THE REPORT

MARCH 2019
ISSUE 87

The Magazine of the International Institute of Marine Surveying

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THE REPORT

The Magazine of the International Institute of Marine Surveying

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Editor's Letter

Dear IIMS Member

Welcome to the March Report Magazine 2019, edition 87.
Is it me or do I detect a growing mood of optimism generally in the shipping and yachting world amongst surveyors? If feedback and comments received from members are anything to go by in recent weeks, then the answer is yes. Indeed, Capt Zarir Irani refers to an upturn in the Middle East region in his President's column on page 5.

I have chosen to publish an opinion article in this issue written my Capt Rich Madden. This first appeared online recently at gCaptain.com and I subsequently shared it on the IIMS LinkedIn feed. The article prompted the biggest reaction imaginable and one of the largest number of comments for any post we have shared on social media ever. It was instant and the stark views of some were thought provoking. In his article, Rich considers the truly awful start to the year, which saw an unusually high number of major accidents and incidents at sea in January resulting in huge loss of life to dozens of seafarers and multi million pounds worth of damage to vessels and cargoes. If ever one needed reminding of the treacherous and at times unforgiving nature of the marine world, this is surely it? Rich's article starts on page 58. It is a sobering read, but I recommend it to you.

For the second time, Lee Wartlier bemoans the lack of marine surveyors at the annual London Expert Witness conference, held late last year and cautions against the assumption that some people might have that undertaking expert witness work is straight forward – see pages 47 to 49.

Continuing on with the theme of expert witness, the article on page 42 entitled *'Ten Golden Rules of Loss Prevention for Expert Witnesses'* has been written by ITIC. Helpfully, they have also published their standard trading conditions for expert witnesses too.

Nippin Anand has written for the Report Magazine before. In his article from page 68, Nippin once again presents an alternative and different view to many of safety management and the culture that often lies behind it.

I am grateful to veteran, retired surveyor, Jeffrey Casciani-Wood, for his in depth article entitled *'Considerations on the Metacentric Stability of Narrowboats'*. As Jeffrey told me himself just a couple of weeks ago, this topic has particular relevance as there are reported instances of owners attempting to take these vessels into the open sea, a purpose for which they are most certainly not suited to!

Recently I had the pleasure of co-hosting our Baltimore Conference alongside James Renn. He introduced me to Craig Norton, President of InspectX. Craig, an upcoming second generation surveyor, got to the point where he was fed up of scribbling his surveying notes down whilst on board the vessel only to have to come home to burn the midnight oil preparing his report, thus duplicating his work. He felt his work/life balance was wrong. With this in mind, he set out to create a solution to this age old problem. The result is certainly impressive and, for those surveyors who want to get ahead with technology, InspectX seems to offer an interesting possibility – see page 50.

In our occasional look at business matters, we have published two articles in this edition. The first is *'The Golden rules for writing good, persuasive website content and how to present it'* – see page 64. And for UK organisations registered for VAT, the article about the Making Tax Digital system, set to launch in April, could prove invaluable (page 62).

Survey well.

Mike Schwarz
Chief Executive Officer
International Institute of Marine Surveying

Tel: +44 (0) 23 9238 5223 | Email: info@iims.org.uk | IIMS, Murrills House, 48 East Street, Portchester, Hampshire, PO16 9XS, UK | **www.iims.org.uk**

The President's Column

Dear IIMS Member

Hello and good day from Dubai.

It's been a fantastic winter for us in the Middle East. We have had some really good temperatures and open skies which are very welcome.

We have been relatively busy in Dubai with the IIMS UAE Branch supporting the International Superyacht Summit on 27th & 28th February 2019.

We are looking forward to a good 2019 and at least the Middle East markets have started receiving good news about large projects and an increase in transshipment traffic and cargo movements in the region. Also Fujairah is leading the way in the region by banning open loop scrubbers. As a result this has left its mark on the international map as being one of the leading ports in the world to make such a stand. It clearly marks a strong case for stocking compliant fuel.

IIMS now has a presence in over 100 countries with members spread far and wide. That's a great number of countries who can boast of having qualified surveyors, the true value of which is starting to be recognized by the underwriting community.

We do hope that the first quarter of 2019 has been rewarding for our in-country representatives and regional directors who have received emails sent through UK Head Office to indicate what is expected of them as a representative of our Institute internationally. We also welcome names of others who would like to take on these responsibilities with a view to growing their area into a fully functional IIMS branch.

I believe that the growth of our Institute will be determined by its international representation, so it is vital that links are maintained with IIMS Head Office and problems, suggestions and points for improvement are most welcome. Feedback and support from any one of us volunteers, management board members, or head office staff will be extended as much as possible. We therefore look forward to your responses and if we receive these before the third week of March, we will be more than happy to discuss them at the upcoming Management Board meeting on 20th March 2019 at Portchester.

It's going to be an exciting 2019 for the IIMS. There will be some important decisions with regard to investments going forward, including greater digitalization and a new accreditation program for existing and new members in the pipeline.

Lastly, there is the landmark 10th year celebration of the UAE Branch (which now stands as the oldest serving functioning branch established outside the UK), which will take place on board the QE 2 at Port Rashid on 20th November 2019. We are currently inviting speakers and sponsorship interests for this event so please note it in your calendars and write to me personally if there are any ideas and suggestions that you may have about participating at this conference.

I end this column by wishing one and all a great 2019 ahead. Let's remember we have put behind us economically one of the most difficult decades in the shipping and yachting history that most professionals have seen, so it's now time to gear up and look forward to blue skies and following winds.

Wishing all you professionals the very best!

Zarir.

Capt. Zarir Irani, *President*
International Institute of Marine Surveying
Email: Capt.Irani@constellationms.com

IIMS Organisation & Structure

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NORWEGIAN ELECTRIC SYSTEMS SELECTS CORVUS ENERGY STORAGE SYSTEM FOR NEW FERRIES

Corvus Energy has announced that it has been selected by Norwegian Electric Systems (NES) to supply lithium ion battery-based energy storage systems (ESS) for five new all-electric ferries being built by Havyard for Norwegian ferry operator Fjord1.

"Fjord1 continues to forge a very progressive path towards environmentally sustainable operations with these additional all-electric ferries," says Stein Ruben Larsen, Senior Vice President Sales at NES, a total system integrator of electric systems for the global marine market. With respect to their ESS selection, he remarks, "The proven reliability, safety and performance of the Corvus ESS was important in awarding this contract to Corvus Energy."

Fjord1's fleet modernization is impressive—the result of winning a number of tender competitions where low- or zero-emissions were specified by Norwegian authorities in an effort to reduce emissions from the ferry fleet. To date, Corvus Energy has supplied ESSs on eight Fjord1 electric ferries operating on four Norwegian coastal routes.

These five latest all-electric ferries are of Havyard 932 design and will be built in Havyard Shipyard in Leirvik, Sogn. Each ferry is 67 meters in length, holds 50 cars and will be equipped with air-cooled Corvus Orca Energy ESS that will supply electrical power to the ferry's NES all-electric power and propulsion system. The Corvus equipment is scheduled for delivery in 2019 and all five ferries will be fully operational on four additional routes in Norway by January 1, 2020.

MERCURY MARINE REACHES THE GRAND OLD AGE OF 80

On 22nd January 1939, E. Carl Kiekhaefer purchased a bankrupt engine manufacturing plant in Cedarburg, Wisconsin. Now, 80 years later, Mercury Marine is a company with 7,000 global employees and recognised worldwide as one of the leading manufacturer of marine propulsion systems.

"We look forward to celebrating with our employees and customers around the world," said John Pfeifer, Mercury Marine President. "Mercury has come a long way over the past eight decades through hard work and dedication of everyone who has been a part of our journey. While the past 80 years have been fantastic, we are looking forward to continued growth over the next 80 years."

Since 2008, Mercury has invested more than $1 billion into the expansion of research, development and manufacturing capabilities to develop its largest engine platform yet, launched globally in 2018. In total, 19 new four-stroke outboard engines were announced in February and May covering the 175-300hp range in both V6 and V8 which was revered in the marine industry and featured in national publications around the world.

Mercury will celebrate this milestone with its employees, customers and the communities in which they work and live throughout the year including a global employee celebration in September. In addition, Mercury will celebrate its 80th anniversary during the 2019 boat show season.

UK DEPARTMENT FOR TRANSPORT HAS LAUNCHED MARITIME 2050

Maritime 2050 is a collaboration between the Department of Transport and Maritime UK, the body for the UK maritime sector. This is the first ever long-term strategy for the UK maritime sector.

Maritime UK Chair Harry Theochari said: "For the first time the maritime sector has a real long-term strategy – setting out what government and industry will do to position the UK as the world's leading maritime nation over the coming decades in an increasingly competitive global context. The global ocean economy will double in value to $3trn by 2030. Competitor maritime nations are hungry for the prize, and Maritime 2050 will ensure that the UK is best-placed to capitalise.

The main strategic ambitions of Maritime 2050 are:

- Maximise our strength in maritime professional services, retaining and enhancing our UK competitive advantage in the provision of maritime law, finance, insurance, management and brokering, and developing our green finance offer.
- Lead the way in taking action on clean maritime growth enjoying economic benefits from being an early adopter or fast mover.
- Strengthen our reputation for maritime innovation, maximising benefits to the UK from new maritime technology through our world-leading universities, maritime small and medium enterprises (SMEs) and global companies.
- Continue to be recognised as the global leader in maritime safety and security standards and expertise worldwide.
- Grow our maritime workforce and transform their diversity enhancing our reputation as the world leader in the provision of maritime education and training.
- Promote a liberalised trading regime that delivers maximum benefit for our maritime sector.
- Support the continued multi-billion pound commercial investment in maritime infrastructure that makes the UK a globally attractive destination for all maritime business.
- Strengthen and enhance our reputation as a leading country in the International Maritime Organization (IMO), International Labour Organization (ILO) with like-minded countries to take action.
- Promote our UK wide leading maritime cluster offer with government, the maritime sector and academia working in partnership to make the UK the place to do maritime business.
- Showcase our UK maritime offer to the world, promoting all parts of the maritime sector including shipping, services, ports, engineering and leisure marine, and through London International Shipping Week (LISW) maintaining its status as the leading global maritime event.

Download and read the 52 page executive summary at **https://bit.ly/2TcDYdH.**

NON ADEQUATE FIRE PROTECTION ON BOATS IS A CONCERN

Most marine insurance policies state that boats must have adequate fire protection says Sea-Fire's Richard Duckworth.

But he says many boatbuilders are fitting the minimum protection they can get away with and crossing their fingers it will never be put to the test.

"For the last 20 years, major production boat builders have recognised they have a duty of care to protect their customers and to fit as standard a comprehensive engine room fire suppression system using fully tested and marine approved components," says Richard.

"Unfortunately, this is not mirrored across all the industry."

And he said safety and fire suppression should not be an afterthought in the build or refit process. Instead systems need to be designed specific to each boat as one size does not fit all.

"In many ways, it is understandable that fire suppression on board is overlooked. The actual percentage of boat fires in relation to boat usage is very small," he said. "However, as boats have become larger, the equipment fitted on-board has grown exponentially.

Read the full story at **https://bit.ly/2RMX7Go**

RCR engineers frequently come across vessels with no smoke or CO alarms that have fire risks and ventilation issues.

RCR CITES LACK OF VESSEL MAINTENANCE AS REASON FOR INCREASING NUMBER OF CALL OUTS

River Canal Rescue (RCR) is urging boaters to pay more attention to vessel maintenance and safety following an increase in the number of call-outs for faults caused by what it describes as a general lack of maintenance.

In 2016, this amounted to 948 call-outs, in 2017 there were 1031 and in 2018 RCR had 1081 call-outs due to lack of maintenance and safety, together with continuing fires and CO poisoning incidents.

"Boaters who fail to maintain their vessels or pay attention to boat safety put themselves and others at risk," said RCR operations director, Jay Forman.

He said, "With rental costs spiralling across the UK, boats are a cheap accommodation option and so are increasing in popularity. Yet we find many boaters unfamiliar with even basic engine workings and therefore unlikely to pay attention to maintenance."

He added: "This can cause a problem if a vessel moves from its mooring, breaks down and obstructs the waterway."

And he said RCR engineers frequently come across vessels with no smoke or CO alarms that have fire risks and ventilation issues.

"It's frightening when you think of the hazards on boats such as diesel, oils and combustible materials. The most common fires are electrical, engine space and solid fuel related so it's vital boat owners pay attention to these areas," explained Jay.

CLIPPER VENTURES HAS ACQUIRED THE HAMBLE SCHOOL OF YACHTING

The announcement follows the setting up of Clipper China, Clipper Ventures' Chinese sail training division aimed to meet the country's growing participation in offshore sailing.

"The decision to buy the Hamble School of Yachting is part of a wider strategy to develop our offering within the offshore sailing industry," said Clipper Race chairman and co-founder Sir Robin Knox-Johnston.

"Clipper Ventures is the world's leading provider of offshore sail training and Hamble School of Yachting is one of the RYA's leading sail training schools in the UK which makes us a strong match."

Chris Rushton, Hamble School of Yachting principal, added: "The Hamble School of Yachting is well established in the UK sail training industry but to link up with Clipper Ventures and be able to share our commitment to increasing sailing participation and top-class standards on a truly global level makes this a very exciting move, especially given the growing opportunities to lead the industry in China."

CANAL & RIVER TRUST FINALISES SALE OF BWML

The Canal & River Trust has finalised the sale of its wholly-owned marina subsidiary, BWML, in a transaction that sees Lloyds Development Capital (LDC) invest in the business, supporting the existing management team.

Stuart Mills, Chief Investment Officer at the Canal & River Trust, says: "We are delighted to have completed the sale of BWML and will be investing the proceeds into other income-generating assets to support our core work of caring for the nation's canals and rivers.

"BWML is performing well and we believe its prospects for future growth are good. Coupled with the expertise of LDC we believe the business will benefit and, by extension, its boating customers will too."

Chris Wright, Director at LDC in the South, said: "We are excited to be able to provide the investment to support BWML's management team in growing this established brand in order to enrich the experience of its marina users. With our support, management will focus on delivering improvements across the marina sites and add new locations to further strengthen its brand and market position."

REGISTRATION FOR OCEAN BUSINESS 2019 IS OPEN

Ocean Business 2019, taking place at the National Oceanography Centre in Southampton from 9-11 April 2019, is open for registration. Ocean Business promises to be an incredible global show offering the very latest technologies, water-based demonstrations and learning opportunities, as well as Offshore Survey, Ocean Careers, key international associated industry events and an amazing line-up of social opportunities for networking.

Ocean Business 2019 is expected to be the best show yet with such demand from its 360+ international exhibitors that exhibitor space sold out over a year ago. As well as this, record levels of interest in training and demonstration sessions meant that the organisers have had to make way for an extra classroom and a new floating pontoon to meet the demand for the autonomous vehicles and vessels at this year's show. This means that visitors will enjoy free back-to-back training and demonstration opportunities with a dynamic programme that runs to 184 hours. These sessions allow visitors to see products for themselves in their real environments.

Cheri Arvonio, Ocean Business' event manager, comments, "There's a feeling of energy and optimism from the ocean technology community this year and this is reflected throughout the show. With so much demand for exhibitors to share their latest innovations, it really will be a special year for visitors. Visually, there will be non-stop action, especially on the dockside with the extra pontoon designed for the needs of autonomous vehicles. As a landmark international event, we feel we are presenting the very best globally and will be expecting over 60 countries to be represented at the show."

To attend Ocean Business 2019, click here to register for free online at **https://bit.ly/2RrKQlW**

BOAT SAFETY SCHEME (BSS) SET TO INTRODUCE NEW CO ALARM REQUIREMENTS FROM APRIL 2019

Representatives from the Boat Safety Scheme (BSS), a public safety initiative owned by the Canal & River Trust and the Environment Agency, are urging the industry to take onboard safety seriously following the deaths of three inland boaters.

Ahead of issuing the latest advice on carbon monoxide (CO) detection, communications manager Rob McLean has shared that three boaters died in 2018 as a result of onboard fires whilst several more were taken to hospital following fires, explosions and carbon monoxide poisoning.

In light of this and following a public consultation in the autumn, the BSS management committee has decided to introduce new CO alarm requirements from next April.

Strong support for the changes was demonstrated in the responses to the consultation with 84 per cent in favour of introducing a requirement for suitable working CO alarms.

All boats with accommodation spaces subject to the BSS will see mandatory checks introduced for CO alarms in good condition and in appropriate locations.

The alarms will warn people in the area about immediately dangerous levels of CO. They can also alert craft occupants to moderate levels of CO, which can be a long-term threat to health if left undetected.

YACHT REGISTRATION TAX RELIEF TO END BEFORE 2019 IN SPAIN

On 31st December 2018, the Spanish Touristic Registration tax regime, which was established in the General Budgets Law passed on 4th July 2018, came to an end.

The provisions for the Spanish Touristic Registration tax regime are laid down in Royal Decree 1571/1993. It is a sort of Temporary Admission customs regime whereby non-Spanish residents could register a yacht under Spanish flag exempt from VAT (Non-EU residents) or Matriculation Tax (EU residents but not Spanish).

Matriculation Tax is a tax applicable to leisure yachts, new or used, when registered under Spanish flag or when they are intended for use in Spanish territory by individuals or entities residing in Spain or holding establishments located in Spain. The tax levied is 12% of the yacht's value.

According to the preamble of the Spanish General Budgets Law 2018, the regime would no longer be applicable as it did not meet the requirements established by the VAT and customs regulations and neither accomplished its original purpose – to encourage the sales of Spanish-manufactured yachts – as the majority of yachts that benefitted from the regime were not built in Spain.

As a result, given that the regime will came to an end on 31st December 2018, yacht owners benefitting from the regime have had to choose one of a number of different options in order to keep their yachts in Spanish waters.

Read the story in full and understand what the options are at **https://bit.ly/2PNwKdF**

CONSTRUCTION WORKERS UNEARTH REMAINS OF FIRST SAILOR TO CIRCUMNAVIGATE AUSTRALIA

Construction workers building the new London-Birmingham high-speed railway line have unearthed the grave of the Royal Navy sailor who gave Australia its name.

For 180 years the last resting place of explorer and navigator Captain Matthew Flinders has been lost among 40,000 other bodies in graves near Euston station. But archaeologists excavating St James' burial ground to pave the way for the new HS2 terminus have identified the officer's grave out of the thousands at the site. The lead depositum plate – breast plate – put on top of Flinders' coffin when he was buried in July 1814 meant his remains could be formally identified.

As commanding officer of HMS Investigator, Flinders sailed from Portsmouth in 1801 to conduct the first circumnavigation of Australia – confirming it was a continent. Although he wasn't the first man to use the term, his account of the voyage – "A Voyage to Terra Australis" – gave the new land its popular name.

His grave disappeared in the 1840s when the original Euston station was expanded into part of the cemetery. The headstone was removed and it was feared Flinders' remains were lost; for a long time a myth persisted that he was buried under Platform 15.

"Matthew Flinders is one of those iconic characters from the golden age of the Royal Navy. He's a household name in Australia but far less so here in his native land. He's very much a forgotten hero of discovery," said Matthew Sheldon, Head of the Curatorial Department at the National Museum of the Royal Navy in Portsmouth.

His grave disappeared in the 1840s when the original Euston station was expanded into part of the cemetery.

WORLD'S LARGEST SAILING YACHT BLACK PEARL BY OCEANCO WINS PRESTIGIOUS AWARD

Oceanco's 106.7m Black Pearl won top honours at the 2019 Boat International Design & Innovation Awards that took place on the 27th of January in Cortina. This unique and complex vessel took home the award for "Best Naval Architecture for Sailing Yachts."

