“We now have three years’ experience performing camera-assisted visual inspections on ships and offshore structures using drones,” Oledzki continues. “But our customers expect more. They would like us to cover the full scope of inspections using

this advanced technology, including thickness measurements. So in mid-2018 we decided to venture into this field and began developing a flying thickness measurement system. We built several prototypes and finally arrived at a design that satisfied our requirements.”

An attachment frame was engineered in-house by the Gdansk team in an iterative process including repeated practical testing. Its design is compact and ‘universal’, allowing surveyors to interchange the close-up inspection camera for the ultrasonic measurement head on a drone at any time, or attach the frame to another drone in case the original one is damaged. This standardization minimizes the amount of equipment surveyors have to carry when travelling to a ship, especially when dispatched by helicopter. “Reducing the amount of luggage was actually our key objective when developing this system,” stresses Oledzki.

What is more, key parts of the attachment frame are made by the DNV GL team on a 3D printer, which means the team can now manufacture any number of identical frames in a repeatable process, whether for their colleagues at other DNV GL offices or for spare parts.

Today we can say we have the capability to offer owners the full package of drone-assisted remote survey services including close-up inspection and verification of the thickness measurements.

#### BOTTOM-LINE VALUE FOR OWNERS

“We have successfully tested the new thickness measurement drone on an MPV, some bulk carriers and this shuttle tanker,” says Oledzki. “The results are very positive – the system works well and delivers reliable data. Today we can say we have the capability to offer owners the full package of drone-assisted remote survey services including close-up inspection and verification of the thickness measurements.”

Alba adds: “We see a great opportunity to accelerate the survey process and minimize off-hire times; what is more, we can actually perform some inspections during the voyage of a vessel when cargo spaces are accessible. This is of great value to owners and operators.”

The biggest challenge the Gdansk team faces is to convince ship and cargo owners that the new methods delivers good and reliable results, says Alba. But the response from customers is excellent: “The owners for whom we have performed drone surveys to date have been very satisfied, and in many cases they were outright surprised how quickly and efficiently inspections can be done, and how little owner involvement is required to provide access to the structure. Whereas in the past, the surveyor had to be physically taken to the structural element to be inspected, the drone now ‘brings the structure to the surveyor’ for real-time inspection.”



Photo Credit: Mickael Brock AMI Studio



Photo Credit: Mickael Brock AMI Studio

#### LIMITATIONS AND OPPORTUNITIES

Yet owners should not foster unrealistic expectations, Leszek Alba cautions: "The critical point is the condition of the vessel interior." Oledzki explains: "When we receive a request from an owner for a drone inspection, we take our equipment on board and first assess the condition of the vessel to see whether thickness measurements can be done with the drone. If the coating is intact and the surfaces are clean, we can get good visual inspection results and high-quality

thickness readings. If the condition of the vessel is not suitable for ultrasonic thickness measurements, we can still use the drone with a mounted camera to perform a visual inspection."

"Drone or not, it is impossible to take ultrasonic measurements on corroded steel because the measurement head is unable to establish direct contact with the steel to get a reading," stresses Alba. "Ultrasonic measurements are suitable to confirm the intact