Black Pearl, the largest sailing yacht in the world, is a veritable tour de force, incorporating high tech design, an updated state-of-the art DynaRig sailing system, single level engine room, a hybrid propulsion installation and high capacity battery bank allowing for a regeneration mode when under sail. Her hull design is created with a unique wave-piercing bow that is both aesthetically appealing and fuel-efficient. Naval Architecture is by Dykstra Naval Architects and Lateral Naval Architects assisted with systems engineering and weight management as well as elements of structural and general engineering.

A true sailing yacht, Black Pearl is capable of crossing the Atlantic without using any fuel. Under sail power the yacht can regenerate enough energy to power full house load, obviating the need to run generators. Black Pearl 's hybrid propulsion system also has the ability to regenerate energy, as well as on board systems, such as the waste heat recovery system allowing further gains in overall energy efficiency.

Watch the video at **https://youtu.be/k7pCkzz7IWY**

Naval Architecture is by Dykstra Naval Architects and Lateral Naval Architects assisted with systems engineering and weight management as well as elements of structural and general engineering.

NTSB PUBLISHES ITS OFFICIAL REPORT ON ISLAND LADY FIRE OFF FLORIDA

The NTSB has released the official investigation report on the fire onboard the small passenger vessel 'Island Lady' on the Pithlachascotee River, near Port Richey, Florida, on 14 January 2018. NTSB held a public meeting in mid-December where it identified insufficient preventative maintenance program and lack of guidance for responding to engine high-temperature conditions as key causes of the accident.

About 1600 on the afternoon of 14 January 2018, a fire broke out in an unmanned space on the small passenger vessel Island Lady near Port Richey, Florida, during a scheduled transit to a casino boat located about 9 miles offshore in the Gulf of Mexico. 53 people were on board the Island Lady. After receiving a high-temperature alarm on the port engine, the captain turned the Island Lady around to return to the dock. During the return trip, smoke began filling the lazarette, main deck, and engine room. The captain deliberately beached the vessel in shallow water near shore to evacuate the passengers. All crewmembers, employees, and passengers evacuated the vessel by entering the water and wading/crawling ashore. Fifteen people were injured and transported to local hospitals; one passenger died in the hospital several hours after the fire. The Island Lady, valued at $450,000, was declared a constructive total loss.

Probable cause
NTSB determines that the probable cause of the fire onboard Island Lady was Tropical Breeze Casino Cruz's ineffective preventive maintenance program and insufficient guidance regarding the response to engine high-temperature conditions, which resulted in the captain's continued operation of an engine that was overheating due to a cooling water pump failure, leading to ignition of the exhaust tubing and surrounding structure. Contributing to the spread of the fire was the lack of fire detection in the vessel's lazarette, which was not required by regulations and which allowed the fire to take hold unbeknownst to the crew.

The NTSB identified the following safety issues:

- Lack of company guidance regarding engine high-temperature alarms: After the captain received a high-temperature alarm for the port engine's jacket-water system, he did not shut down the engine but instead left it idling. Doing so allowed the overheating engine to continue to generate excessive heat, which in turn affected the exhaust tubes and ignited their surrounding structures. Tropical Breeze Casino Cruz did not provide specific guidance to its vessel captains about how to respond to high-temperature alarms.
- Lack of fire detection in unmanned spaces with exhaust tubing: Although federal regulations require small passenger vessels to have fire detection and suppression systems in spaces containing propulsion machinery (such as engine rooms), the regulations do not require such systems in unmanned spaces with engine exhaust tubing. The fire on board the Island Lady most likely started in the lazarette?an unmanned space aft of the engine room?through which the exhaust tubes led toward the vessel's stern. Because there was no fire in the engine room initially, activating the vessel's fixed fire suppression system for that space would have served no purpose; further, activation would have caused the vessel to needlessly lose all available propulsion during the emergency.
- Insufficient preventive maintenance: Although Tropical Breeze Casino Cruz stated that it implemented a preventive maintenance program after a previous fire on board a company vessel (the Express Shuttle II) in response to an NTSB safety recommendation, the quality of the program was insufficient. The US Coast Guard does not require small passenger vessels to have preventive maintenance programs and, importantly, even when such programs are voluntarily in place (such as in this case), the Coast Guard provides no enforcement oversight.
- Insufficient crew training and documentation: The investigation revealed that the Island Lady crewmembers lacked sufficient understanding of firefighting principles and that their training drills were infrequent or not completed. In addition, records pertaining to crew training drills and daily maintenance checklists were kept only on board the vessel and were lost in the fire; no duplicate records were kept ashore.
- Inappropriate material and design of fuel tank level-indicator system: Counter to Title 46 Code of Federal Regulations 182.440 (a)(7), the Island Lady's fuel tanks were equipped with plastic hoses used as fuel level indicators; further, the system did not have automatic shutoff valves. As a result, during the fire, the plastic material melted and the release of diesel fuel exacerbated the fire.

Download the 62 page report at **https://bit.ly/2G9dciX**

REPORT ISSUED BY MAIB ON THE GROUNDING OF GENERAL CARGO VESSEL CELTICA HAV

At 1438 on 27 March 2018, the Bahamas registered general cargo vessel Celtica Hav grounded on a stone training wall in the approach channel to the River Neath, Wales.

The vessel had a harbour pilot on board at the time who had control of the steering and speed. Celtica Hav was quickly re-floated and manoeuvred clear of the training wall.

It suffered extensive shell plate damage to the bottom of its hull, which resulted in water ingress to several ballast tanks and flooding in the engine room.

The flooding was contained using the vessel's bilge and ballast pumps, and submersible salvage pumps provided by the harbour authority.

There were no injuries to personnel and no damage to the environment.

Safety lessons

- a detailed pilotage plan had not been made by either the ship or the pilot, and the master/pilot exchange did not cover all hazards, including that posed by the training walls.
- the pilot did not have full positional awareness when Celtica Hav left the dredged channel and did not fully appreciate the risk of grounding on the training wall.
- the vessel's electronic navigation equipment was not adequately utilised to monitor the vessel's position and assess its progress.

Recommendations

Recommendations have been made to the Neath Port Authority (2019/101 and 2019/102) and HAV Ship Management NorRus AS (2019/103 and 2019/104) to improve the planning of pilotage and the quality of the master/pilot exchange of pilotage information.

Read the report in full at **https://bit.ly/2HCL3Tv**

BEWARE THE DANGERS OF ALUMINIUM DROSS

The UK P&I Club and the TT Club have published advice following an incident involving a consignment of aluminium pellets (or dross) that was found at the port of loading with the doors and sides of the container blown out. The terminal arranged to test the samples, as there was no evidence that the unit had been dropped during handling.

The test results indicated that aluminium dross is highly susceptible to a reaction with chlorides when moisture is present. The commodity produces gases when exposed to moisture and the build-up of gasses was considered the most likely cause of the container exploding.

The container was damaged beyond repair and it is understood that some lines and ports are refusing this cargo commodity.

According to the UK Club, at the time the material is tested, before filling the container and subsequent shipping, the moisture level is such that the reaction with the commodity does not generate gas at enough rate to meet the UN hazard class 4 criteria. However, the reaction is slow, so after some time there is the possibility of an explosion. This may deform the side panels, but it is also able to 'pop' the container where it is joined to the frame.

The UK Club suggested that carriers work with shippers on any bookings for recycled aluminium carried in bulk in containers to gain more certainty about pre-shipment controls necessary to avoid excessive moisture content that may lead to a build-up of gasses while transit.

Read the full story at **https://bit.ly/2CQ5yGX**

INDEPENDENT CHECK OF INSTALLATION COULD HAVE PREVENTED EXPLOSION IN CONSTRUCTION SERVICE VESSEL NORMAND MAXIMUS

The Accident Investigation Board of Norway (AIBN) has published released its report on the work accident on board the Normand Maximus off the coast of Brazil on 21 February 2017. One person died in the accident, while another one was seriously hurt and a further three sustained minor injuries.

The construction service vessel (CSV) Normand Maximus was hired by Saipem to function as a platform at sea. In cooperation with Baker Hughes, Saipem was to conduct pre-commissioning tests to verify that all equipment and components are in accordance with the requirements stipulated for the Petrobras on the oil field Lula.

Baker Hughes was performing pressure testing of the oilfield'sgas flow system when the accident happened. The pressure testing operation occurred in a cordoned off area on the CSV Normand Maximus's open aft deck. A permit to work (PTW) system was used to identify hazards and ensure that safety measures were implemented.

On Tuesday 21 February 2017, along with recovery/depressurisation of the MEG1 system, at a pressure of 215 bar, the compressed mixture of air and MEG exploded, which caused numerous blowouts and breaks in the system of pipes and valves on the open deck.

A Baker Hughes employee who was working in front of a manual pipe valve was hit by the valve's handwheel, thrown out by the explosion and died. Moreover, one seriously injured person and three persons with minor injuries were on the deck.

Download the report at **https://bit.ly/2ThhZlP**

REPORT BY TAIC INTO FATAL BURST NITROGEN CYLINDER PUBLISHED

New Zealand's Transport Accident Investigation Commission (TAIC) has published its report on the accident in Port Chalmers, Dunedin in February 2017, on board the passenger cruise ship Emerald Princess. A nitrogen cylinder burst resulting in one fatality. The core of the report highlights a lack of global minimum standards for inspection, testing and rejecting pressure cylinders for stored energy systems on lifeboat launching installations, a common system on cruise ships.

On February 9, 2017, while the Bermuda-flagged passenger vessel 'Emerald Princess' was berthed at Port Chalmers in Dunedin, its crew was conducting maintenance procedures on one of the lifeboat launching systems.

As the maintenance was completed the crew was putting pressure on a bank of high-pressure nitrogen-gas cylinders that were a part of the launching davit 'stored energy' system. Additionally, one of the nitrogen bottles burst resulting in the death of one crew member who was standing close by.

After the incident, TAIC investigated the vessel and discovered that:

- The nitrogen cylinder burst out at below its normal working pressure because severe external corrosion had reduced the wall thickness to about 30% of its original thickness;
- The failed nitrogen cylinder and several other pressure cylinders within the stored energy system, despite having been surveyed about two weeks earlier, were not fit for purpose and should not have been left in service;
- There is an immediate need for consistent and proper standards to be developed at a global level for maintaining, inspecting, testing and, where necessary, replacing high-pressure cylinders associated with stored energy systems on board ships;
- The crew were following the approved and appropriate procedure for re-pressurising the stored energy system.

Read the recommendations and download the report at **https://bit.ly/2SdJvDE**

LACK OF COMMUNICATION LED TO SERIOUS MAIN ENGINE PROBLEMS IS KEY FINDING

The Swedish P&I Club has published a case study following serious damage caused to a ship's main engine. As a consequence of poor communication water contaminated the lubrication oil causing severe damage to the engine.

Engineers on a bulk carrier were conducting scheduled maintenance on one of the ballast pumps. They had closed all the isolating valves to the ballast pump and put up notices about the job in the engine room and engine control room, but not on the bridge. They didn't finish the job on the first day, so continued the next day.

The next day the Master asked an officer to print out the alarm list for the ballast water management system, prior to arriving at the next port as a port state inspection would take place. To get the list the officer had to start the ballast water management system, which he did.

The bilge high level alarm was activated in the engine room. An oiler checked the bilges and could see water pouring in, covering the tank top. An engineer turned off the power to the ballast water management system.

He found that two ballast system valves were open from the main seawater crossover suction line. He closed these valves to stop the ingress of the water. These valves had been opened automatically when the ballast water management system started. The engineers pumped the water from the tank top into the bilge holding tank.

An hour later the M/E bearing wear alarm – Water Level 50%, went off. The lube oil for the crank case had 0.09% of water in it. The second lubricating oil purifier was started. A little later the M/E bearing wear alarm went off again. A second sample of the lube oil was taken, and it was found that the oil had 0.08% of water in it.

The chief engineer decided to partially change 3,000 litres of lubrication oil for the crank case. A third sample was taken and the water content was 0.019%.

Subsequently, the engine stopped and a full change of the lube oil was performed. A crosshead bearing was opened for inspection. No damage was found. Nevertheless, one of the rubber diaphragm seals for draining the crankcase to the system lubricating oil tank was found to be defective. This caused the water flooding into the engine room to contaminate the lube oil.

Read the story in full at **https://bit.ly/2sU96Dy**

GUIDELINES FOR SAFE CARRIAGE OF DIVINYLBENZENE IN CONTAINERS ARE PUBLISHED

The Cargo Incident Notification System (CINS), the International Group of P&I Clubs and the TT Club have published industry guidelines for the carriage of Divinylbenzene (DVB) in containers.

DVB is a chemical prone to polymerization (a form of self-reaction). When shipped in bulk, DVB polymerization can lead heat and flammable gas to be generated. Thus, the stowage of containers carrying DVB aboard vessels can present a risk of explosion and fire, if they are not properly presented for carriage.

As a series of polymerization incidents took place from the carriage of DVB by sea in 2018 the IMO approved changes to the way that polymerizing substances, like DVB, are carried, by amending the IMDG Code. These changes are included in amendment 39-18 of the IMDG Code, which will be mandatory from 1 January 2020, but may be applied voluntarily from 1 January 2019.

To ensure the safe carriage of DVB in containers before 1 January 2020, these guidelines highlight the practices set out in the IMDG Code amendments. They also recommend that these must be followed now, on a voluntary basis.

Read the full story and access the guiuidelines at **https://bit.ly/2FO6D5U**

MALTA MSIU REPORT CONFIRMS DAMAGED VALVES IN BWTS LEAD TO ENGINE ROOM FLOODING

Transport Malta's MSIU has published its investigation report into a serious incident concerning the Maltese-registered capsize bulk carrier 'Capri' that arrived at Dampier anchorage, Australia on 22 December 2017. The ballast system's valves were damaged, causing approximately 1,100 tonnes of seawater flooding the engine room.

The Incident
Capri, a bulk carrier, was scheduled to load 164,000 tonnes of iron ore for China. On December 24, while the vessel was anchored, it deballasted ballast nos 1 and 4 aiming to decrease the number of ballast tanks the vessel would have to deballast, once alongside when loading operations would start.

On December 25, the vessel berthed. Since loading hadn't start, the chief chose to strip the ballast tanks that had been emptied during the day before. After completing that action, he advised the engine room to line up the ballast system so that deballasting could take place when loading started.

When the loading began on December 26, the chief ordered the engine room to get ready for deballasting operations. This action required the starting of an additional generator. The chief mate then opened the remote suction valves to ballast tanks nos. 2 port and starboard. Soon, a loud bang was heard and the vessel blacked out.

When power was restored, the crew found out a spray of water coming from the ballast pump suction strainer cover that was reaching the electrical distribution panel located close to the strainer. Water was steadily rising in the engine-room bilges. Despite isolating the ballast system, about 1,100 tonnes of sea water flooded into the engine-room.

Read the story in full and download the report at **https://bit.ly/2AYWH5s**

FAILURE OF A THROW BAG RESCUE LINE DURING A BOAT CAPSIZE DRILL REPORT PUBLISHED

On the evening of 24 March 2018, the Warrington Rowing Club was carrying out a boat capsize drill in a swimming pool. At around 1830, as a young person was being pulled to the side of the pool using a throw bag rescue line, the line parted. The young person was uninjured during the incident. The parted line was examined and found to be made up of four pieces of rope thermally fused together, and it had failed at one of the joints. A customer notification campaign by the manufacturer, RIBER, and prompt publication of the incident in British Rowing's newsletter, identified a total of ten throw bags with defective rescue lines. Laboratory tests conducted for the MAIB established that the joined sections were 12 times weaker than the rope itself.

Safety lessons
- the failure of a throw bag rescue line during an emergency rescue operation in fast flowing and deep waters could potentially result in the casualty drowning
- a large number of throw bags are in use in the UK, both in the leisure sector and emergency rescue services. However as throw bags are not considered safety or lifesaving equipment, there is no requirement to manufacture them to a specific safety or quality standard
- at present, the only safeguard against poor and unsafe workmanship of throw bags is limited to the quality checks of the manufacturer; such checks lack third-party oversight
- considering the large number of throw bags in use in the UK, both in the leisure sector and emergency rescue services, the lack of a quality and safety standard needs to be addressed as a matter of priority
- the MCA's ongoing study to establish responsibility for beach safety is a first step in the right direction towards identifying the appropriate legislative framework for throw bags and public rescue equipment in general

Recommendation
The British Standards Institution has been recommended (2019/105) to develop a standard for public rescue equipment, ensuring that the topic of throw bags and their rescue lines is addressed as a priority.

Download the report at **https://bit.ly/2MJtnol**

NEW MEMBER BENEFIT - THE MARINE SURVEYOR SEARCH APP

Finding a marine surveyor just got even easier with the launch of the free Marine Surveyor Search App, exclusively for IIMS practicing member surveyors.

The International Institute of Marine Surveying (IIMS) has launched a new free App for iOS and Android devices that makes finding a commercial or yacht and small craft marine surveyor by area or specialisation fast and simple. Not only a key benefit for members of IIMS, it will make the search for a surveyor easier for the boating and yachting public, brokers, P&I Clubs, marine insurers - in fact anyone needing the services of a marine surveyor on an occasional or regular basis.

The App can be downloaded in the usual way from either the Google Play Store or App Store. Just search for 'Marine Surveyor Search'.

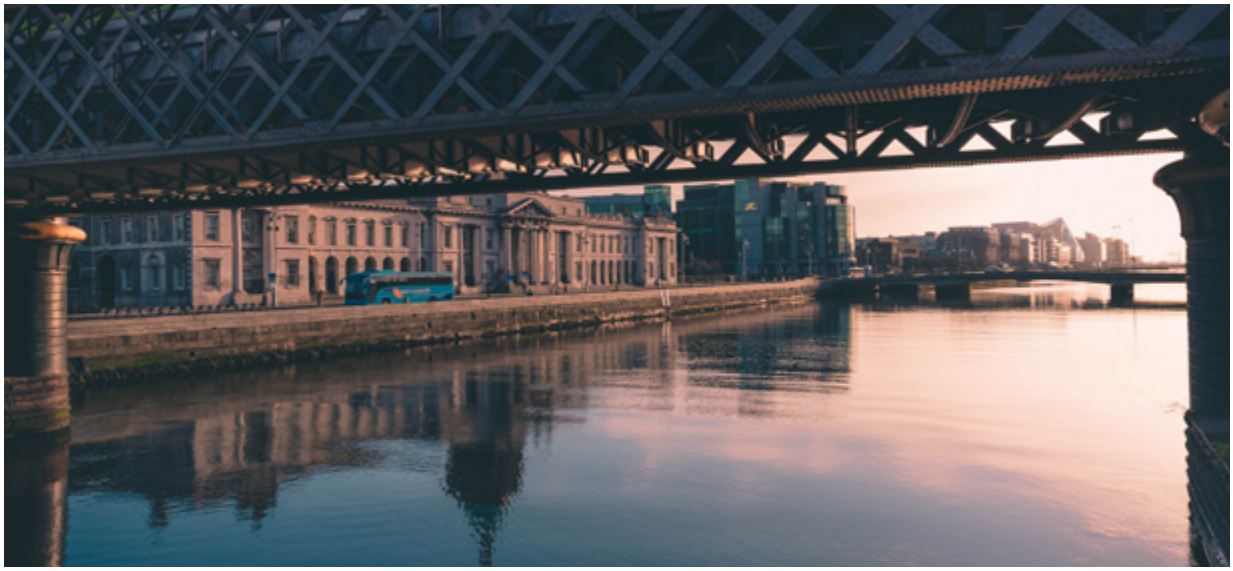
Commenting on this bold initiative, Mike Schwarz, IIMS Chief Executive Officer, said, "IIMS has made a significant investment in App technology to make the process of finding a marine surveyor simple. The project has taken a year to scope out and complete, but it lifts the digital activities of IIMS to the next level. I am delighted at the ease of use and how fast it is to find a surveyor and connect with them at the push of a button."

The App has been developed in partnership with eDot Solutions, Goa, the company that has already successfully delivered two other Apps for IIMS.

The content is drawn from the current IIMS practicing surveyor membership, which has been loaded in its entirety into the App - some 700+ surveyors in over 100 countries worldwide.

You are strongly advised to check your listing on the App to ensure it is displaying as you would like it to show with the correct details and so on.

Key features of the App include a simple search function by name, by skill set and by location, including the nearest port in the case of commercial ship surveyors. Additionally, the App will allow users to rate a surveyor, store favourites and see recently searched surveyors. Communication with a chosen surveyor is simple with contact being made by email or telephone at the press of a button.



IIMS SET TO TRAIN IN DUBLIN, IRELAND FOR THE FIRST TIME IN YEARS

IIMS has organised a two-day training workshop of primary interest to large yacht and small craft surveyors on Monday 11th and Tuesday 12th March 2019 at Malahide Marina, just a few miles to the north of Dublin and close to the international airport. This is the first IIMS visit to Ireland for a number of years, so don't miss this opportunity to refresh and learn some new skills too. The event is open to members and non-members and will be a mix of classroom presentations and hands-on surveying on boats in the marina using the available kit and technology. The classroom training is planned to take place at the marina, but subject to demand, it may be necessary to book a meeting room at an adjacent hotel for the classroom material. Delegates will be notified in good time if that change becomes necessary.

The cost of the event is £140 (no VAT payable) for both days, to include all presentations, lunch, tea and coffee on both days. All delegates will be sent a certificate of attendance after the event and IIMS members may claim 5 CPD points for attendance.

Programme of events (The schedule is subject to minor amendments and timing adjustments.)

MONDAY 11 MARCH

09.15 Registration
09.30 John Magna, Infrared Training Ltd: Infrared camera technology and thermography
11.00 Tea/Coffee break
11.30 Jon Sharland, Tritex NDT: How ultrasonic thickness gauges work and their uses
13.00 Lunch
14.00 Andrew Drage, Copper Development Association: Session 1 - The corrosion behaviour of metals in seawater
14.50 Tea/Coffee break
15.10 Mike Schwarz: An update on IIMS activities
15.45 Andrew Drage, Copper Development Association: Session 2 - The corrosion behaviour of metals in seawater
16.45 Close

TUESDAY 12 MARCH

09.30 Mike Schwarz – Several short presentations on business related topics
10.30 Tea/Coffee break
11.00 Osmosis and moisture meters by Nigel Clegg
13.00 Lunch
14.00 Paul Winter, Winter Insurance: Report writing and how to avoid claims
16.00 Close

Please reserve your place online at **https://bit.ly/2Te57NF** or call the IIMS Head Office on +44 23 9238 5223.

LAST CHANCE TO BRING YOUR CPD POINTS UP TO DATE FOR 2018

The annual CPD year formally closed out on 31 December 2018, but members are reminded that they have until 31 March to make any late claims to bring their CPD record up to date before last year is finally locked out.

Those who have already acquired some points, but not sufficient to be CPD compliant, are especially urged to use the App to make their claims to ensure the required 10 points have been recorded for the year.

And don't forget that once you are CPD compliant, the special roundel will be added to your website listing.

If you have yet to engage with the IIMS CPD App, it is straight forward to use. For anyone who has yet to use the App, here is a brief overview of how it works. Each IIMS member has a unique log in, the same one used to access individual membership pages on the web site. Members can (and do) claim points in real time rather than saving up a claim for months. So for example, let's say you attended an IIMS training day yesterday. At the end of the event, or on your return home, you can open the App to make a claim for 5 points for the training event from the drop down menu.

You submit your claim. An automatic email comes back to you to advise you that your points claim has been submitted and will be verified soon. At the same time an email comes into IIMS advising us that you are claiming 5 points for attending the IIMS training day. The IIMS Membership Secretary will click to accept or decline your claim. Assuming your claim is verified and accepted, an email is automatically sent back to you to inform you that 5 CPD points have been added to your CPD account and that you only require 5 more points by 31 December 2019 to make your quota. This process repeats each time you make a successful CPD points claim, with the number required counting down.

There is no limit to the number of points you can successfully claim in a year, but you will only be able to carry a total of 3 CPD points forward to the following year, which the app will automatically do. You can send attachments to substantiate your claims too if necessary. You will also have a record of all points achieved that you can refer back to at any time.

A word of warning. A number of CPD claims are rejected because they are not accompanied by proof or evidence. Attaching files and photos is easy throug the App, so please be sure to provide evidence if required to avoid disappointment if your claim is rejected.

If all else fails, please email Dave Parsons at **info@iims.org.uk** and he will help you.

IIMS PAYS SUNSEEKER A VISIT AT THEIR POOLE HQ

A group of IIMS members descended on the Sunseeker factory in Poole, UK for a facility visit on Monday 18 February. The group was treated to a two and a half hour tour with access all areas from the moulding shop at the start of the build process to the finishing areas. A major employer in the town, Sunseeker has around 2,500 people working at their various factories. A genuine surprise was just how many vessels are currently in build with the vast majority destined for export. IIMS is most grateful to the management of Sunseeker for facilitating the visit.

The group headed next door to the headquarters of the RNLI and after lunch were treated to several presentations. Two RNLI surveyors, James Turreff and Ben Williams spoke to those present about their busy schedules and routine surveying work as part of the planned maintenance schedules on the large fleet. Next to speak was Malcolm Stewart, A Plan Insurance. In his presentation, he gave a detailed overview, including a case study, of the role of the insurance broker and how and where the surveyor fits into the process. Giles Waterhouse was thorough and passionate as he spoke about non destructive testing, with a particular emphasis on rigs and masts.

LONDON CALLING AS IIMS RETURNS TO CONFERENCE IN THE UK'S CAPITAL CITY

IIMS is pleased to announce that after a break the IIMS Conference makes a welcome return to London, UK this year on 17/18 June. The Conference is sponsored by Constellation Marine Services LLC and supported by Matrix Insurance and Cygnus Instruments Ltd. Nautical Institute is our media partner.

The Annual General Meeting will be held as part of the Conference schedule at 14.00 on Tuesday 18 June.

Both Conference days and the AGM are available to real-time and online-only delegates, meaning that no matter where in the world you are, it is possible to participate.

The venue is the well equipped and beautifully appointed Regent's University located by Regent's Park in the heart of London and just a few minutes' walk from Baker Street underground station.

Dinner on the evening of Monday 17 June takes place at 10-11 Carlton House Terrace, a magnificent Regency building adjacent to The Mall.

Conference Fees

OPTION 1
Day 1 Conference only real-time delegate (Member £165, Student £140, Non Member £175) OR
Day 1 Conference only Zoom online only delegate at £140

OPTION 2
Day 2 Conference only real-time delegate (Member £110, Student £100, Non Member £120) OR
Day 2 Conference only Zoom online only delegate at £90

OPTION 3
Conference Dinner on the evening of Monday 17th June at £100

OPTION 4 (FULL PACKAGE)
Attend all of the above events which include Day one and Day two at Regent's University and the Conference Dinner (Member £350, Student £315, Non Member £380)

The speaker schedule is subject to alteration and we still await topics from some of our presenters, but for now we can confirm the following:

DAY ONE – Herringham Hall, Regent's University

09.30 Welcome from IIMS President, Capt Zarir Irani
09.45 Update on IIMS activities, new innovations and enhanced member benefits by Mike Schwarz
10.20 Peregrine Storrs-Fox, Risk Management Director, TT Club - Cargo integrity in the context of cargo inspections and surveys
11.00 Coffee
11.20 Neale Rodrigues, Divisional Director, Loss Prevention, Britannia P&I Club - What a P&I Club expects from a surveyor
12.00 Capt Nick Sloane, Resolve - Topic to be confirmed
12.50 Lunch
14.00 Nick Deal, Bond Solon – Beware the pitfalls of expert witness work
14.45 Capt Zarir Irani, IIMS President – Cyber vulnerability for terminals and vessels in confined waters
15.10 Coffee
15.30 Karen Brain, Matrix Insurance – Topic to be confirmed
16.10 Panel discussion
16.40 Close

19.00 Dinner at 10-11 Carlton House Terrace, St. James's, London SW1Y 5AH

DAY TWO – Tuke Common Room, Regent's University

09.30 Gary Lowell, Lowell Boats – Wooden boat inspections
10.30 Bas Edmonds, Regulatory Delivery Officer – Ship Standards, MCA – Maritime & Coastguard Agency update on new and recent regulations for small craft surveyors
11.30 Coffee
11.50 Craig Norton, President, Inspect X – Report writing software for surveyors by surveyors
12.45 Lunch

DAY TWO – Tuke Cinema, Regent's University

09.30 Speaker to be confirmed
10.30 Jayan Pillai – Fire on Ships & Boats
11.30 Coffee
11.50 Mark Townsend, Cordstrap
12.45 Lunch

14.00 IIMS Annual General meeting , Regent's University (free to attend).

To make your reservation for what promises to be two excellent days of conferencing, visit the Conference page on the IIMS web site and we will invoice you on receipt of your instructions at **https://bit.ly/2VjSnW8**

IIMS BALTIMORE CONFERENCE REPORT

The IIMS Conference in Baltimore on 18/19 January, held at the well-appointed MITAGS Conference centre, was attended by a healthy number of real time delegates, joined by a number of others remotely using the Zoom platform from as far afield as Mexico and Vancouver.

Apart from IIMS members, it was particularly pleasing to see a good number from other American surveying organisations taking part. IIMS is grateful to Regional Director, James Renn, for getting the programme together and hosting the event.

Capt. John McDevitt spoke at length about performing vessel electrical surveys, an area that remains a dark art for some surveyors. John brought his almost encyclopaedic knowledge of US electrical codes and standards into his presentation.

Wooden Boat Inspections. Gary Lowell brought decades of wooden boat building and repairs experience to the meeting as he talked about all aspects of construction design and repair procedures.

In an unbilled, extra presentation, Capt Bill Ackley talked surveying inspected US vessels and SubChapter M. James Renn introduced the group to some 100 year old technology now gaining traction in the form of the Flettner Rotor, as shipowners seeks ways to use less and cleaner fuel.

Craig Norton, a younger, second generation marine surveyor has developed reporting software called InspectX, enabling the survey findings and results to be entered whilst on the vessel using a tablet (or mobile device). In his presentation, he gave an overview of how the system works.

Ken Weinbrecht tackled the thorniest of subjects in a fascinating presentation when he considered the value of the service a marine surveyor provides. Whilst not making a recommendation on what to charge, he reminded those present not to undersell themselves.

Jeff Smith, Cool2sea and Clear2sea enclosure panels, gave an insight into the acrylic panel materials and systems.

Andrew Tuhan, who is engaged in superyacht surveys and management, spoke in great detail about the challenges of inspecting these large vessels, which are quite unlike the craft many surveyors encounter on a regular basis.

Michael Richardson introduced the Entratech concept to delegates. Entratech is introducing its fully approved fuel water separators with alarm that informs the operator of a water peril before water can reach the engine. Dylan Bailey talks about non-destructive testing, an area in which he has a lot of knowledge. He brought to the meeting experience and methodologies many of which were unknown or unpractised by surveyors.

Ted Thies discussed the development and application of the next step in polymer coating protection against corrosion and marine growth fouling - ultra-tight surface structure results in no penetration, moisture migration or marine growth adhesion to this material developed from the sub-molecular level up.

Craig McBurney gave a sobering presentation. He spoke about the work being undertaken to identify disabled veterans prior to their committing suicide. He explained how vessel maintenance, tall ships, service and refitting are used as springboards in disabled veterans.

A number of these presentations can be found and watched on the IIMS YouTube channel.

AN OPEN LETTER FROM THE UK MARITIME & COASTGUARD AGENCY - ACCEPTANCE OF LEISURE LIFERAFTS ON UK COMMERCIAL VESSELS

Maritime & Coastguard Agency

1. I'm writing to advise you that the Maritime and Coastguard Agency (MCA) has identified cases where ISO 9650 liferafts have been sold to, or serviced for, owners of UK Small Commercial Vessels and Fishing Vessels without the requisite arrangements being in place, or without a specific service instruction.

2. The objective of this open letter is to raise awareness of the statutory requirements for the correct manufacture, servicing, sale and carriage of ISO 9650 liferafts for use on UK Small Commercial Vessels and Fishing Vessels, and to highlight the phase-out of ORC liferafts. This is to ensure that the standard of safety for abandonment intended by the MCA's carriage requirements is upheld.

Standards of ISO 9650 Liferafts on UK Small Commercial Vessels and Fishing Vessels

3. For an ISO 9650 liferaft to be used on a UK Small Commercial Vessel or Fishing Vessel MGN553, and Section 4 of that Notice in particular, sets out the conditions of acceptance. As such, MGN553 is relevant to manufacturers, service stations sales agents and hire agents marketing liferafts for the UK commercial market, and it's important that vessel owners are aware of the requirements that it explains.

4. We note that in some cases the Category C medical kit required for the carriage of a liferaft on a UK commercial vessel is being installed post-manufacture inside the canister or valise of leisure (ISO/ORC) liferafts. The service interval for liferafts must account for the expiry date of any equipment stowed inside.

5. For an ISO 9650 liferaft to be acceptable on a UK Small Commercial Vessel or Fishing Vessel, the manufacturer and service stations must ensure that the ISO 9650 requirements on instructions and servicing are followed, specifically: -

   - A detailed list of the points to be serviced, the procedures to be followed, the items to be replaced, etc. shall form the subject of a precise documentation supplied to the service station;
   - All items having an expiry date shall normally be changed when this date arrives prior to the next scheduled service, barring any specific listed cases;
   - All inspections carried out shall be recorded and kept by the [service] station;
   - The servicing date, the name of the service station, its stamp and signature shall figure on a document given to the owner and on the service record placed in the liferaft.

   It is also a requirement of IS09650 to detail on the outside of the canister the contents of the life raft and any grab-bag required to supplement the equipment in the raft for ISO compliance.

6. If an authorised surveyor finds an ISO liferaft on a UK Small Commercial Vessel or Fishing Vessel with evidence that the above requirements have not been met, they are entitled to note a deficiency and require corrective action which may, in certain cases, include the replacement of the liferaft. Such action will then need to be addressed by the vessel owner with the manufacturer and service station to maintain commercial vessel certification with a compliant liferaft on board.

Phase-out of ORC Liferafts on UK Small Commercial Vessels, Fishing Vessels and Class XII Pleasure Vessels

7. Service stations, sales agents and hire agents servicing and supplying ORC liferafts to UK Small Commercial Vessels, Fishing Vessels and Class XII Pleasure Vessels need to be aware of the MCA's phase-out of acceptance of ORC liferafts as described in MGN553 (commercial vessels) and MGN599 (Class XII).

8. It's also worth noting that the phase-out of ORC liferafts is also applicable to fishing vessels, where we ask that the owner of the fishing vessel declares which area category they operate within so that the phase-out arrangements in MGN553 can be followed by surveyors and service stations.

9. If an ORC liferaft on a UK commercial vessel has not been annually serviced then the attending surveyor or inspector may insist at their next attendance that the liferaft is replaced with either an ISO or SOLAS liferaft because the phaseout conditions have not been followed.

10. We have asked our network of Certifying Authority surveyors and MCA inspectors to pay close attention to service records of liferafts to check for evidence of the issues raised in this letter. Any questions or comments on the above should be directed to this email address: marinetechnology@mcga.gov.uk

Recent new IIMS members

Full members		
Kenji Koike	*MIIMS*	Japan
Nimesh Perera	*MIIMS*	Sri Lanka
Technician members		
Juan Portillo	*TechIIMS*	Spain
Associate members		
Carl Eather	*AssocIIMS*	Australia
Hatem Salama	*AssocIIMS*	Canada
Kelvin Rabbitts	*AssocIIMS*	Australia
Lee Cudmore-Ray	*AssocIIMS*	UK
Affiliate members		
Adrian Matthews	*AffilIIMS*	UK
Jeff Arseneault	*AffilIIMS*	Canada
Rolf Thunecke	*AffilIIMS*	UK
Supporting members		
Renju Udayabhanu	*AffilIIMS*	Qatar
Santhosh Kurimchira	*AffilIIMS*	Qatar
Sugunakar Pakala	*AffilIIMS*	Qatar
Corporate members		
DFS Maritime Services	*CorpIIMS*	Malaysia
Graduate members		
Alex Lloyd	*GradIIMS*	UK
Mark Sutton	*GradIIMS*	Grenada
Tangang Richards	*GradIIMS*	Cameroon

IIMS congratulates those students who have completed their studies:

IIMS Professional Qualification in Commercial Ship Marine Surveying
David Aquilina
Frederik Giepmans

IIMS Professional Qualification in Yacht and Small Craft Marine Surveying
Barnaby Sollars
Mark Sutton

ONLINE SEMINAR - SYNTHETIC FIBRE RIGGING - 6 MARCH 2019

Short notice, but spaces are available for an online seminare being delivered at 12 noon (UK time) on 6 March. This is a 90 minute session presented by Kim Skov-Nielsen, IRMS, IRMC, DipMarSur, MIIMS, SAMS AMS at a cost of just £35 per delegate.

Kim is an experienced Yacht Surveyor and Marine Consultant, New Build and Refit Project Manager, MCA Approved Coding Examiner and ISM Auditor, Maritime Expert Witness and Rigging Specialist.

Rigging – it is what holds the mast up and transfers the power of the wind in the sails into forward momentum – it's kind of vitally important and needs to be looked after.

Synthetic fibre – we walk on it, we wear it, we make sails out of it, build aircraft wings out of it – but what is it?

We will look at the many forms of fibre, how it is put together and attached; and where do we as surveyors come in; how can we inspect it and what reference points may we have. Reserve your place now at **https://bit.ly/2Wu2EjZ**.

LEGAL ISSUES ARISING FROM NEW BUNKER SULPHUR REGULATIONS IN MARPOL

The Marine Environment Protection Committee (MEPC) confirmed in July 2018 that the new global sulphur limit for marine fuel of 0.50% m/m will apply from 1 January 2020.

Further, amendments to MARPOL Annex VI which prohibit vessels from carrying fuel oil with a sulphur content of more than 0.50% m/m have been approved by the IMO. Such measures will come into force on 1 March 2020, after which only vessels which are equipped with Exhaust Gas Cleaning Systems (i.e. scrubbers), will be exempt from this prohibition.

The technical challenges facing owners are discussed elsewhere; but the new rules also have legal implications, both in terms of compliance, and in relation to the terms of their charterparties, which need to be considered.

First published by the The Swedish Club - Circular no: 53/2018 - Date: 2018-12-03

LEGAL FRAMEWORK

MARPOL Annex VI contains rules limiting the main air pollutants contained in ships' exhaust gas. Regulation 14 governs Sulphur Oxide (SOx) emissions, and the sulphur content permitted in fuel oil used on board ships has been progressively reduced in stages (see table on right).

SOx limit outside ECAs	SOx limit inside ECAs
< 4.50% m/m prior to 1 January 2012	< 1.50% m/m prior to 1 July 2010
< 3.50% m/m on and after 1 January 2012	< 1.00% m/m on and after 1 July 2010
< 0.50% m/m on and after 2020	< 0.10% on and after 1 January 2015

Compliance with Regulation 14 is mandatory, and that will continue beyond 2020, though *"relevant circumstances"*, i.e. mitigating factors, including the non-availability of compliant fuels, will be considered in cases of non-compliance (see below).