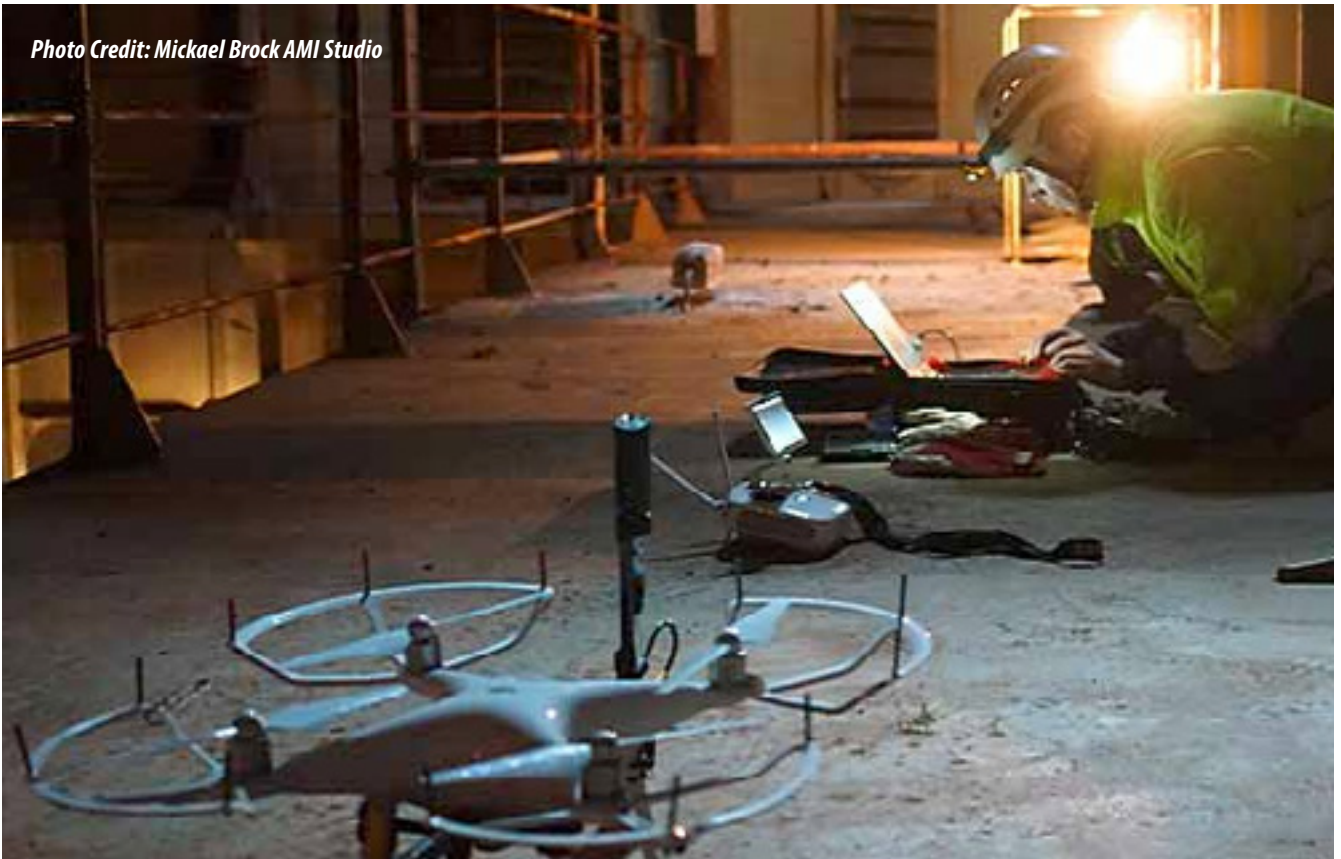
condition of structures. Our drone inspections serve the purpose of verifying the good condition. They are ideal for renewal surveys of younger vessels that are five to ten years old."

The classification rules require a wide range of thickness measurements, most of which are typically performed by subcontractors. "It is important to note that our measurements are only supplemental to what the contractors are doing," Alba



Photo Credit: Mickael Brock AMI Studio

Photo Credit: Mickael Brock AMI Studio



points out. "We only access structures that cannot be reached by conventional means. We use drones to perform close-up surveys and to verify and confirm that a ship is structurally in good condition as required under class rules. The drone accelerates this spot-checking process dramatically so we can accomplish it within a single visit. We can even perform it during a voyage or port stay." Wherever conditions are detected that warrant further investigation, traditional access using staging is unavoidable, he adds; but when the drone survey shows that everything is in good condition, this expense can be avoided.

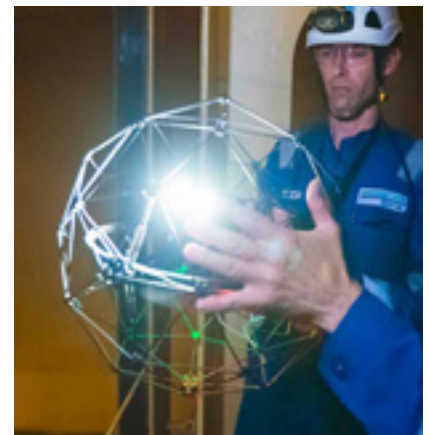
#### AN EVOLVING TECHNOLOGY

Younger tankers, MPVs and bulk carriers are the primary targets of DNV GL's drone survey offer. Oledzki says that conceivably drone measurements could be extended to cover the full scope of thickness measurements at some time in the future. And that is by no means all this technology could accomplish. "The last step of this development could be

autonomous drones performing close-up inspections and thickness measurements," says Leszek Alba. "They could either navigate based on sensor and navigational algorithms or using an electronic model such as the 'digital twin'. This would enable the surveyor to stay outside, simply watching the computer screen and letting the drone do its work independently."