Regulation 18 sets requirements in relation to fuel oil quality, and requires amongst other things that a BDN stating the sulphur content of fuel must be kept on board and available for inspection for three years from the date of supply.

COMPLIANCE AND ENFORCEMENT

Compliance is ultimately enforced by Port State Control (PSC) in coastal states which are party to MARPOL.

It is the individual states who are responsible for determining what "control measure" to take against a vessel for non-compliance: this can include the imposition of fines (the level of which will be set by the state finding the breach), and even the detention of the vessel.

It is the ship owner who pays any fines levied for non-compliance in the first instance, and they will be required to show what was done to try and achieve compliance, which will likely impact on the action taken against the ship. Whether or not any fines or other losses incurred on account of non-compliance are recoverable from a charterer will depend on the terms of any charterparty, and the cause of the vessel's non-compliance.

As far as P&I cover is concerned, members are required to act as a prudent uninsured and follow applicable rules and regulations. Furthermore, cover for fines is generally only available where there has been accidental escape of a pollutant from the insured vessel and the Member has satisfied the Club that all reasonable measures have been taken. Other fines are only covered by the P&I insurance on a discretionary basis.

PRACTICAL AND LEGAL ISSUES

New charters entered into prior to 01 January 2020 but which will extend beyond that date will need to contain specific terms to deal with the new regime. However, ship owners should also review the terms of existing charterparties which extend beyond 1 January 2020. If uncertainty exists then it is advisable to agree certain addenda with charterers so as to avoid any potential disputes in the future.

Example:

Your ship is on a long-term time charter, based on the NYPE 46 form.

The charterparty contains a clause paramount, the BIMCO Bunker Fuel Sulphur Content Clause for Time Charter Parties 2005 and the BIMCO Bunker Quality Control Clause for Time Chartering, and also provides:

"Bunkers on redelivery
to be about the same
as on delivery:
BOD ABT 250 MT HIGH SULPHUR
FUEL, ABT 400 MT LOW SULPHUR
FUEL",
and
"HSMGO USD350/MT,
LSMGO USD500/MT BENDS".

Below are some of the issues which might arise, and the differences in that regard between ships with scrubbers and those without:

1) SEAWORTHINESS

Clause 1 and the clause paramount impose on owners a duty to exercise due diligence to make the vessel seaworthy at the commencement of each voyage performed under a time charter. As part of that obligation, Owners must maintain the vessel's class and ensure that she complies with international and national maritime rules and regulations, i.e. is "legally fit" for the chartered service.

i) No Scrubbers

If a vessel requires modifications in order to comply with new legislation, then a failure to make such modifications would render the vessel unfit for the chartered service, meaning all down time and associated costs would be for owners' account. This is as per the court of appeal case of the Ellie & the Frixos [2008] EWCA Civ 584.

Generally, however, unless the terms of the charter require it, an owner is not obliged to install scrubbers. This is on the basis that the vessel will be capable of performing the chartered service using low sulphur fuel. In contrast, if a vessel needed modifications in order to be able to burn compliant fuel, this is for Owners' cost and account. Provided vessels can burn compliant fuels then the vessel will not fall foul of the new rules and will not be unseaworthy, or unfit for the chartered service simply by virtue of having no scrubbers.

ii) Scrubbers Installed

However, some owners are considering installing scrubbers, which will allow vessels to stem higher sulphur content fuels, and 'clean' them to produce emissions which meet the requirements of the rules. Generally, the time and cost involved in the installation of scrubbers is a matter for owners.

Installation of scrubbers will have an impact on owners' maintenance obligations, including crew training, in order to deal with this new piece of equipment. Owners will be liable should their crew not be properly trained in the use of the scrubbers.

Further, if the scrubbers break down the costs of repair will obviously be for owners' account, and if any time is lost in effecting repairs, it will be an off-hire event under clause 15. If excessive low sulphur fuel is consumed due to the breakdown of the scrubbers (which would otherwise allow the use of cheaper high sulphur fuels), then this may also raise a claim by charterers for the difference in fuel prices (subject of course to establishing the breakdown was caused by a breach of charterparty).

2) COST OF BUNKERS

Charterers are to provide and pay for all fuel whilst the vessel is on hire (see clauses 2 and 20 of the NYPE). Charterers will be required to supply fuel which complies with the new sulphur limit, in line with ISO 8217 standards, and which is "of a quality suitable for burning in the Vessel's engines and auxiliaries".

i) No Scrubbers

Charterers will be required to provide fuel which complies with the new sulphur limit, the cost of which will be at the Charterers' risk. It has been predicted that the increased costs could be as much as around USD600 per metric ton.

ii) Scrubbers Installed

Charterers will be able to purchase fuel oil with a higher sulphur content (< 3.5% m/m), and will therefore benefit from lower fuel costs in the short term. This is likely to make vessels with scrubbers already installed more attractive to prospective charterers, although a long term charterer may be able to offset these costs by sub-chartering out the vessel.

3) QUALITY OF BUNKERS / REMOVAL OF NON-COMPLIANT FUEL

Under the BIMCO Bunker Fuel Sulphur Content Clause, charterers are required to supply bunkers of such specifications and grades to permit the vessel to comply with the maximum sulphur content requirement of any ECAs within which the vessel is ordered to trade. This includes all waters regulated by the E.U (EU Directive 2005/33/EC, amending Directive 1999/328/EC).

The BIMCO quality control clause requires charterers to supply bunkers which comply with ISO 8217 standards, and which are "of a quality suitable for burning in the Vessel's engines and auxiliaries".

The above clauses do not expressly deal with the new sulphur limit outside ECAs. Whilst no doubt BIMCO will publish a further clause in due course, the new global limits do not specifically alter the terms of these clauses.

i) No Scrubbers

If the expected prohibition on the carriage of non-compliant fuel is approved then ships without scrubbers will not be permitted to carry fuel with a sulphur content of more than 0.5% m/m beyond 1 March 2020.

In order to assess the relevant control measure (i.e. fine or other measure) States shall "take into account all relevant circumstances and the evidence presented to determine the appropriate action to take, including not taking control measures" (per Regulation 18(2) (c) Annex VI).

At present, it is understood that oil companies are working on perfecting blends for compliant fuel. There remains a question mark as to what extent compliant fuels will be readily available, but fuel suppliers, who will each be looking to steal a march on their competitors, are apparently quietly confident in that regard.

Parties to MARPOL are encouraged to promote the availability of compliant fuels in accordance with Regulation 18.1, but Regulation 18.2 provides that ships should not be required to deviate or "unduly delay the voyage in order to achieve compliance". However, not all countries with bunkering ports are signatories to MARPOL Annex VI, for example Algeria, Bahrain, Saudi Arabia, and Thailand (interestingly, the U.A.E. is also not a signatory to MARPOL Annex VI. Certain ports within it have taken the decision to comply, although this does not include Fujairah, even though local suppliers appear to have taken a commercial decision that they will comply.)

Where non-compliant fuels are all that is available then (taking into account the vessel's trading patterns and with her safety being of paramount importance), it is possible that necessity will dictate a vessel is supplied with (and will likely have to burn), non-compliant fuel.

However, notwithstanding the terms of Regulation 18, that vessel would still be in breach of Regulation 14. A lack of available compliant fuel acts only as a mitigating factor which would be taken into account by the MARPOL state when deciding what action to take against the vessel for non-compliance. It will not necessarily excuse the breach.

In such circumstances, it is suggested that the consequences of carrying and burning non-compliant fuel would be recoverable from charterers. This is either on the basis that charterers are liable to supply fuels (and have accordingly breached an obligation to supply compliant fuels), and also on the basis of an indemnity for following their orders to stem non-compliant fuel. The fact that non-compliant fuel was not available would not protect charterers from such claims under the charterparty.

A further issue which arises is that a vessel subject to a long term charter may have non-compliant fuel on board post 01 January 2020 (such fuel having been compliant prior to 01 January). Such fuel ought to be removed prior to 1 March 2020. So, who pays for its removal?

If charterers have, prior to 2020, supplied fuel to a vessel which will not comply with the new rules, then if that fuel remains on board, it is suggested that charterers would need to give an order that it be removed prior to 1 March 2020, failing which the vessel will be in breach of the new rules, and Regulation 18(2)(c) would be applied by the relevant state party to MARPOL)

The fuel on board a time chartered vessel belongs to time charterers. Therefore, it is for them to remove it, and it is also theirs to re-sell or re-process as they see fit.

If charterers refuse to give the vessel orders to remove the non-compliant fuel, or do not do so within the relevant time, it is also suggested that the costs of removal would be recoverable from charterers. The legal basis for this would either be breach of an implied term that they are responsible to remove such fuel from the vessel or by way of an indemnity. Any fines levied against the vessel for non-compliance post 1 March 2020 would also be recoverable from charterers.

If non-compliant fuel is supplied after 1 March 2020 on account of compliant fuels being unavailable, vessels will likely be required to remove it at the earliest opportunity (but without having to deviate or unduly delay the voyage), and replace it with compliant fuel. This will again be done at charterers' time and expense.

ii) Scrubbers Installed
Ships with scrubbers will not be required to remove non-compliant fuel, and will be able to continue being supplied with it, and burning it on or after 1 March 2020. This gives such vessels a further commercial advantage.

4) BUNKERS ON REDELIVERY / DEFINITION OF BUNKERS

In our example, the cost of the bunkers at both ends would only apply to HSMGO and LSMGO. Actual cost would apply to all other fuels. However, in relation to delivery and redelivery quantities, bunkers have only been defined as "high sulphur fuel" and "low sulphur fuel", in line with the two categories of bunkers available today.

It may of course be the case that the charterparty fuel prices (agreed pre 2020) do not reflect the cost of buying fuel post 2020. However, the parties will be stuck with the bargain that they have reached, with the result that charterers in our example could end up 'selling' bunkers on redelivery to the owners at a significant discount. From 2020 however there will be three categories: fuel with sulphur content of (a) < 0.1% m/m, (b) < 0.5% m/m, and (c) < 3.5% m/m.

It is suggested that post 2020, in all cases, "low sulphur fuel" should sensibly be interpreted to mean fuel with a fuel sulphur content of < 0.1% m/m. So the charter prices would apply accordingly.

i) No Scrubbers
Vessels with no scrubbers installed will not be permitted to be supplied with or burn todays so-called "high sulphur fuel".

In such circumstances it is suggested that "high sulphur fuel" on redelivery should sensibly mean fuel with a sulphur content of < 0.5% m/m, i.e. category (b) above.

ii) Scrubbers installed
Vessels with scrubbers installed will be permitted to carry fuel with a sulphur content of < 3.5% m/m.

In such circumstances it is suggested that "high sulphur fuel" on redelivery would mean fuel with a sulphur content of < 3.5% m/m, i.e. fuel which meets the current global limit (category (c) above).

A sensible solution would be for parties to discuss addendums to their existing charterparties to deal with any uncertainty over the quantity and cost of specific fuels.

5) SWITCHING FUELS

Different limits on sulphur emissions exist inside and outside of ECAs, and this will continue beyond 2020. Switching fuels has become commonplace, and will also continue.

Crew competency issues sometimes arise when vessels switch to different fuels and cases have arisen where breakdowns and delays have occurred due to switching over fuels. If issues arise from switching fuels, then the vessel will be off-hire, and owners would not be entitled to an indemnity from Charterers. Such matters are for owners as they relate to the use and management of the vessel.

6) PERFORMANCE WARRANTIES

Charterparties usually contain performance warranties giving specific speed and consumption

allowances for different fuels. The performance warranties given on vessels with scrubbers are not likely to be affected.

However, any warranty given for specific fuel types may no longer apply, or may need revision.

Owners should check the wording of performance warranties in existing charterparties, and should not provide performance warranties relating to any new fuels without knowing how the vessel will actually perform whilst using them (owners may wish to speak with engine manufacturers in that regard).

7) SCRUBBERS – COSTS INVOLVED

The costs of scrubbers can range from around US$900,000 to US$3,500,000, and that does not factor in installation costs. If a vessel is fitted with scrubbers, then their maintenance is for owners as already discussed.

The cost involved in disposing waste from scrubbers is not expressly dealt with under the charter. However, even if owners need to foot the bill in the first instance, it is suggested that these costs would likely be recoverable by way of an indemnity from charterers. The logic of this is that waste is created by following their orders (to burn fuel with a higher sulphur content and use scrubbers).

GOING FORWARD

Owners will also want to give consideration to all of the above when entering into charterparties going forward.

In the future, bunkers should not be defined as "high" or "low" sulphur, but with reference to their sulphur content or as MARPOL Annex VI compliant. Appropriate consideration will need to be given to consumption warranties and prices on delivery and redelivery.

In the lead up to January 2020, owners will need to ensure appropriate measures are in place to remove non-compliant fuel. If that fuel cannot be burned or removed prior to the cut-off date, then owners will face sanctions from States who are party to MARPOL.

Vessels with scrubbers fitted are likely to be at a commercial advantage in the short to medium term, although it cannot be said with any degree of certainty how long this will last. Much will depend on the oil industry's ability to respond to the technical issues faced in producing abundant quantities of compliant fuel.

CONCLUSION

As can be seen there are various issues which ship owners need to be thinking about, both in terms of existing charterparties and in charterparties entered into in the future.

If owners are in doubt about the provisions of any existing charterparties, or over what to include in future charterparties, we recommend that owners should seek further and more specific advice.

Finally, a word of caution. Being observant to local regulations is particularly important since regulations may vary from port to port. For instance, the Club has received information that Singapore will ban the use of so called "open loop scrubbers" which discharge wash water from the scrubber directly into the sea (albeit after certain treatment).

This text has been provided with kind assistance from Ince & Co lawfirm.

There's no doubt about it - SHIP SURVEYING IS BEING REVOLUTIONISED BY DRONE TECHNOLOGY according to ClassNK

As part of an on-going focus on safety in enclosed spaces, ClassNK describes how it has carried out detailed drone tests to revolutionize ship surveying. In spring this year, ClassNK introduced guidelines on the use of drones in class surveys, covering procedures and technical considerations for safe operation, as well as requirements for drone service suppliers.

Although drones with multiple propellers on the same plane are currently the most widespread design, research is taking place into alternative arrangements with tilt rotors and propellers in a tetrahedral configuration. Meanwhile, significant progress has been seen in autonomous operations using higher precision positioning, and considerable advances in machine image recognition and processing.

Typically equipped with a compact camera for photography or recording video and Wi-Fi for data transmission, these easy-to-control, lightweight machines have rapidly grown in popularity. Apart from the consumer hobbyist market, and use for product delivery by online retailers, drones have attracted interest from across industry: they are ideal for collecting images from high or otherwise inaccessible or dangerous locations. They can be utilized for a range of aerial photography, inspections and surveying, and security applications, and have proved invaluable in planning rescues and emergency response.

In the maritime industry, efforts are underway to use drones for inspections and surveys. In fact, discussions on Remote Inspection Techniques (RIT) are already well-advanced at the International Association of Classification Societies (IACS), which published revised guidelines on remote inspection techniques in June 2016. The revisions of the associated IACS Unified Requirements are complete and will take effect in January 2019.

Deploying drones on ships presents some significant challenges. The drone may not function properly in the cargo hold or ballast tank due to being in an enclosed space surrounded by magnetic material which may interfere with some of its sensors – particularly GPS and magnetic compass – that are tightly linked to flight stability. Dark environments can also make it difficult for operators to fly drones safely.

Last September, ClassNK designated 'survey technology innovation' as one of four focus areas listed in its new R&D Roadmap, with drones identified as a key technology. The society has been verifying drone performance, with test flights conducted in a variety of enclosed spaces of the sort found on ships.

ASSESSING BASIC PERFORMANCE

A basic performance verification test was devised to demonstrate maneuvering (take-off and landing, forward/reverse and lateral flight, reverse flight with 180-degree yaw) and to assess the capabilities of camera and sensors. The camera performance was tested with a Landolt ring chart – the kind of chart opticians use to test eyes – to evaluate definition of different line thicknesses from 0.1mm to 5mm, and a QR code. Differences in results were observed when the subject drone, a Phantom 3 Standard from DJI, was operating with and without GPS signal. Maneuverability tests in the vicinity of a powered-off crane to assess antimagnetic performance were also carried out.

The outdoor maneuvering test took place in windy conditions, which significantly influenced the results. While fixed-point hovering was easier when using GPS, the gain was large causing the drone to over-compensate in its movements. In non-GPS mode, the gain was small and smooth maneuvering was possible, but wind-thrust had a more marked effect on the drone.

In GPS mode, the drone immediately begins hovering when the operator removes his finger from the controller, whereas in non-GPS mode, inertial force continues to move it until a counter input is given. Consequently, non-GPS mode gives a manual feel to maneuvering and it is possible that operators will find the drone easier to control. When the wind subsided in the trial, stable flight was possible regardless of GPS availability.

Indoors with no wind, stable flight was possible both with and without GPS. Since these results were obtained with a low-cost drone, it is conceivable that higher-end drones equipped with ultrasonic sensors and other advanced features will be even more stable.

Many images photographed with the camera were extremely clear. However, because this model lacked an optical zoom, enlarged images were often indistinct. Image sharpness distinctly improved when the drone was flown closer in to its target. In survey applications, optical zoom would be an essential requirement. Camera specification and artificial lighting will also need to be considered if photography in dark environments is deemed necessary.

The tests in the material storage yard with a crane threw up some interesting results. The drone initially failed to take-off, with the system displaying a 'compass abnormality' error message. However, when launched from a more magnetically benign location, the drone was able to approach the crane without the issue. This suggests performance in the presence of magnetic structures must be carefully evaluated before a drone is deployed to carry out inspection work.

TESTS IN SIMULATED TANKS

To simulate conditions inside a ship's tank, a drone was put through its paces in a land-based, steel test tower. The experiments, using a DJI Matrice100 drone, studied the impact on performance due to compass unreliability, intermittent or complete lack of GPS and poor lighting both for flight control and photography.

Take-off was possible when the drone was placed more than 50cm away from magnetic materials, i.e. the steel walls. There was no difference in attaining stable flight between GPS and non-GPS mode, revealing that drones are operable with only basic inputs from gyro and accelerometer. Piloting a drone that has relatively low control precision is a good way for operators to accumulate experience.

When flying near walls, there was a slight shaking in the drone motion, owing to the wind from the drone's own propellers. To prevent collision with walls, it may be necessary to attach a guard or collision prevention device.

Images taken inside the tower were generally of low quality, due to a combination of poor light conditions, small camera sensor size, and inappropriate ISO settings. Artificial light sources, both from ground level and mounted on the drone itself, resulted in improved images. When the photo subject contains highly polished or metallic surfaces, it will be necessary to experiment with different arrangements in order to produce diffused light that minimizes reflection. Night-vision cameras may also be considered as an option. It was also noted that videos transmitted from the camera were frequently corrupt on the receiving terminal such as a smartphone.

TESTS ONBOARD SHIPS

The final phase of the study was directed at testing the performance of drones inside a cargo hold of a bulk carrier and tank of an oil tanker and was carried out with the cooperation of Kanda Shipbuilding and Orient Marine in the first instance and Tsuneishi Shipbuilding and Technos Mihara in the second. Drones used were the 4.5kg DJI Matrice 210 and the 3.5kg DJI Matrice 100.

On the bulk carrier, the trial took place with the hatch half open, providing an intermittent GPS signal and good daylight for photography, so additional lighting was not required. The flight route was based on the path of an actual internal audit. Because the Matrice 210 is an industrial grade drone with sophisticated machine-vision based self-localization, its flight was stable regardless of GPS availability.

Photography was carried out at a distance of 5m, as the drone itself is almost 1m wide. The high-quality camera benefited from both optical and digital zoom. Zoom photography is generally sensitive to vibration or movement, but good results were obtained thanks to the drone's high stability when hovering at a fixed point.

However, at higher altitudes the downward facing vision system found it harder to capture landmarks on the hold's uniform ground surface. This inhibited the self-stabilization, especially when GPS was unavailable. In such conditions, manual flight by the operator is preferable.

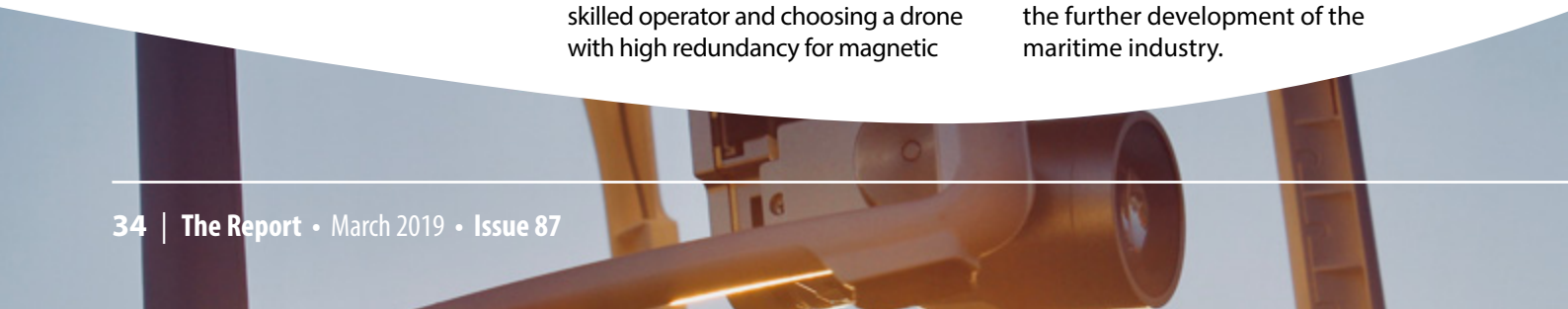
At one point during the trials both GPS and the vision system did not function at the instant that a compass error occurred. Although the drone drifted, the operator, who had more than 500 hours flight experience responded calmly and kept the flight stable. The exercise demonstrated that safe flight in a hold is possible but highlights the importance of having a skilled operator and choosing a drone with high redundancy for magnetic materials. Furthermore, as the size of Matrice 210 prohibited flight in close proximity to members, there will inevitably be blind spots in surveys with this type of drone.

On the oil tanker, as with the bulk carrier, the flight path was selected according to locations for photography needed in an actual close-up survey. The pilot worked together with an assistant in charge of the camera. A third surveyor checked the images as they came in, requested close-ups when needed, and signaled when to move to the next location. Additional illumination was provided by lights mounted on the drone. This configuration delivered good results for still images but video images suffered from noise.

Fixed-point hovering was difficult because flight was performed in non-GPS mode. The resulting movement caused blurring in photos of members and made pinpoint checks somewhat stressful. This degradation in image quality was exacerbated in zoom photography. During close-up photography, results were heavily dependent on the operational skill of the drone pilot, especially when flying close to walls or other structures. The pilots in these tests had at least 100 flying hours experience.

Compass error occurred and prevented take-off when attempting to fly the Matrice 100 after an extended period of time. Although it is hard to draw definitive conclusions about the effect of magnetic materials, it is thought that the accumulation of error due to the presence of magnetic materials was a factor.

The procedures and best practice given in ClassNK's guidelines combine the understanding of drone performance gained in these and other trials with its decades of experience conducting class surveys. The society will continue to actively work with innovative technologies like drones and will continue to make efforts to contribute to the further development of the maritime industry.



Considerations on the Metacentric Stability of Narrowboats

BY **EUR. ING. JEFFREY N. CASCIANI-WOOD**

In a recent discussion on the social media, the subject turned on taking a narrowboat along the lower tidal reaches of the London river – the Thames – it being suggested by several people that it was perfectly safe to do so and even to take such a boat across the English Channel to France. Let me be very clear about that. The modern live aboard narrowboat which developed from the cargo boats of the nineteenth and early twentieth century is a boat and suitable and safe only on the EU Category D calm waters of the canal and inland rivers and waterways not for the tidal reaches of a large river or the open seas of the English Channel which are EU Category C waters. See the Appendix 1 to this article. It also became clear in the discussion that many of the correspondents did not know anything about boat stability, one even suggesting that, because his boat had a flat bottom, she was stable.

Narrowboats have a relatively simple hull design with a long parallel mid body which may be of one of four cross sectional form. These forms are shown in Figure 1 below.

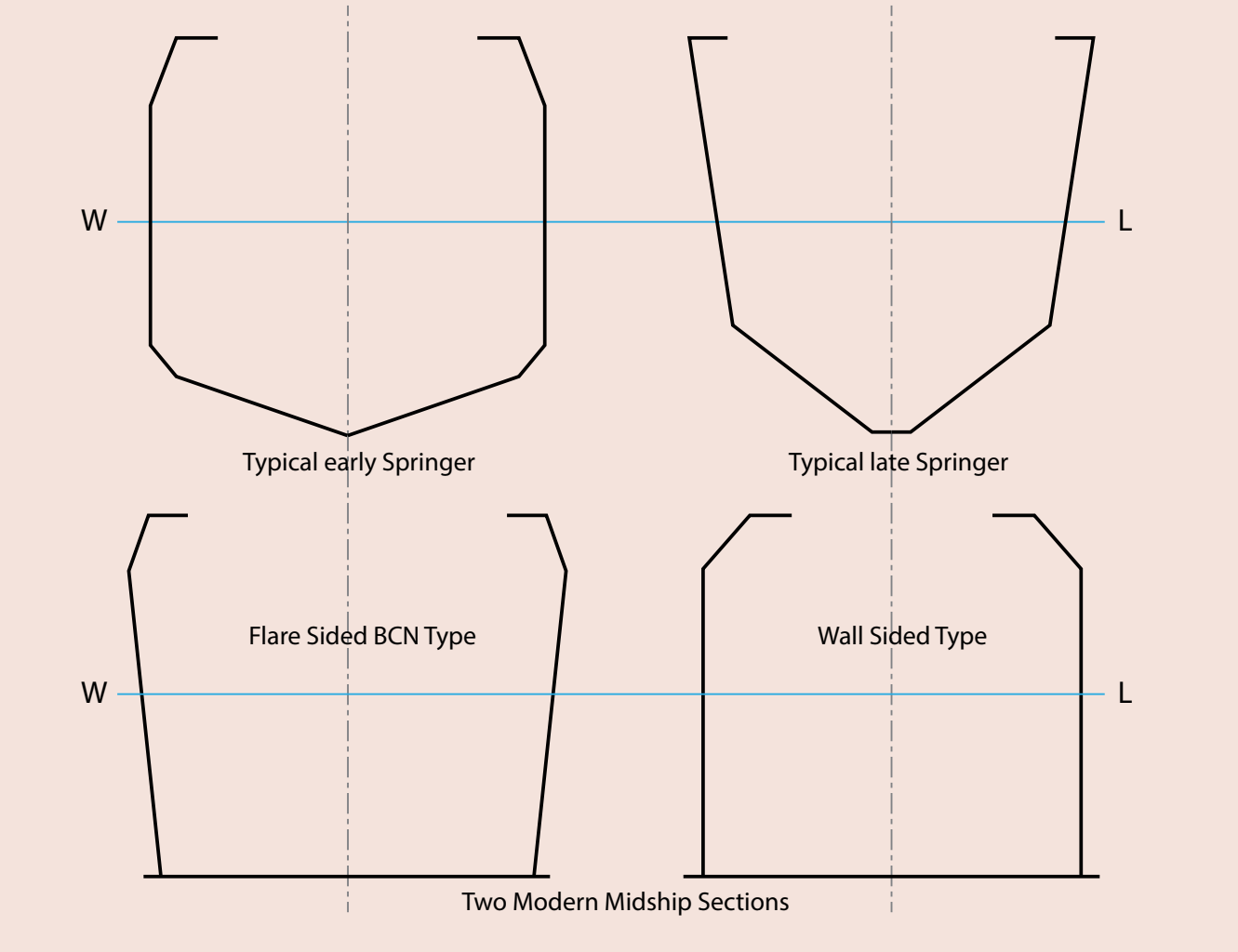


Figure 1. Typical narrowboat midship section outlines

The marine surveyor should note that the midship section bottom right in Figure 1 is said to be slab or wall sided NOT because the sides are called walls (they are, in fact, called sides) but because, like the walls in a house, they are flat and upright. The curved section forward of the parallel mid body is called the fore ship or entry and that abaft the after end of the parallel mid body is called the after ship or run.

When surveying such a boat, it is very important that the main and secondary dimensions of the hull be measured. The job takes about 5 minutes. The marine surveyor should remember that he is paid to record in his report items that he himself has measured, weighed, tested, whatever, NOT what somebody else has told him. So-called reported dimensions are not evidence, they are legally hearsay and usually undefined. In the event of the surveyor being sued, recording reported dimensions in his report would be a gift to the prosecuting counsel.

To illustrate the transverse metacentric stability of a narrowboat, the following dimensions for a typical modern vessel were chosen:

The boat's controlling dimension is the Breadth Overall which, in order to use the locks on much of the canal system, must not exceed six feet ten and a half inches or 2095 mm. The breadth that controls the stability of the boat, however, is that on the waterline which, after subtracting the thickness of any rubbing bars each side is usually about six feet eight and a half inches or 2040 mm but may be several mm less.

To understand why a ship or boat stays upright when afloat, it is necessary, first of all, to understand some naval architecture terms. Figure 2 shows the midship section of a narrowboat with wall sides. She is floating upright in still water. G is the centre of gravity and B the centre of buoyancy which is the geometric centre of the underwater form. G is vertically above B which, in turn, for most narrowboats is about 0.75 times the depth of the hull. G, for an average narrowboat is usually at or very close to the waterline and both B and G are on the boat's centreline. The weight of the boat and everything on her – the displacement and acting downward through the point G – is equal and opposite to the force of buoyancy acting upwards through the point B. Both are given the symbol Δ which is the Greek letter delta and corresponds to the English letter D.

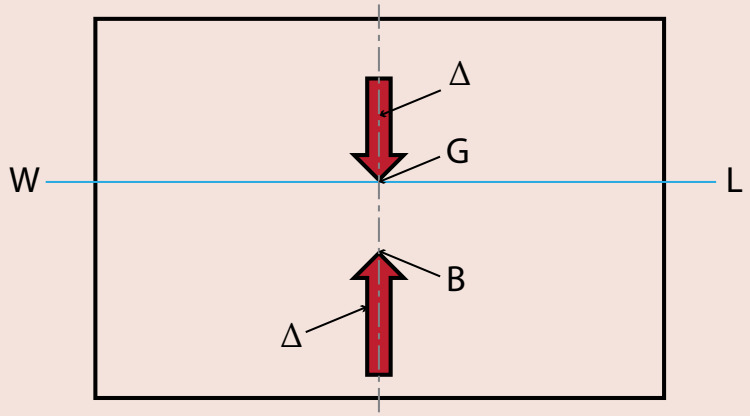


Figure 2
Initial Positions of Centres of Buoyancy and Gravity in Still Water

Item	Symbol	Dimensions Imperial	Dimensions Metric
Length Overall	L_{OA}	52′ 0″	15.85 m
Length Hull	L_H	50′ 0″	15.24 m
Length Waterline	L_{WL}	48′ 9″	14.86 m
Breadth Overall	B_{OA}	6′ 10½″	2095 mm
Breadth Waterline	B_{WL}	6′ 8½″	2045 mm
Depth Overall	D_{OA}	3′ 9″	1.14 m
Draught Forward	T_F	1′ 4″	0.41 m
Draught Aft	T_A	2′ 2″	0.66 m
Freeboard	f	2′ 0″	0.61 m
Displacement Weight	Δ	12.00 t	12.88 te
Displacement Volume	∇	432.00 ft^3	12.88 m^3
Block Coefficient	C_B	0.7922	0.7922

Table 1
Typical Narrowboat Dimensions

If now a small weight w kg is moved through a distance of d metres across the deck from port to starboard, the boat will heel to an angle of θ degrees. θ is the Greek letter theta and is pronounced as a soft th as in thin. See Figure 3 above. The underwater volume will remain the same, but its shape will alter. That will cause the centre of buoyancy to move to position B1. The weight of the boat will remain the same and will continues to act downward through the point G, but the buoyancy force, although it will remain the same in magnitude will now act upward through the point B1. The vertical line though the new centre of buoyancy will cross the centreline of the boat at the point M which is called the metacentre. The distance, GM is called the metacentric height and

is measured in feet or metres and is the controlling factor of the boat's initial stability. The distance BM is called the metacentric radius and the distance GZ the righting lever.

The naval architect now has to use three formulae, all of which are fundamental to the study of ship stability.

The first which is proven using advanced mathematics states that:

$$BM = I/\nabla \quad m \quad (1)$$

and the second, which is the fundamental formula of the Inclining Experiment, states that:

$$GM = wd/\Delta.\tan\theta \quad m \quad (2)$$

The third states that:

$$GM = KB + BM - KG \quad m \quad (3)$$

where

BM	= the metacentric radius	m
GM	= the metacentric height	m
KG	= height of the centre of gravity above the keel	m
I	= second moment of the waterplane area	m^4
d	= distance the inclining weights are moved	m
w	= inkling weight	kg
θ	= angle of heel	degrees
Δ	= vessel's displacement weight	kg
∇	= volume of displacement	m^3

Tan θ is a mathematical function and is obtained from either a booklet of mathematical tables or by pressing the appropriate button on a hand calculator.
∇ is pronounced Velta.

Of the items in the above list, all, except the second moment of area of the waterplane (I), can be measured directly. Textbooks on naval architecture give the method of computing I using the so-called Simpson's Rules although, these days, it is calculated using a standard computer program. For the marine surveyor at the bottom of a drydock such luxuries are not available, and he has to rely on a surprisingly accurate but very simple empirical formula which states that:

$$I = C_W L_{WL}.B_{WL}^2/12C_B T_M \quad m^4 \quad (4)$$

where

C_W	= the coefficient of waterplane area	-
T_M	= the mean draught	m

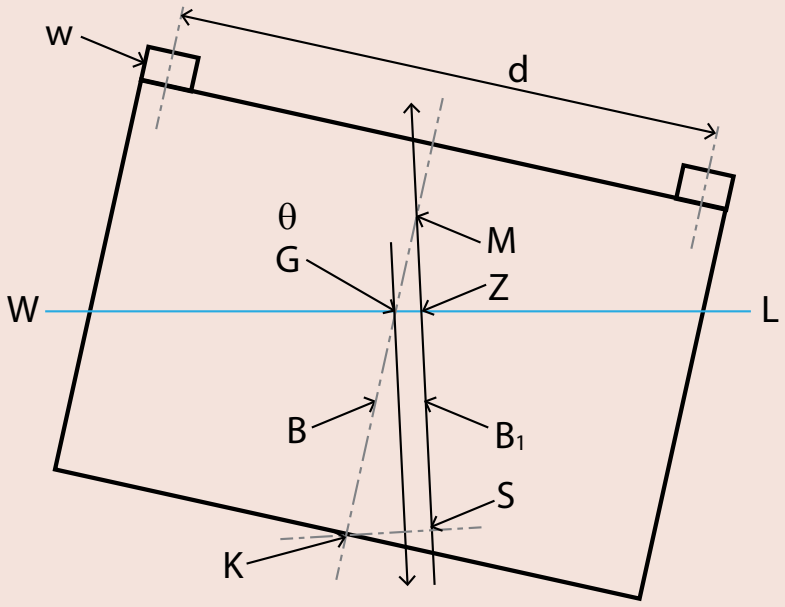


Figure 3
Vessel heeled due to Movement of Weight w.

The other symbols can be identified from Table 1.

For the narrowboat whose details are given in Table 1, the value of C_W which is the area of the waterplane divided by the waterline length and breadth was 0.8485 and may be assumed for most modern boats to be 0.85.

Now, using the above formulae and the data in Table 1 and taking the mean draught as:

$$TM = (0.41 + 0.66)/2 = 0.535 \quad m$$

we calculate as follows:

from formula 4

$$I = \frac{0.8485 \times 14.86 \times 2.045^2}{12 \times 0.7922 \times 0.535} = 10.37 \quad m^4$$

And from formula 1:

$$BM = 10.37/12.88 = 0.805 \quad m$$

Taking KG as 0.75 x 1.14, KB as 0.53 x 0.535 and using formula 3, we obtain:

$$GM = 0.53 \times 0.535 + 0.805 - 0.75 \times 1.14 = \mathbf{0.23} \quad m$$

That is satisfactory and shows that the boat has a reasonably good initial stability.

As a matter of interest, naval architects use, as a preliminary design figure, an assumed value of GM to be 20% of the waterline breadth. The figure of 0.23 m for the above narrowboat is 11.25% of her waterline breadth.

As a simple check on the figure, it can be shown that the rolling period of a boat is a function of the metacentric height GM. The evaluation of a number of inclining and rolling tests according to various formulae showed that the following one gives the best results for GM estimation and that it has the advantage of being simple:

$$GM_o \approx k_{RP}(B_{WL}/T_R)^2 \quad \text{m} \quad (5)$$

where

B_{WL}	=	waterline breadth	m
GM_o	=	the initial metacentric height	m
T_R	=	rolling period	s
k_{RP}	=	constant (the rolling coefficient)	-

The factor k_{RP} is of the greatest importance and it should be noted that the greater the distance of masses from the rolling axis, the greater the rolling coefficient will be. Therefore, it can be expected that:

- the rolling coefficient for an unloaded vessel (*i.e.* for a hollow body) will be higher than that for a loaded vessel.

- the rolling coefficient for a vessel carrying a great amount of fuel and ballast which latter is usually located in the bottom (*i.e.* far away from the rolling axis) will be higher than that of the same vessel having an empty fuel tank.

Experiments have shown that the results of the rolling test method get increasingly less reliable the nearer they approach metacentric height values of 0.2 m and below.

For a normal narrowboat, the coefficient k_{RP} can be taken to be about 0.45. The boat on the numerical example had a rolling period of 2.9 seconds so that, using the value for k_{RP} of 0.45, the metacentric height should be approximately:

$$GM = 0.45 \times (2.045/2.9)^2 = \underline{\mathbf{0.22}} \text{ m}$$

Which shows a very good agreement.

N.B.1 As a guide for the marine surveyor, if the rolling period in seconds is numerically greater than one and a half times the waterline breadth in metres, her stability should be considered very suspect.

N.B.2 The shape of the bottom of the boat is irrelevant,

The only realistic way of increasing the stability of the boat is to fit ballast as low as possible. A 10 mm thick bottom plate is very helpful in this respect.

The initial metacentric height, however, is only part of the stability problem. It applies up to a heel angle of about 5°. Above that angle of heel other factors have to be taken into account. As the heel increases, the righting lever GZ first increases up to a maximum at about a heel angle of 30° to 35° and the starts to decrease. At the angle at which the cockpit coaming touches the waterline, the GZ curve also called the Curve of Statical Stability takes a sudden plunger and rapidly becomes zero. At that point called the angle of vanishing stability or AVS the boat becomes totally unstable and will plunge sink rapidly. The angle at which the boat starts to flood called, unsurprisingly the minimum down flooding angle, is easily measured and should, in the author's opinion, be noted in his survey report.