As for the present, incorporating thickness measurements in drone surveys is already a big step, says Alba: "Today we have gathered enough experience and solid results to know what we can achieve in assessing the condition of structures. Autonomous drones will essentially do the same but with less operator involvement."

And as Tomasz Oledzki says, "We know the ship, and as surveyors we know exactly what we are looking for." "We not only take pictures or measurements but we are competent to assess them and confirm the good condition of the ship, and we take responsibility for every aspect of these services."



Tomasz Oledzki, Head of Section Fleet in Service (FIS) Poland at DNV GL Maritime

# The role of the Special Casualty Representative in the salvage of mega box ships

Nick Haslam joined Brookes Bell as Partner in March 2019 after 22 years in the marine consultancy industry.

He previously served at sea for 21 years in all ranks up to Master. He has considerable towing and anchor handling experience and previously worked for four years with a salvage company onboard salvage tugs. He also served on various ship types including reefer, container, bulk carrier, general cargo, tugs and AHTS. Nick has carried out a variety of surveys and opinion-based work since becoming a consultant. His particular specialisations are in the areas of salvage and wreck removal; towing disputes; offshore operations; and salvage arbitration. In 1999, Nick was appointed to the Lloyd's Salvage Arbitration Branch SCR Panel as Special Casualty Representative (SCR), in 2017 he was appointed as the SCR representative and sits on the SCOPIC Committee at Lloyd's.

BY **NICK HASLAM**,  
PRINCIPAL MASTER MARINER,  
BROOKES BELL



Amid the growing trend of an increase in ship sizes, Mr. Nick Haslam uses his insight as a Special Casualty Representative (SCR) to consider what the priorities are during salvage of mega box ships. This article was first published in the Standard P&I Club's Mega Box Ship bulletin at <https://bit.ly/2XGYc5I>.

### Definition of an SCR

The role of the Special Casualty Representative (SCR) is to monitor the salvage services and operation then provide a final salvage report, which forms the basis for the settlement of any claim for SCOPIC remuneration (under the Special Compensation P&I Clause) that the salvor might have with the shipowner. Whilst usually appointed by the shipowner and/or its P&I club, the SCR performs this role on behalf of all parties and their insurers, including all property interests.



Salvage operations generally operate on a 'no cure no pay' basis so a salvage reward will only be payable where there is sufficient value in the property salvaged. As transportation of the quantities of oil and other potential pollutants has increased over the years, so too has the potential for damage to the environment. In order to properly incentivise and remunerate salvors for actions and steps taken to prevent damage to the environment, the 1989 Salvage Convention introduced special compensation under Article 14.

Article 14 allows salvors to receive special compensation for their expenses and equipment where salvors assist ships in situations where there is a threat of damage to the environment. Under Article 14, salvors can recover their expenses and with the possibility of an uplift where environmental damage was prevented. However, such payment is only payable under Article 14 to the extent it exceeds the traditional Article 13 property based salvage award.

Concerns in respect of Article 14 being overly cumbersome and whether it was in fact disincentivising

salvors were raised. Accordingly, in 1999 the Special Compensation P&I Clause (SCOPIC) was introduced into the LOF contract. SCOPIC sought to simplify matters by introducing a tariff to calculate the salvor's special compensation together with an uplift fixed at 25%. Article 13 awards will be discounted by 25% of the amount by which any Article 13 award exceeds the SCOPIC remuneration.

It is important to note that the incorporation of the SCOPIC clause is optional under the LOF contract and must be incorporated by way of reference. If SCOPIC is not incorporated, Article 14 will apply, if relevant. If SCOPIC is incorporated but not invoked, Article 14 will not apply.

Once SCOPIC is invoked, an owner must provide SCOPIC security in the sum of \$3m within 2 working days of the clause being invoked. SCOPIC remuneration is payable for the sum in excess of the traditional salvage award under Article 13. As it is assessed by reference to an agreed tariff of daily hire rates for equipment and personnel, it is essential that a Special Casualty Representative (SCR) is appointed in order to monitor operations and costs.