Figure 4 below shows a typical curve of statical stability for a standard narrowboat and Figure 5 the minimum down flooding angle at the after cockpit and how to measure it.

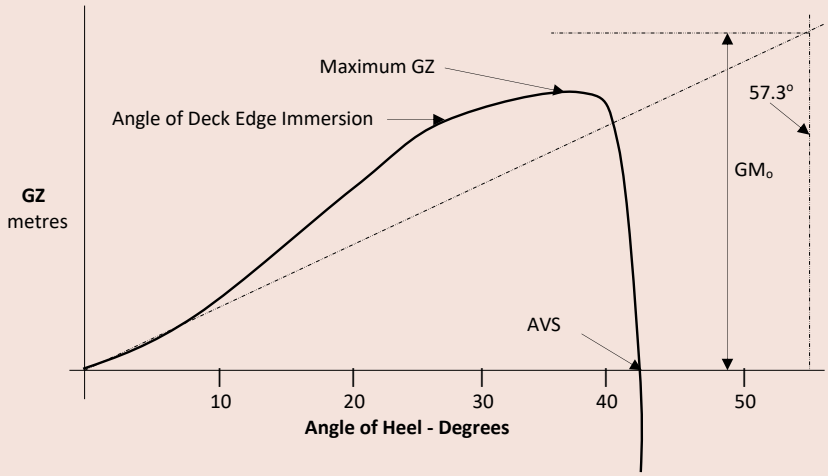


Figure 4
A Typical Narrowboat's Statical Stability Curve

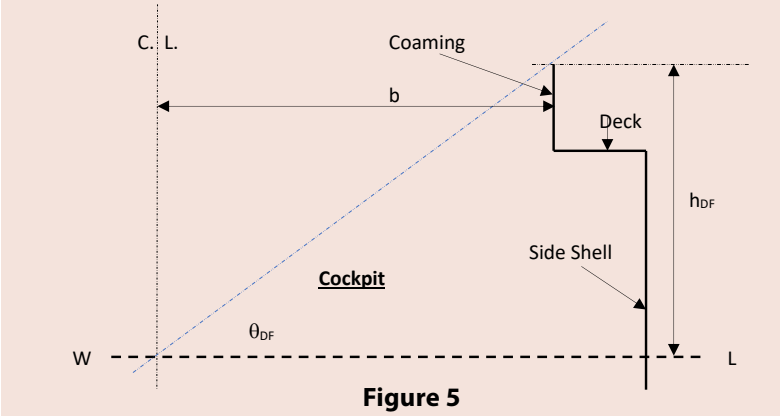


Figure 5
Down Flooding Height and Angle at Cockpit

In the Figure 5:

b	=	half breadth of the cockpit	m
h_{DF}	=	down flooding height at cockpit	m
θ_{DF}	=	down flooding angle	degrees

Both b and h_{DF} are easily measured. B can be measured by taking the width of the cockpit and dividing that by 2. θ is obtained by dividing h_{DF} by b to obtain the tangent of that angle and then consulting a pocket calculator.

There are no rules covering privately owned narrowboats but, the nearest of the published rules are those for small commercial motor vessels, EU Category C waters it is recommended that they should be used as a guideline.

They are:

Minimum metacentric height	350 mm
Angle of maximum GZ value at least	25°
Maximum GZ value should be at least	200 mm at 30° or greater
Area under GZ curve to 30°	0.055 m.r
Area under GZ curve to 40°	0.090 m.r
Area under GZ curve between 30° 40°	0.030 m.r
Minimum down flooding angle	40°
A range of positive stability of at least (AVS)	60°

Most narrowboats cannot reach any of those criteria, except possibly the first and the third, hence the reason why they are confined to use on EU Category D waters.

The usual recommendation for down flooding angle is for the minimum to be 40o for a sea going boat. Again, a narrow boat is rarely able to reach that recommendation, but the author considers it to be good practice, when on a survey, for the marine surveyor to measure the down flooding heights and angles and report them. He should also measure the freeboard both sides and report both.

Strictly, the vessel may also down flood over a forward cockpit but, as the narrowboats usually trim by the stern, the after cockpit has a small down flooding height and angle. It is good practice to measure and report both forward and aft. Because of the trim, the measurements should be taken at the after end of both cockpits.

There are no rules applying to narrowboats that state what freeboard should be obtained but, again it is good practice, to compare the measured values to those proposed by the IIMS in the Unit 27 of their Surveying Diploma and repeated here verbatim.

- ***The freeboard is to be measured at mid hull length from the top of the side deck to the still waterline and should be at least 530 mm for a vessel 12 metres hull length and 685 mm for a vessel 22 m hull length. Freeboards for intermediate lengths to be by direct interpolation.***

  Again, many boats will not reach that standard, and the freeboards should be simply reported without comment.

  If possible, the marine surveyor should also carry out a simple rolling test on the boat and report the results. See Appendix 2.

  N.B.3. The marine surveyor should also note that narrowboats are single compartment vessels. That is, they have a single bulkhead at each end of the main cabin neither of which are strictly water tight. It takes, therefore, only the single cabin between those bulkheads to be breached open to the sea for her to plunge sink.

The dangers of overplating an area of the hull have been discussed elsewhere and will not be considered further here except to state that, bearing in mind the Law of Unconsidered Consequences which is so often overlooked, one of the side effects of overplating is the changes that the practice have on the boat's transverse metacentric stability. The extra plating adds approximately 7 kg per square metre of area per mm of thickness to the hull and that has a deleterious effect on the height of the centre of gravity, it also alters the metacentric radius, the height of the centre of buoyancy, reduces the area under the statical stability curve, the maximum GZ value and the angle at which it occurs, reduces the AVS and also reduces both the down flooding height and angle. If carried out, it should, therefore, only be done with careful thought and with such effects taken into account.

Considerations on the Metacentric Stability of Narrowboats

APPENDIX 1

DEFINITIONS OF SEA AREAS

(From the Official Journal of the European Union)

Article 1 of the **European Directive (94/25/EC)** dated **16th June, 1994** defines recreational craft as "…. any boat, of any type, regardless of the means of propulsion, from 2.50 metres to 24.00 metres hull length, measured according to the appropriate harmonised standards, intended for sports and leisure purposes." The significant wave height is defined as the average height of the 1/3 highest waves and a number of the waves experienced may be up to twice that height.

Category Definitions

A. OCEAN: Vessels designed for extended voyages where conditions may exceed wind force 8 (Beaufort Scale) and significant wave heights of 4 metres and above may be experienced and vessels largely self sufficient.

B. OFFSHORE: Vessels designed for offshore voyages where conditions up to, and including, wind force 8 (Beaufort Scale) and significant wave heights up to, and including, 4 metres may be experienced.

C. INSHORE: Vessels designed for voyages in coastal waters, large bays, estuaries, lakes and rivers where conditions up to, and including, wind force 6 (Beaufort Scale) and significant wave heights up to, and including, 2 metres may be experienced.

D. SHELTERED WATERS: Vessels designed for voyages on small lakes, rivers and canals where conditions up to, and including, wind force 4 (Beaufort Scale) and significant wave heights up to, and including, 0.5 metres may be experienced.

Categorisation of Waters by the U.K. Maritime and Coastguard Agency MSN 1719(M)

These categorisations strictly apply only to Class IV and V Passengers Vessels and determine which waters are NOT regarded as 'seas'.

Category A: Narrow rivers and canals where the depth of water is less than 1.5 metres and where the significant wave height could not be expected to exceed 0.6 metres at any time.

Category B: Wider rivers and canals where the depth of water is generally more than 1.5 metres and where the significant wave height could not be expected to exceed 0.6 metres at any time.

Category C: Tidal rivers and estuaries and large, deep lakes and lochs where the significant wave height could not be expected to exceed 1.2 metres at any time.

Category D: Tidal rivers and estuaries where the significant wave height could not be expected to exceed 2.0 metres at any time.

N.B.4. The Port of London Authority (Safety Bulletin No 1/2012) has recommended that the tidal reaches of the river Thames which stretch from Teddington Lock to the Number One Sea buoy be regarded as MCA Category C waters as wave heights of up to 1.2 m may be encountered there. The author would also **recommend** that the similar tidal reaches of the river Medway be so classified.

Narrow boats with engine room side ventilation holes particularly are not suitable for operation on these waters.

Considerations on the Metacentric Stability of Narrowboats

APPENDIX 2

AN APPROXIMATE DETERMINATION OF A SMALL VESSEL'S STABILITY BY MEANS OF THE ROLLING PERIOD TESTS

(From the Official Journal of the European Union)

The Rolling Period Method

As a supplement to the approved stability information, the initial stability can be approximately determined by means of a rolling period test. Vessels with a high initial stability are said to be stiff and have a short rolling period and conversely, vessels with a low initial stability are said to be tender and have a long rolling period. The following guidance notes describe the rolling period test procedure which can be performed at any time by the crew of a small vessel.

1. The test should be conducted in smooth water with the mooring lines slack and the vessel breasted off to avoid making any contact during the operation. Care should be taken to ensure that there is a reasonable clearance of water under the keel and the sides of the vessel.

2. The vessel is made to roll. That can, for example, be done by leaning on the nearest gunwale when it is at its highest point and taking one's weight off as soon as the boat starts to move downward.

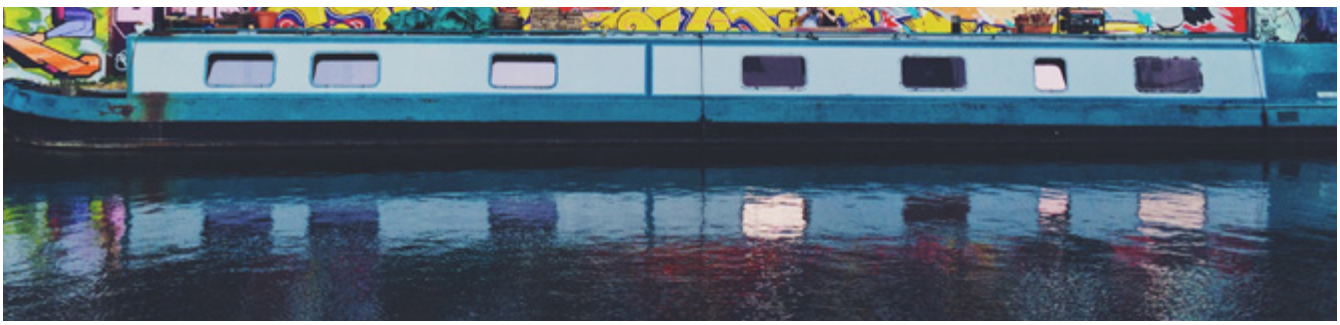
3. The timing and counting of the oscillations should only begin when it is judged that the vessel is rolling freely and naturally and only as much as it is necessary to accurately time and count these oscillations (approximately 2° - 6° to each side).

4. With the vessel at the extreme end of the roll to one side (say port) and the vessel about to move toward the upright, one complete oscillation will have been made when the vessel has moved right across to the other extreme side (*i.e.* starboard) and returned to the original starting point and is about to commence the next roll.

5. By means of a stop watch, the time should be taken for not less than six of the complete oscillations. The counting of these oscillations should begin when the vessel is at extreme end of a roll.

6. After allowing the roll to completely fade away, the operation should be repeated at least twice more. Knowing the total time for the total number of oscillations made, the time for one complete oscillation, say T seconds, can be calculated.

7. The boat's metacentric height can then be estimated using formula 5 above.



Ten Golden Rules of Loss Prevention for Expert Witnesses

ITIC was formed in 1992 through the merger of CISBA CLUB, a mutual insurer of shipbrokers, founded in 1925, and Transport Intermediaries Mutual Insurance Association (TIM).

Transport Intermediaries Mutual Insurance Association was formed in 1985 by Thomas R. Miller & Sons partnership with a view to expanding the sources and availability of liability insurance for all professionals in the transport industry. Since 1992, ITIC has grown steadily and has nearly 2,300 members in over 100 countries.

Today ITIC is managed by ITIM Co Ltd, a subsidiary of Thomas Miller & Co Ltd. Thomas Miller manages a number of world-leading mutual and other insurance companies providing insurance for shipping, transport and professional indemnity risks, including UK P&I Club, TT Club, HAMIA, BLP, OPDU, PAMIA and Bar Mutual.

These are ten golden rules drawn from ITIC's experience of defending experts...

1 A lot of appointments are casual. If you are a professional then you should have terms and conditions. ITIC has drafted some standard trading conditions for expert witnesses which can be found later in this article. These trading conditions may need adapting to your specific circumstances but are a good starting point. Contracting on a sensible basis will greatly assist if a dispute arises.

2 To err is human – the answer is insurance. The professional's clients should be able to expect that if the professional makes a mistake there is a reasonable sum available to compensate them. Meeting this expectation underpins confidence in the professional's marketplace. That is one of the roles of professional indemnity insurance.

In addition to the potential liabilities, even an "innocent" expert can face substantial legal costs dealing with a claim. At best only a proportion of these costs will ever be recovered. One important consideration is that appointment as an expert is a personal appointment rather than a company one. Make sure your company's policy covers you, as an individual, when acting as an expert, and not just when you are acting in the name of the company. Once you have appropriate terms and conditions and insurance there are some important considerations about how you perform your duties.

3 Don't allow your desire to help your client blind you to the evidence. Our adversarial system doesn't help. You will be described as "our expert" and the opponent's witness as "their expert". In spite of this, you are there to be an impartial expert, not an advocate of your client's case. Problems happen if you allow yourself to over zealously "support the cause". Your client will blame you if he loses.

4 As it says in the statement of truth you must sign, your evidence must be your complete professional opinion. Check that you haven't disregarded anything because it doesn't fit your theory.

5 The purpose of your evidence is to explain technical matters. This is very different from stating what you would have done in similar circumstances. Justification of your usual practice can taint your evidence.

6 Don't be bullied. A survey conducted by an expert witness training company found that one in ten expert witnesses had been pressurised by a lawyer into changing evidence before the case had gone to court. It is your evidence and if it goes wrong you will have signed off on it.

7 Challenge inadequate or misleading instructions. The Expert Witness Institute's terms make it clear that you are to be provided with comprehensive instructions.

8 Don't accept instructions if you cannot be independent. The expert may be faced with a business dilemma of not wishing to alienate the principal but simply not wishing to say what is required.

9 Check that you are not conflicted. A surprising number of experts accept an engagement only to find that a colleague has dealt with the opposition.

10 Don't stray outside the area of your expertise. Lawyers will seek to challenge whether the opponents' expert is properly qualified to comment on every aspect of the case. If they can show you lacked expertise for part of your report your work will be discredited.

These are ten golden rules drawn from ITIC's experience of defending experts

ITIC's standard trading conditions for expert witnesses

These terms and conditions are published for the general interest of members of ITIC acting as an expert witness in the UK. The specific requirements of individual businesses vary and accordingly no responsibility can be taken for the suitability of these terms and conditions to a specific business or contract. As with all contractual terms it is important that the user ensures that they are properly incorporated in their contract with their counterparty. You should seek the advice of your usual legal advisor prior to using these terms and conditions. Guidelines on incorporating terms and conditions can be found on ITIC's website.

1. DEFINITIONS

"Expert" is the Expert trading under these conditions.

"Client" is the party at whose request or on whose behalf the Expert undertakes the Services. This may on occasion be the "Solicitor" or "Insurer".

"Solicitor" is the firm of solicitors and/or individual solicitor appointed by or acting on behalf of the Client. The Solicitor may be the Client.

"Insurer" is the insurer of the Client who may appoint the Expert directly or indirectly. The Insurer may be the Client.

"Report" means any report or statement supplied by the Expert in connection with the Services requested by the Client.

"Disbursements" means the cost of all reasonable photography, reproduction of drawings, diagrams, sketches and printing, duplicating and, where applicable, electronic transmission fees, and all reasonable and appropriate expenses including, but not limited to, reasonable travel, refreshments and hotel accommodation where an overnight stay is necessary.

"Fees" means the fees charged by the Expert to the Client for the Services excluding any Disbursements and value added tax where applicable.

2. SCOPE

The Expert shall provide its services solely in accordance with these terms and conditions ("Conditions").

3. SERVICES

The Expert will act as an expert witness in relation to a claim or dispute involving the Client. The expert, if required, will provide written reports, witness statements and oral testimony in a court or other tribunal. The expert may also, if required, attend settlement meetings and/or mediations. The Client, either directly or via their Solicitor or Insurer, will set out in writing the exact services it requires the Expert to provide. Where possible, the Expert will confirm these in writing or alternatively the Expert will advise what services it will perform in connection with the Client's instructions. Once the Expert and the Client have agreed what services are to be performed ("the Services") any subsequent changes or additions must be agreed by both parties in writing.

4. PAYMENT

(a) Where it is agreed that the Client shall pay the Expert's Fees and Disbursements: The Client will pay in accordance with these Conditions and in any event not later than 30 days following the relevant invoice date, or in such other manner as may have been agreed in writing between the parties. Any delay in payment shall entitle the Expert to interest at 4% above the Base Lending Rate of HSBC Bank Plc prevailing at the time of default or the rate set out in the Late Payment of Commercial Debts (Interest) Act 1998 applicable at the time of default, at the discretion of the Expert.

(b) Where it is agreed that the Insurer shall pay the Expert's Fees and Disbursements: The Insurer will pay in accordance with these Conditions and in any event not later than 30 days following the relevant invoice date, or in such other manner as may have been agreed in writing between the parties. Any delay in payment shall entitle the Expert to interest at 4% above the Base Lending Rate of HSBC Bank Plc prevailing at the time of default or the rate set out in the Late Payment of Commercial Debts (Interest) Act 1998 applicable at the time of default, at the discretion of the Expert.

(c) Where it is agreed that the Solicitor shall pay the Expert's Fees and Disbursements: The Solicitor, when in receipt of the Expert's invoice will promptly send a disbursement invoice to the Client. The Solicitor shall pay the Expert within 14 days of receiving funds from the Client. Any delay in payment by the Solicitor shall entitle the Expert to charge interest on the Fees and Disbursements to the Solicitor at 4% above the Base Lending Rate of HSBC Bank Plc prevailing at the time of default or the rate set out in the Late Payment of Commercial Debts (Interest) Act 1998 applicable at the time of default, at the discretion of the Expert.

It is understood that the Solicitor is usually the agent of the Client in the appointment of the Expert and therefore, the Solicitor will have no direct liability for the Expert's fees UNLESS the Expert is acting directly for the Solicitor or the Solicitor has agreed to be responsible for paying the Fees and Disbursements.

5. OBLIGATIONS AND RESPONSIBILITIES

(a) Client:

The Client undertakes to ensure that full instructions are given to the Expert, either directly or via their Solicitor and/or Insurer, and are provided in sufficient time and good order to enable the Services to be performed. The Client must procure all necessary access for the Expert to any goods, cargo, premises, vessels, installations and/or transport and to ensure that all appropriate safety measures are taken to provide safe and secure working conditions where appropriate. The Expert shall not be liable for the consequences of late, incomplete, inadequate, inaccurate or ambiguous instructions. It is understood by the Client that the Expert's overriding duty is to the Court.

(b) Expert:

The Expert shall use reasonable care and skill in the performance of the Services in accordance with sound practice. The Expert's overriding duty is to the Court.

(c) Report:

The Expert shall submit a written Report to the Client following completion of the agreed services providing the Expert's opinion, unless otherwise expressly instructed by the Client (directly or via their Solicitor and/or Insurer) not to do so.

(d) Attending Hearings:

The Expert, where necessary, will attend at court or other equivalent hearing (*i.e.* arbitration). The Expert may also attend mediations or settlement meetings if requested to do so and the date is acceptable and agreed by all parties.