## Engaging an SCR

The SCR must be appointed from the SCR Panel. The SCR is normally appointed by the P&I club on behalf of the owner of the ship. The SCR performs this role on behalf of all parties and their insurers, including all property interests. Similar to the salvor, the SCR is to use their best endeavours to assist in the salvage of the ship and the property thereon, and in so doing, to prevent and minimise damage to the environment. However, the salvage master remains in overall charge of the operation, makes all final decisions as to what they think is best and remains responsible for the operation.

The role of the SCR is to monitor the salvage services and liabilities and provide a final salvage report which forms the basis for settlement of any claim for SCOPIC remuneration which the salvor might have against the ship owner. Day to day the SCR will work with and scrutinise the salvage master's plan and check the accuracy of the daily progress reports and the daily running cost sheet. An SCR should be appointed as soon as SCOPIC is invoked to ensure that they are present at the casualty from the outset. The

objective is for the SCR to be fully conversant with the operation and conditions; to be available to consult with the salvage master and to be able to comment and assist as necessary. It is expected that the SCR will be aboard during any major salvage activity.

Manifests should be provided to them at the time of their appointment so that analysis of the various International Maritime Dangerous Goods (IMDG) cargoes can commence whilst mobilising. The volatility of the various dangerous goods carried on board mega box ships can and does cause serious problems for salvors. The SCR will work closely with the salvage master to identify the potential risks from the various cargoes and ensure that suitable measures and actions are promptly taken.

### Parameters of the Role

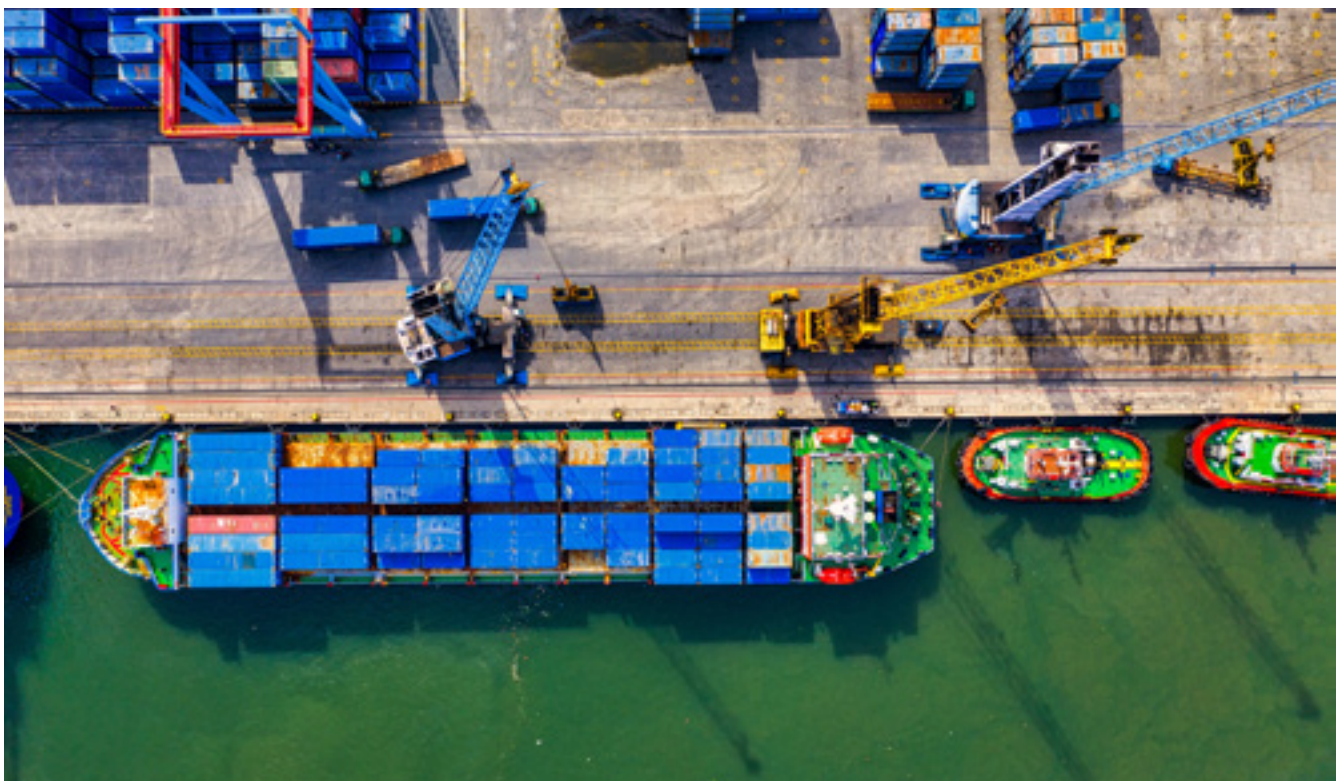
The SCR has a duty to report, observe and consult with the salvage master and to endorse and circulate the salvage master's daily salvage reports to interested parties. If the SCR disapproves of the way the salvage operation is being conducted, or the type or