(e) Confidentiality:

The Expert understands that the information provided by the Client may be subject to confidentiality and agrees not to permit access to such information to any third party unless the Client expressly grants permission. This obligation will not however extend to information which (i) was already or becomes known to the Expert through other sources not subject to such an obligation of confidentiality (ii) is or becomes known to the public generally other than as a result of a breach of this obligation or (iii) which the Expert is obliged to disclose pursuant to an order of a court or other such authority. In all cases such obligation of confidentiality shall be deemed to end 3 years after the end of performance of the Services. The end of Services being the date of the Expert's final invoice.

(f) Intellectual Property:
The right of ownership in respect of all original work created by the Expert remains the property of the Expert. The Expert will provide a licence for the Client (and/or the Solicitor and/or the Insurer) to use the work for all reasonable uses.

(g) Conflict of Interest/ Qualification:
The Expert shall promptly notify the Client of any conflict of interest or lack of suitable qualifications and experience, which would, in the opinion of the Expert, render it undesirable for the Expert to continue its involvement with the appointment. The Client shall be responsible for payment of the Surveyor/Consultant's Fees up to the date of notification.

6. LIABILITY

(a) Without prejudice to Clause 7, the Expert shall be under no liability whatsoever to the Client for any loss, damage, delay or expense of whatsoever nature, whether direct or indirect and howsoever arising UNLESS same is proved to have resulted solely from the negligence, gross negligence or wilful default of the Expert or any of its employees or agents or sub-contractors.

(b) In the event that the Client proves that any direct loss, damage, delay or expense was caused by the negligence, gross negligence or wilful default of the Expert aforesaid, then, save where such loss, damage, delay or expense has resulted from the Expert's personal act or omission committed with the intent to cause same or recklessly and with knowledge that such loss, damage, delay or expense would probably result, the Expert's liability for each incident or series of incidents giving rise to a claim or claims shall never exceed a sum calculated on the basis of ten times the Expert's total fees for the Service or £125,000 whichever is the greater. The Expert shall not be liable for any indirect or consequential loss at all. The Expert shall also not be liable for damage to equipment and other items placed at its disposal by or on behalf of the Client however such loss or damage occurs.

7. INDEMNITY

Except to the extent and solely for the amount therein set out that the Expert would be liable under Clause 6, the Client hereby undertakes to keep the Expert and its employees, agents and sub-contractors indemnified and to hold them harmless against all actions, proceedings, claims, demands or liabilities whatsoever or howsoever arising which may be brought against them or incurred or suffered by them, and against by any party (including, but not limited to, the Solicitor and Insurer) and in respect of all costs, loss, damages and expenses (including legal costs and expenses on a full indemnity basis) which the Expert may suffer or incur (either directly or indirectly) in the course of providing the Service under these Conditions.

8. FORCE MAJEURE

Neither the Expert nor the Client shall, except as otherwise provided in these Conditions, be responsible for any loss, damage, delay or failure in performance hereunder arising or resulting from act of God, act of war, seizure under legal process, quarantine restrictions, strikes, boycotts, lockouts, riots, civil commotions and arrest or restraint of princes, rulers or people.

9. INSURANCE

The Expert shall effect and maintain, at no cost to the Client, Professional Liability Insurance for such loss and damage for which the Expert may be held liable to the Client under these Conditions.

10. TIME BAR

Any claims against the Expert by the Client shall be deemed to be waived and absolutely time barred upon the expiry of one year from the submission date of the final invoice to the Client.

11. SEVERANCE

If a court finds that any provision of these terms and conditions is invalid, illegal or unenforceable, that provision shall, to the minimum extent required, be deemed deleted and the validity, legality and enforceability of the remainder of that and all other provisions of these terms and conditions shall not be affected.

12. JURISDICTION AND LAW

These Conditions shall be governed by and construed in accordance with the laws of England and Wales and any dispute shall be subject to the exclusive jurisdiction of the English Courts.

ITIC is the leading provider of professional indemnity insurance to the marine sector.

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- more than 350 other ship broking companies;
- over 180 naval architects;
- over 150 ship and crew managers;
- marine registries, new building supervisors, and shipping pool managers all over the world.

Contact ITIC by post at
90 Fenchurch Street, London EC3M 4ST.

Telephone: **+44 20 7338 0150**
Website: **https://www.itic-insure.com**

Article first published on the ITIC website at **https://bit.ly/2TncnX4** in November 2018 and reprinted here with their kind permission.

All you need to know about surveying, and more, in just 24 hours

Marine Surveying International FEST 2019

II

Tuesday 29 - Wednesday 30 October

Too many experts? Or simply not enough?

BY **LEE WARLTIER**
MIIMS

Early November and it was that time of year again. The nights draw shorter as does the time left to ensure CPD points are acquired for the end of the year. Outside of the IIMS and other associations I see that our involvement with the UK legal sector remains important, not only for the latest legal gossip and training but also as this is an excellent marketing base for professional appointments. The best way to operate in legal circles is to maintain a relationship with various expert witness movements. Having completed the CUBS (Cardiff University Bond Solon) Certificate in Expert Training, I push to maintain the expected standards of the various courses both Bond Solon and the Academy of Experts offer in report writing, court room skills and cross examination. All excellent skill sets applicable to many walks of life.

Marking once again that rare occasion of the largest gathering of registered Expert Witnesses in the UK, Church House within the confines of the Palace of Westminster, London was loaded up with medical boffins, quantity surveyors, architects and even alcohol tasters (what a job!). Yet again I had that lonely feeling as the only Marine Surveyor representative of our trade.

Joining leading expert witnesses working in civil, criminal and family law allowed for a huge wealth of experience and expertise to be available and whilst originally anticipating the usual dribble of law and what we can and cannot do (and that which we must) I was swiftly taken aback at the immense relevance of the subject matter of the day to my continuing work. A full review of the use of artificial intelligence and the responsibilities in relation to data use and the expert formed great introductory seminars. A full update on the Civil Procedure Rules and discussions of example cases followed and then a brilliant discussion and opinionated group seminar on a judge's perspective on expert reports and their testimony by Sir David Foskett, High Court Judge.

This proved to be an excellent insight from the top brass as to what they are looking for, require and more importantly expect. It is interesting to know that many self-declared 'experts' still do not know the requirements of the CPR particularly regarding report formatting, content, statement, hot-tubbing and joint meetings of experts. The day wrapped up with separate seminars on disclosure and working with counsel. So, whilst not all the speeches in this great hall compared necessarily to Sir Winston Churchill's announcement to the world the sinking of the German battleship Bismarck when it was used as parliament's temporary home in World War II, most were not to be missed and the day was remarkably more enjoyable and interesting than originally expected (not forgetting the food!).

Okay, so this year's conference focused on changes in the law, technological implications and the impact of Brexit. An all-round success across the board. Totally relevant for all industries, however there was just one problem; no marine surveyors were present to take advantage! Dwarfed by the crowds of architects, quantity surveyors, RICS candidates, psychiatrists, accountant's legal beavers and medics covering a variety of fields I felt rather unloved. On several occasions, I was asked about my trade and specialisation; all good questions but there was a base line to this which was the stereotypical idea that marine surveyors are cross trade enthusiasts without qualification. Many times, in conversation, when describing what I do for a living it made me realise what a niche little (but yet huge) industry we work in. Having to describe the training and experience required to get we were are, in an industry where for once experience is often put before qualification is sometimes difficult to justify to expert peers. My training however, will never be over. My field of expertise rests with 'expert valuation' having completed over 100 this year to date with several in arbitration at present. This is in addition to high value logistics (specifically the handling and securing of high value cargoes) an area in which I have worked and studied for fifteen years. Explaining these basic facts to my peers at the conference won me some points and by the end of the day you could say I was one of them, but nonetheless always feeling slightly like a guest amongst others.

I've always been rather sceptical about subjects such as raising professionalism within the IIMS and our beloved industry. However, being placed in a room full of internationally accredited experts opens one's eyes to the opinion of our field and knowing that there are several marine surveyors working as 'expert witnesses' (though none were present at such a gathering or to my knowledge hold membership to any of the associations relevant). I think it is perfectly understandable where the negative opinion is sought and I would welcome discussion from any of our membership who work in the expert witness field on how they maintain their standards if association with some of the legal institutes would be of interest.

Working with the IIMS head office I am hopeful we may see a return in representation of these groups at future conferences; so watch out. I personally am an active member of the activities with both Bond Solon as a training academy but also the Academy of Experts which give unrivalled support to their membership. Check them out! Hopefully recent discussions with the CEO will result in a regular contribution by the likes of Bond Solon to The Report Magazine which will contribute to raising more awareness and understanding in this somewhat turbulent and potentially lethal sector of our industry (and yes, if you are not properly tuned into the ways of the court and the CPR it could be lethal for your career)!

Moving forward I think the reputation of the marine surveyor is somewhat tarnished in the eyes of parallel industries and the IIMS is working toward the correction of this. There is lots to do on both a fee and professional training sense. The expert witness world is one where one poor performance can end your career in an instant. There are several examples which can be given which include i) Arroyo & others V Equion Energia Ltd (2016) EHC 1699 where a class action was brought about in which the experts were criticised for making assumptions and trying to bolster the claimants case. Another example is provided in ii) Allen Todd Architecture Ltd V Capita Property & Infrastructure Ltd (2016) EWHC2171 where the confidence was lost in the appointed expert due to the delays and lack of communication; the claimant sought to change experts mid trial. There are several examples which show how fragile your reputation can be and the simple transition from marine surveyor into an expert witness is not as easy of some might think.

It would be interesting to complete an assessment of our membership to find out who our experts are and what qualifies them to be as such. I would pose the following questions to our would-be experts:

1. When did you last receive an update to the Civil Procedure Rules (specifically part 35 which relates to the appointment of expert witnesses)?
2. Is your knowledge of the requirements of the CPR and relevant parts enough to guide you through the process should you receive an appointment?
3. When was the last time you received training in courtroom skills and perception?
4. Do you know how to write an expert witness report, its legally required content and the formatting necessities required?

I would welcome any 'experts' within our membership that are keen to collaborate on the issues raised to contact me by email.

Lee Warltier (***lee@sgsurvey.com***)
Director, Sterling Global Marine Limited

Key references:

- Bond Solon 2018 Expert Witness Conference literature.
- Allen Todd Architecture Ltd V Capita Property & Infrastructure Ltd (2016) EWHC2171.
- Arroyo & others V Equion Energia Ltd (2016) EHC 1699.

INTRODUCING INSPECTX

A NEW TOOL FOR THE OLD SCHOOL

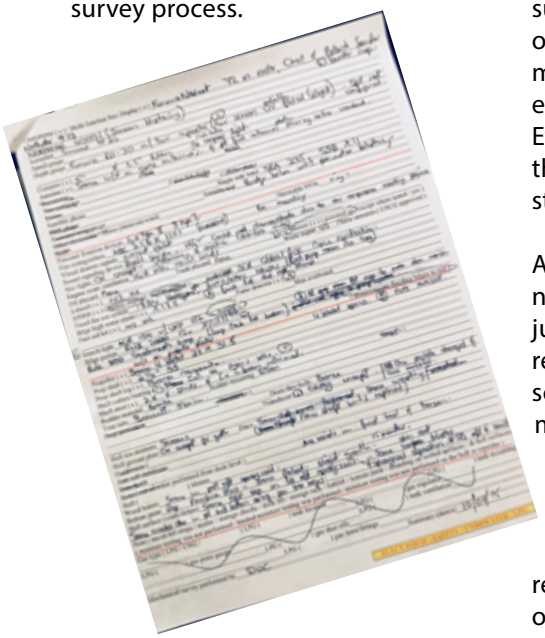
Based in the sunshine state of Florida, second generation marine surveyor, Craig Norton, is the President of InspectX. A SAMS® Accredited Marine Surveyor, RYA 200 ton Yachtmaster Offshore and MCA Y3 Chief Engineer, he decided he was fed up of duplicating his work when writing his reports, collecting the evidence in the field only to come home to have to make sense of his scribbled notes so he could write his report. His thought process led him to search for a solution so that a report could be generated whilst doing the survey to save those many hours in front of a laptop once home. The result is InspectX, a programme designed for surveyors by surveyors.

BY **CRAIG NORTON**

It is 2019 and we are living in the technological future we could only have imagined 20 years ago. As marine surveyors we are fortunate to have such a large selection of advanced tools readily available, all of which can significantly improve the quality and scope of our inspections. We have advanced methods of non-destructive testing such as thermography, moisture meters, ultrasonic testing and lab analysis, yet when conducting a survey inspection, we still take handwritten field notes on paper just the way we did decades ago. The tedious task of taking handwritten notes and duplicating the effort by transcribing these notes into a legible document in the office is accepted as the unfortunate norm.

InspectX will change that forever. It is the first and only marine report writing software specifically designed to complete an entire survey report on a touchscreen tablet while in the field. It is aptly

named because of its versatility which enables an inspection and report of almost anything. Before discussing this new solution, let's take a look at the problem with the survey process.



It is a well known standard that preparing a detailed survey report takes roughly an hour in the office for every hour that was spent in the field. For most surveyors, this means that most evenings and weekends will be spent working on these reports. As a partner in a well-established and very busy survey company in South Florida, I very much enjoyed the onboard survey process but hated the long nights and weekends writing these reports. Just like the preparation of any survey report, ours were tedious and time consuming. Added to the repetitious task of preparing the report is the constant stress and responsibility that comes along with trying to ensure every possible item was thoroughly checked during the inspection. The pages and pages of scribbled notes were often torn or saturated with saltwater. Every evening, my goal was to complete transcribing just half the notes collected from that day's assignment which meant that I would spend the entire evening in front of the computer, even eating dinner at my desk. I was losing sleep, had little time for my wife or myself and I realized that continuing in this way was unsustainable. I'd had enough, but I wasn't alone.

Over and over I heard from other surveyors with similar stories of late nights spent behind the computer and no personal life. There was clearly something wrong with our survey process and what became overwhelmingly clear, was just how much time we spent duplicated our effort when transcribing our notes. Even when sent to a transcriptionist, the review and correction time was still too long to justify the expense.

As an engineer by trade, it is in my nature to identify and fix problems just like this. Teaming up with a respected surveyor as well as a software developer, we began a mission to completely replace the notepad and pen and introduce the idea of using a tablet to collect information while in the field. To accomplish this would require the design and construction of software specifically tailored to the marine industry and with the marine surveyor's process in mind. We identified two key challenges that would be absolutely necessary in order for this to work in the field. Firstly, this software would need to be able to rapidly navigate to a specific location within the report faster than flipping through the pages of handwritten fieldnotes, and secondly, once at that location, this software would need to be able to enter information faster than writing with a pen. With those two specific goals in mind we set out to create a program purposely designed toward entering information while in the field and eliminating the duplicated effort of transcription once in the office.

After studying numerous survey reports and separating the structure of these reports into categories, sub-categories, and headings we chose to represent each of these sections as clickable buttons on the screen. Visually presenting the entire report layout in this fashion enabled rapid navigation to any heading within the entire report with just a single press. This rapid navigation answered our first key component.

Next, we added a list of commonly used phrases called "Quick Insert Options" to each heading within the report. Whether taking inventory, describing a condition, or writing a deficiency we often use similar phrases and statements in our writing. Having access to a running list of these phrases that could be modified, built upon and fully customized directly in the field meant that we could have an unlimited resource of all our past commonly used statements for entry when this condition was sighted again. These "Quick Insert Options" enable an entire phrase, one that was already carefully worded with references or standards, to be instantly entered into the report. Newly added phrases can be saved for future use and custom changes can be made with the tablet's onscreen

keyboard, handwriting to text recognition, and even through voice dictation. These adjustments can be made faster than writing it by hand and this ability to quickly insert text and phrases was the second key factor and the last piece needed to prove our concept in the field.

With an early version of InspectX software loaded onto a touchscreen tablet, my business partner Peter Muir and myself ventured out to inspect a small vessel early in 2016. We had our familiar clipboard with fieldnotes on standby but neither of us picked up the pen, instead pressing buttons and making our selections directly on the tablet. The process proved natural and fluid and after that first assignment I clearly remember us both laughing out loud at the absurdity that we just managed to complete an entire report in the field without at all compromising on our content or quality!

Once we realized the full extent of how much time this would save, we knew there would be other surveyors that could benefit from this system. We began working on a version that could be customized and tailored for use on many different types of survey inspections. This of course, did not occur overnight. The next couple of years saw continuous progress and additional enhancements that have all proved extremely valuable. Peter had accumulated an enormous database of information during his 26 years of surveying and we agreed to include all of this content as an option with the program for other surveyors to build upon. This content can be modified and new phrases can be added at each surveyor's discretion. From the ground up, the layout of the entire program has been designed with the needs of a marine surveyor kept in mind. The buttons are large and easy to read, and the navigation and entry is designed to operate entirely by touch. There is a dark background with bright contrasting colors to help screen readability even in bright sunlight. We designed a color scheme where the buttons change color to represent their status and level of completeness. As information is entered, a heading can be marked as 'in progress' which turns the button yellow if the inspector feels there is more information to be added to this heading, or it can be marked as 'complete' which turns this button green. This visual cue, along with a percentage value, serve as a very rewarding indicator as the inspection and subsequent report are completed together. At a glance, a surveyor can see exactly which headings have been completed and which are still in progress.

The powerful benefits of these colored buttons were not fully realized until we started to put the software into practical use. Unlike handwritten fieldnotes, this software now functioned as a *reminder* to inspect certain items and this served to increase consistency and reduce the chance for omitting an important item. In addition, the ability to mark a heading as 'in progress' proved to be incredibly useful as information could be entered on any item but left 'in progress' as a visual reminder to demonstrate, verify or add further information at that particular entry. This helped to improved consistency and accuracy during the inspection in a way that handwritten field notes could never match. We are frequently reminded by other surveyors using InspectX just how valuable these colors have become to their survey process.

The vessels most of us inspect are not arranged in the order that a report is written and being able to quickly navigate to different sections of the report through the software allows for a more natural workflow throughout the inspection day. A surveyor can start in any area of the vessel and just record what is seen without the need for any particular order, and with a single touch they can jump to an entirely different section of the report to enter information on another item. This fluid process ensures the software functions as a tool to aid in the inspection process rather than dictating the order of items to be inspected. All the while, the color scheme works to ensure nothing gets overlooked and everything

moves along according to the information intended for collection. This software installed on a tablet in the field functions as a tool, equally as important and essential as an inspector's flashlight. Arriving to an assignment with the technology of a tablet can project a competitive edge and we have noticed referrals and requests for survey inspections purely based on the fact that this software ensures a thorough and detailed report. Brokers and clients are continually impressed, not just with the fast report turnaround time, but equally with the detailed process that affords them and their clients the added confidence that all possible inspection points are thoroughly investigated.

Beyond entering information and saving time, InspectX improves the delivery of the end of day discussion with the client. This is most often utilized in the case of pre-purchase inspections, where the prospective purchaser is eagerly awaiting to hear the list of deficiencies to better understand the vessel's current condition. In the past when using handwritten notes, I would mark the margin of the page wherever a deficiency was mentioned and during my discussion with the client I could reference those markings in the margins. However, there was simply no way to prioritize these items which resulted in my delivered list being a mixture of high priority safety related items and low priority cosmetic deficiencies in the order they were written on paper. This changed when using

InspectX as these deficiencies are already entered and prioritized accordingly and now the relevant information can be relayed to the client in an orderly and meaningful way. Leaving the vessel with all the headings marked complete inspires confidence and assurance of a thorough inspection, and that feeling can only matched by the satisfaction of knowing the entire report is also complete.