number of craft, personnel and equipment being used, they should inform the salvage master in writing as soon as possible and, if not satisfied with the salvage master's daily salvage report, publish a dissenting report to be issued to all parties. Likewise, the SCR should also endorse and circulate the final salvage report to interested parties.

However, the SCR has no power to direct the salvage master to employ more or less resources in the salvage operation and this decision must remain at the salvage master's discretion. The SCR similarly cannot bind the owner of a ship or cargo to any particular course of action.

The SCR must not be requested by any party, nor volunteer themselves, to provide expert opinion either during the operation or subsequently which would undermine the independence of the role. An SCR can give evidence of fact with regard to salvage issues, but should not give evidence of opinion.

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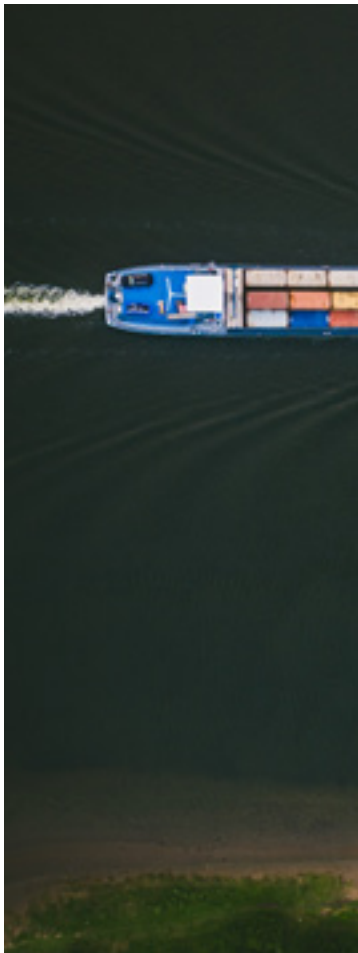


# Losing control of the beach was just the icing on the cake (or handling media relations when disaster strikes)



BY MARK CLARK,  
DIRECTOR OF THE  
MTI NETWORK

Mark Clark has over 25 years of working on crisis desks in both the commercial world and UK government transport and health departments. He has provided strategic media handling advice to many of the world's leading shipping companies and has been on the front line in numerous high profile casualties.



Formerly a former print journalist and broadcaster often behind the microphone on both the BBC and independent radio stations across Europe, Mark was also a personal press officer to a UK Cabinet Minister for a lengthy period and spent some time at the very highest level of government.

Between 1997 and 2011 he headed the UK Maritime & Coastguard Agency's public relations and media department. During this time he handled many significant shipping, yachting and oil incidents and worked closely with many companies and teams within the oil and gas sectors. He has been involved in many multi-faceted drills, training exercises and on-line simulations of casualty situations to test organisations, local authorities, government bodies and shipping and energy companies.

For the diverse global media, a large mega box ship casualty with its plethora of goods being carried will be a gift that keeps on giving. A coordinated media response is a necessity.

From the MSC Napoli, which occurred in January 2007, to the container ship groundings today, the many lessons that incidents with box ships of varying sizes have taught us about being responsible for the co-ordination of media management are worth repeating for any future major casualty.

In 2007, I was Head of Communications at the UK Maritime & Coastguard Agency (MCA), when the MSC Napoli developed large cracks in its engine room whilst en route to Sines in Portugal. The 62,000-tonne ship took in water through a hole in its side during a storm in the English Channel and the crew were forced to abandon ship. Salvage efforts over the following few days did not go to plan and the ship had to be beached off the East Devon coast in the UK after her back broke. Everyone recognised

that had she been allowed to sink mid-channel, it would have been a catastrophe for both the English and French coastlines.

Let's also not forget that, in 2007, just 12 short years ago, Facebook was still in its infancy and there was no Twitter, no Snapchat and only very limited capability smartphones. In short, there was no social media to really mess up your day and provide instant criticism and analysis on the go.

In the present day, as a rescue helicopter reaches a ship to assist in evacuating its crew, news organisations will immediately start tweeting updates.

However, even in the early stages of the MSC Napoli incident, the media were speculating that various town councils in Northern France had pressurised the French government to ensure that the casualty came ashore on the UK side of the English Channel, despite our protestations that this had nothing to do with tourism issues and all to do with the UK's undersea topography!

The MSC Napoli was carrying 2,323 containers, 158 of which were classed as having potentially hazardous contents, although the ship's overall capacity was more than 4,400 TEU. Built in 1991, at the time, it represented one of the largest container ships on the high seas.

However, due to the step change in capacity that has occurred over the past ten years, the MSC Napoli was nothing like one of the 20,000-plus TEU behemoths that might one day find itself on a beach near you.

After the MSC Napoli grounded, the logistical issues were immediate and apparent as they would be in any mega box ship casualty, but the sheer size of mega ships and the huge quantities they transport mean that these problems will be magnified.

## WHAT ARE THE IMMEDIATE ISSUES?

Where to house the journalists

- A main briefing room for journalists (to host live media conferences) will need to be arranged as well as rooms for plans, technical back-up, maps, and a communications infrastructure and someone to run, support and maintain it (ie arrange WiFi, routers, power, links, a car park for satellite trucks, etc). In 2007, whilst working for the MCA and responding to the MSC Napoli casualty, I 'took over' a local hotel and booked out its main function room for a couple of weeks, providing journalists with immediate access to food and drink, toilets and so on.
- Expect journalists and news crews to come from all over the world if the casualty has a televisual impact. In the case of the MSC Napoli, automotive plants began to run out of car parts in South Africa and some workers were put on 'short time'. This was enough for yet another TV crew to fly over from the region, especially to follow a story where jobs and livelihoods were being affected.
- It is important to actively coordinate the shipowner's response to the casualty via the media and ensure that the messages are accurate and verified, as well as manage the media on which they are carried, whether social or mainstream.
- Social and mainstream medias need to be monitored 24/7 to provide prompt rebuttal if the

stories grow even more outlandish as journalists and other individuals, who by and large won't know much about shipping, seek new angles and stories.

- Ensure that the key personnel from the various agencies and authorities have the opportunity to discuss options and issues. If one agency fails spectacularly, then the blame is shared equally, with adverse reputational risks for every player regardless of their efforts.
- Significant administrative back-up is also required for any large casualty.

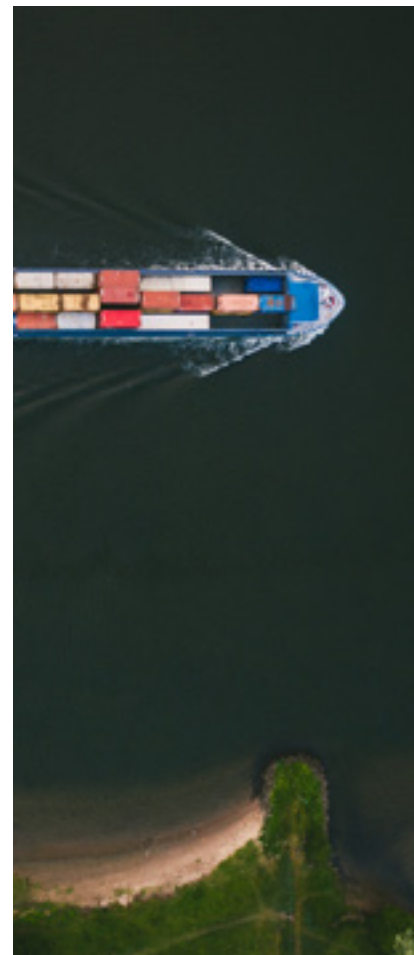
## MAINTAINING SECURITY

In the case of the MSC Napoli, the containers that washed ashore became a magnet for public and media interest, initially for the curious, then the opportunistic local pilferer. When newspapers printed maps of the location, it helped gangs carry off huge quantities of the beached cargo, which included automotive parts and wine barrels. This was aided and abetted by the lack of knowledge of UK law by both the public and media in such situations. 'Finders keepers' became the norm, rather than considering it as blatant theft from the beach.

Immediate security of the affected area would also need to be uppermost in any early decision-making.

## CARGO OPERATIONS

There were two major difficulties that we didn't share with the media at the time of the MSC Napoli casualty: one was the immediacy of sourcing suitable equipment for the emergency discharge of over 3,600 tonnes of heavy fuel oil. Another major problem was to find space to land the containers for 'triage'. The





MCA needed to inspect and weigh the discharged containers on a piece of land formerly used as a football ground but swiftly concreted over for container reception, before onward transport to their destination or for disposal if they were considered beyond saving.

Another finding, well known to the industry, was the significant amount of overweight triaged containers compared to the manifest.

The sheer volume of discharged containers brought ashore by barge caused serious difficulties at the nearby port of Portland. Unknown to the media at the time, we were within 15 containers of closing the port.

This was from a box ship carrying 2,323 containers. For argument's sake, what would you do with the other 18,000 containers today if your mega box ship ends up in the same condition?

Few ports have the emergency facilities and space required to land, assess and turn around thousands of containers from a casualty. In future cases involving a mega box ship, this will be a major critical factor and one which will undoubtedly draw the eye of the media.

### **POLLUTION ASPECTS**

Environmental concerns will take a huge amount of time and effort, and in the MSC Napoli's case, we also had to deal with concerns that were being expressed about the 900 guillemots and 200 gulls which had been found suffering from the effects of oil. Some had been found up to 25 miles away, and we needed to explain our co-ordination efforts with the environmental agencies to recover and clean any affected birds. The

cleaning and care of affected wildlife was slow and expensive. It was probably money well spent for reputational purposes, but I wonder how many birds were saved?

Interest from the mainstream media gradually lessened, and we endeavoured to turn the whole episode into a routine work site. But, nevertheless, the story remained somewhere in the news for over a year.

### **MANAGING THE MEDIA**

Our media priorities at that time would be the same for such a large casualty today:

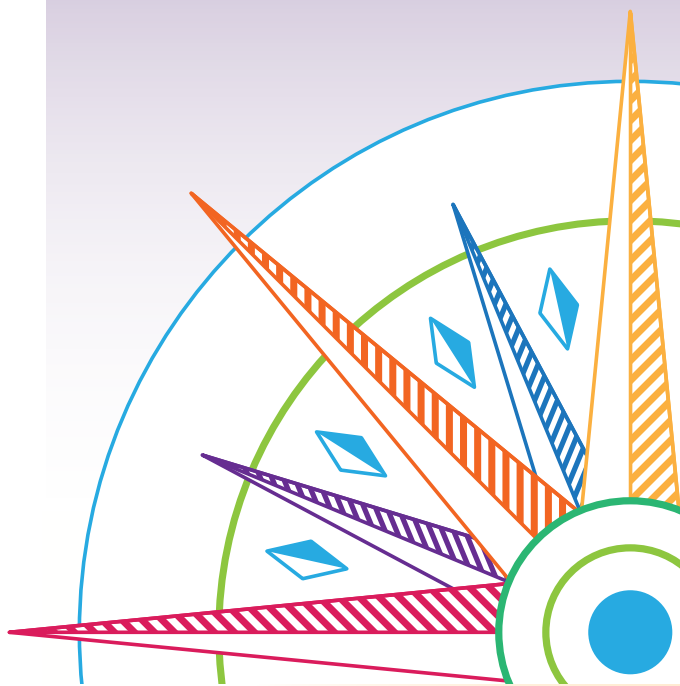
- turn the news into a routine story
- identify the shipowner's key partners/stakeholders
- respond to concerns relating to protection of the environment
- maintain a core script and a definitive Q&A
- identify key spokesmen
- establish hotline telephone numbers.

### **CONCLUSION**

The MSC Napoli had everything the media wanted. No one was hurt or worse throughout the incident; striking pictures; human stories; people grabbing anything they could pick up and carry away in the cold and wet of an English beach; stormy weather conditions; stunning pictures of a ship in distress. In the event of a mega ship casualty now, the media stories will be about pollution risks, cleanup, the environment and the way we transport the massive amounts of goods we need for our 'just in time' economies. – just as they were in 2007.

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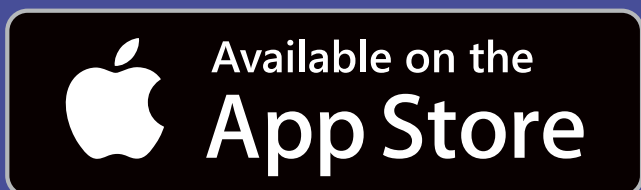
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