Among the powerful features of InspectX is a unique option for those surveyors who collaborate as a team on any assignments. A networked link between computers allow multiple surveyors to work on the same report at the same time. The fact that all participants can visually see the inspection process by the colored buttons means less time conversing to insure all areas were inspected which makes for a more streamlined workflow. This feature can be useful as a training tool for new employees or when training an apprentice. In addition, this same networking ability will be most useful for the easy transition from the work tablet to your home computer, which can be done without transferring any files. It's a seamless experience to come home with your work tablet and immediately open up the software through a browser from the comfort of your main desktop computer.

The pricing model for InspectX is different from most programs today that require either a large investment or monthly subscriptions. InspectX is free to download and we offer remote personal demonstrations to help get setup and running. We chose a unique approach to keep the software affordable and accessible to everyone, and a small charge is applied only once to each project upon completion. Changes can still be made to this project after purchase without incurring another charge. This small fee is easy to build into the cost of each assignment and will also ensure InspectX stays ahead of the curve with updates and enhancements. We don't want to fall behind the times which is why our software is constantly evolving and growing. We listen to the needs of our clients and their feedback help us to prioritize future updates.

The complexity of modern vessels and their systems require more time and attention to inspect. Matching this pressure is the continuous demand for faster report turnaround. Everything in InspectX has been designed with the needs of the surveyor in mind, and the simple and clean layout presents everything that is important while keeping the interface free from distractions. Just like the large selection of advanced tools at our disposal, InspectX brings a modern edge to an old practice and helps to improve performance and save time on each survey inspection.

Craig was born in South Africa and grew up living onboard sailboats in the Caribbean which lead him to developing shipwright skills during refits and rebuilds from a young age. Ocean crossings and yacht deliveries lead to the superyacht industry where he obtained a 200 ton commercial captain's license working on luxury yachts. Later he shifted to the engineering department and obtained a YIII Chief Engineer license before becoming a SAMS AMS® marine surveyor. Most recently, Craig is the founder and president of InspectX marine report writing software.

The creation and continued support of InspectX is a team effort and particular credit should be given to Peter Muir AMS® and his extensive database of included content. Dan Oross, mastermind software developer who has helped make this vision better than we could've ever imagined. Craig's wife Nedra, the brains, inspiration, drive and support without which, none of this would've been possible. Last but not least, thank you to all our current and active users who continue to spread the word and help us grow.

Visit: **inspectxpro.com or**
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Now in its 22nd year Seawork, Europe's largest commercial marine exhibition, offers a tremendous array of opportunities to gather the latest information and intelligence from the best in the commercial marine sector.

With just over 100 days to go to Seawork 2019, preparations are gathering momentum; here's a selection of what's on offer this year...

Knowledge is power

The **Seawork Commercial Marine Conference 2019** will cover two high-profile sectors – **USVs** and **Hybrid**.

Estimated at $US470m, the unmanned surface vessel market is expected to reach around $US1billion by 2022. USVs can augment many functions including divers in salvage, port security, fish farms surveillance, bridge and dam monitoring, research and education. This morning conference session will benefit any business that serves these sectors by helping them keep on top of the latest developments.

With many vessel operators considering the benefits of embracing hybrid propulsion, interest in Hybrid is high. Chaired by Duncan Duffy, Global Technology Lead for Electro-technical matters, Lloyds Register, the Hybrid Conference, will take place on the afternoon of 12 June. Speakers from academia and commercial will cover the latest developments in the drive to reduce operating costs and minimise fuel consumption, together with growing environmental and legislative pressures to bring down emissions.

The Seawork Business Briefings are a great example of Seawork's commitment to facilitating business in the commercial marine sector. A popular feature at Seawork, the free-to-attend Business Briefings cover a variety of industry-pertinent issues and feature expert presentations from industry gurus, exhibitors and supporting associations. Hot topics up for discussion in 2019 are maritime mass rescue operations, remote monitoring and control of workboat operations, cyber security and, not surprisingly, life after Brexit/Non-Brexit.

Applied in an increasing number of structures of all types, Composite technology brings weight reduction and increased rigidity. Composites UK will be hosting a special forum session to highlight composites in the marine sector.

The must-attend UK MOD Procurement session will be held on day three of Seawork, Thursday 13 June 2019, from 1100 – 1300.

Fast vessels operating at high speed for security interventions and SAR are a significant specialist sector of the commercial marine business. As operating demands increase, new solutions for propulsion, navigation, communications and care of the crew will be needed. Speed@ Seawork sea trials and conference are aimed squarely at facilitating growth and development for the design, build and operation of these specialist vessels.

The Marine & Coastal Civil Engineering Expo (M&CCE Expo) joins Seawork

Recently acquired by Mercator Media Limited, organiser of Seawork, the M&CCE Expo is Europe's leading event showcasing the latest equipment and techniques in marine civil engineering and construction. M&CCE Expo will be situated exclusively in its own dedicated exhibition arena, and will run concurrently with Seawork, giving even more opportunities to source the best equipment, learn about best practice, and network with the best people in the commercial marine industry.

Attracting over 7,700 attendees each year, Seawork hosts over 610 exhibitors from 70 countries showcasing 10,000 products and services.

Visit **Seawork.com** to see the full extent of what's on offer at Seawork 2019.
Don't forget to attend the Small Craft Surveyors Forum at Seawork on the afternoon of Wednesday 12. Details coming soon.

What has gone wrong at the start of 2019 with a string of accidents and casualties?

AN OPINION ARTICLE BY **RICH MADDEN** (REPRINTED FROM GCAPTAIN.COM)

It's been an active beginning to 2019 in terms of the multitude of maritime casualties. The phone at the Panama Marine Accident Investigation Department was likely ringing off the hook with three major incidents on Panama-flagged vessels in the first two days of the New Year. The first few weeks of the year produced a wide range of serious casualties and they are likely just the tip of the iceberg in terms of incidents and near misses.

The casualties begin ...

These casualties started with the Sincerity Ace, a Panama-flagged car carrier which suffered a major fire in cargo spaces on 31 December 2018 in the North Pacific. The vessel was subsequently abandoned with four known casualties and one crew member missing.

On 1st/2nd January, MSC Zoe, a Panama-flagged ultra large container vessel (ULCV) was enroute to Bremerhaven, Germany. During heavy weather, the vessel lost 290+ shipping containers overboard. The containers have washed up on German and Dutch beaches with significant pollution.

Also on 2nd January 6 crew members from the MSC container ship MSC Mandy were kidnapped off the coast of Benin. The Panama-flagged feeder vessel was on the way from Lome to Lagos when a reported 8-10 pirates boarded the vessel and left with 6 of 26 crew, possibly including the captain.

A fire aboard the Yantian Express, a 7,500 TEU container vessel reportedly started in one container on deck on 3rd January 3rd and spread. The subsequent blaze forced the crew of the German-flagged vessel to abandon ship to a responding tug boat. The blaze was finally being brought under control a week later. Yantian Express was reportedly making her way to Freeport in the Bahamas under her own power.

On the less serious side from the view of personal injury, the bulk vessel Anglo Alexandria (UK-flagged) grounded while downbound on the Mississippi River on 5th January. While the vessel was refloated within 48 hours and there was no reported pollution, a queue of 50 in and outbound vessels had developed. In the Black Sea off Turkey, Volgo Balt 214 split in two and sank in heavy seas. While 7 of the Panama-flagged cargo vessel 's crew were rescued by Turkish authorities, 6, including the captain, were lost at sea.

Hong Kong harbour was the site of an explosion onboard the tank vessel Aulac Fortune on 8th January. The Vietnam-flagged vessel was preparing to bunker when the explosion occurred. At last report 1 crew member had perished with multiple still missing.

The Vanuatu-flagged cable layer Star Centurion was anchored in the Horsburgh OPL off Singapore on 13 January when the outbound Hong Kong-flagged tanker Antea collided with her. The damage to Star Centurion was so severe that she capsized and sank soon after with all crew being rescued.

Back in the Black Sea on 21st January, Tanzania-flagged LPG tankers Candy and Maestro were conducting a ship-to-ship (STS) transfer of cargo in international waters. During the transfer, a fire broke out, engulfing both vessels. The two vessels had a combined crew of 31 of which 19 were killed or are missing.

The merchant ships Candy and Maestro after the devestating fire.

The Aulcac Fortune on fire. Photo courtesy of the Hong Kong Police Department.

Debris on the beaches following the loss of over 200 containers from MSC Zoe.

The 650 foot Sincerity Ace pictured on fire 1,800 nautical miles northwest of Oahu in the Pacific Ocean. Photo courtesy of the U.S. Coast Guard

Cable ship MV Star Centurion sinks after colliding with MT Antea in Bintan waters. Photo courtesy of Tanjung Pinang Naval Base

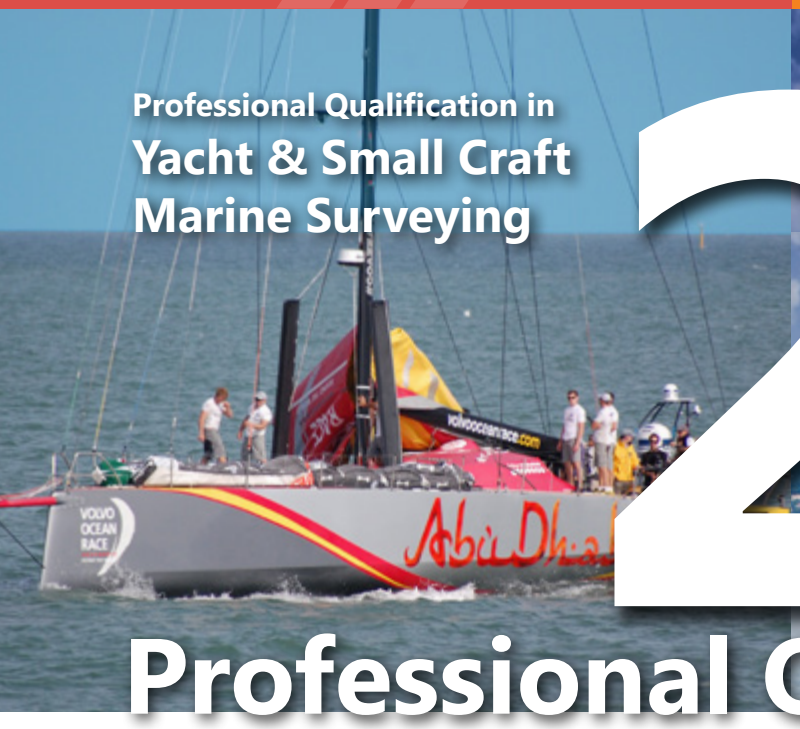
How do we learn from these incidents?

The International Maritime Organization (IMO) Casualty Investigation Code's (CIC) objective is, "a marine safety investigation, as defined in this Code, is an investigation conducted with the objective of preventing marine casualties and marine incidents in the future." In short, the goal is for flag states and the maritime industry as a whole to learn from incidents, identifying opportunities for improvement and best practices.

Unfortunately, 75% of the time according to Allianz Global, we find that the cause of these incidents are attributed to human error. "Human error" potentially involves all the different processes in shipping in which humans play a role – navigation, engineering, ship design, vessel management, shipping clerks, regulatory agencies, flag state. Everyone from the CEO down to the entry ratings in a shipping company is part of the human element. Everyone from the secretary of the IMO down to flag state and class inspectors is part of the human element. And all parts of the human element have the capability for error.

But what is human error?

The IIMS editor comments...
"The sheer volume of accidents and incidents at the start of 2019, resulting in the death of such a large number of seafarers, is both concerning and distressing. It will take many months, or even years, before the official reports are published and are in the public domain. Only then can the true causes of these accidents be understood and then the lessons learned. Life at sea has always been a hazardous way of making a living, but as an industry, the maritime sector must take collective responsibility for an unacceptably high level of accidents and react accordingly. The thoughts of IIMS at this time are with the families and friends of those who have lost loved ones."



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UK HMRC new **Making Tax Digital** system set to launch

Be aware, be very aware if your annual turnover exceeds £85k per annum and your business is UK VAT registered

Whilst it is evidently not relevant for surveyors operating outside the UK, those who practice and operate in the UK need to be aware of the looming changes under the government's new Making Tax Digital system. Even if you outsource your VAT to a specialist or accounting firm, make sure they are compliant with these new regulations for peace of mind.

Online VAT reporting will be introduced within the government's new Making Tax Digital system from 1 April 2019. This affects all businesses with a turnover above the £85,000 VAT registration threshold.

HMRC has published a large amount of guidance on exactly what small business owners should expect as a result of these changes and what they need to do to adapt their existing accounting processes. All businesses must keep and preserve their accounting records either for VAT purposes or for other tax purposes. But with the introduction of Making Tax Digital, VAT registered businesses trading above the VAT registration threshold will need to retain certain records within functional compatible software. If you deregister from VAT you will no longer need to keep digital records in functional compatible software, but you must retain your VAT records for the required period of four years.

The new requirements are far reaching and cannot be listed, but here are some of the most important elements to give you a taster of what's to come:

Depth of digital information that is required to be held

All businesses must have a digital record of their:

- business name;
- the address of your principal place of business;
- VAT registration number; and
- any VAT accounting schemes in use.

In addition, for each sale a business makes, the following information must be recorded:

- time of sale (tax point) – typically when a VAT invoice is sent or for cash accounting, when payment is received;
- value of the sale (net value excluding VAT);
- rate of VAT charged.

Where more than one sale is recorded on an invoice and those sales are within the same VAT period and are charged at the same rate of VAT, they can be recorded as a single entry.

How will the new VAT record keeping requirements work in practice?

The following examples illustrate how business owners should record transactions in the future:

Example 1

A business receives an invoice and types selected data contained in the invoice into functional compatible software. Even though they have logged the invoice, they must still keep the invoice in its original form as the data in the functional compatible software is not a copy of the invoice.

Example 2

Where the business has functional compatible software that scans the invoices received and puts the information in its ledger, the image is retained and contains all the detail required for VAT purposes then the business does not need to keep the original invoice unless it is required for another purpose.

What is HMRC's definition of 'functional compatible software'?

Functional compatible software in this instance is a software program, or set of software programs, products or applications, that must be able to:

- record and preserve digital records;
- provide to HMRC information and returns from data held in those digital records by using the application programming interface (API) platform; and
- receive information from HMRC via the API platform.

In some cases, software programs will not be able to perform all of these functions by themselves. For example, a spreadsheet capable of recording and preserving digital records may not be able to perform the other two functions listed above, but can still be a component of functional compatible software if it is used in conjunction with one or more programs that do perform those functions. Importantly, the complete set of digital records to meet Making Tax Digital requirements do not all have to be held in one place or in one program and can be kept in a range of compatible digital formats.

What happens if multiple software systems are used?

Where multiple software systems are used, they need to be digitally linked together and detailed guidance has also been issued about what this means. HMRC have clarified that "a digital link is an electronic or digital transfer or exchange of data between software programs, products or applications". Using a cut (or copy) and paste function, for example, will not qualify.

Examples of acceptable digital links include:

- linked cells in spreadsheets;
- emailing a spreadsheet containing digital records to an agent, so the agent can continue to work on the figures to use to file the VAT return;
- transferring records onto a USB memory stick and passing it to the agent; and
- XML, CSV import and export, and download and upload of files.

When do these new changes take effect from and when should business owners comply?

Although these new regulations become effective from 1 April 2019, HMRC will allow a period of time for businesses to have in place digital links between all parts of their functional compatible software.

For the first year following implementation (VAT periods commencing between 1 April 2019 and 31 March 2020) businesses will not be required to have digital links between software programs. The one exception to this is where data is transferred, following preparation of the information required for the VAT Return, to another product that is API-enabled solely for the purpose of submitting the 9 Box VAT Return data to HMRC. The transfer of data to this product must be digital.

Also for the first year following implementation (VAT periods commencing between 1 April 2019 and 31 March 2020), where a digital link has not been established between software programs, HMRC will accept the use of cut and paste as being a digital link for these VAT periods.

GOLDEN RULES for writing good, persuasive website content and how to present it

BY **MIKE SCHWARZ**

In his occasional series on business, Mike Schwarz tackles the challenging subject of how to write persuasive content for websites, a skill that many surveyors will not necessarily have in their armoury.

To say the internet is a crowded place would be something of an understatement. Take a look at Internet Live Stats if you don't believe me, which will prove this comment. There are more than one billion live websites in existence fighting to be discovered. Additionally over 3.5 billion Google searches are made each and every day. How on earth can you hope to stand out from the crowd given these stats?

Once you have snared someone to your website, it is easy to fall into the common trap of assuming people actually read your website and that they treat it the same way as reading a book or magazine. You assume completely wrongly! Because website copy is totally different from print copy. Website copy is not read but is scanned, or glanced at. And if you are lucky, research says that the majority will only spend 15 seconds or less on a webpage. So how do you produce sticky content to get people to hang around?

1. Understand who your target audience is

Obvious enough you would think, but many people start to write copy before they have fully thought it through. So take a moment and pause. Who is your primary audience; but importantly who is your secondary audience, those who may be able to influence and inform your primary audience?

Let's dwell on this a bit more. For example, say you're creating a website for a marine surveyor. Your primary audience might be your existing client base who know you. However, your secondary audience is far broader and could include brokers, potential new customers, insurance companies, the general boating and yachting public, in fact anyone who might need your services as a marine surveyor. Your website content must be interesting and understandable by all these audiences.

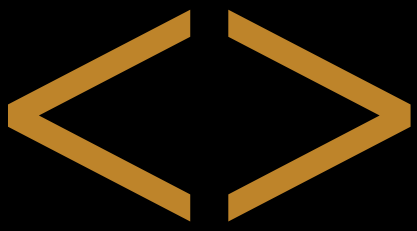
2. Show your most important information first

As has been said, people look at websites rather differently to print media. If you were writing a survey report it might go something like this:

- An explanation and introduction about what your report will review with an overview and introduction.
- Then you might present details of what you found by one area of the boat after another.
- You may make some recommendations and finally you write a conclusion or executive summary.

When writing content for the web, just go straight to the conclusion and leave the rest out! Sounds radical? An example: suppose you need a new office chair. You visit the office chair website. You immediately want to know that they sell office chairs. You want instant access to a search box to see the chairs, the colours and styles offered and to find out the cost and how fast they will deliver. At this stage who the company or provider is are of secondary importance.

Also of primary importance is using a few words to tell people exactly what you do before offering more background information. So always present the big picture first. Who you are and what you do with images and words matters.



3. Avoid trying to be clever

As you now know, people will not spend a long time on your website. So use simple and easy to understand statements. If you write using clever and sophisticated phrases that require people to think you are asking too much in the majority of cases. Remember visitors to your site are 'hunters' looking for a solution to their problem. Don't make it hard for them by making them having to think. Keep it simple and easy.

It is also important to understand that you are an expert in the marine surveying sector. You know the intricacies and importance of the services you offer. Your potential client may just simply know they need it. In many cases it is probable they will not know the ins and outs. Make sure you speak in language that will appeal to them and accepts that point.

4. Write for scanners because as research shows, only 16% will read all the copy on your page

Writing for scanners means you should do the following:

- ensure your headlines explain exactly what the page is about and what you are offering;
- be certain that you have communicated a sales message and made your call to action easy;
- make sure that your sub headlines summarise your key points;
- use easy to read bullet points to cut down on too many words.

5. Get familiar with the concept of carewords and use them well

Carewords are the words that help your customers perform tasks on your site, or simply gives them the confidence and confirmation that they are in the right place when they land on your website. So do use familiar words. Imagine you want to take a ferry to France on holiday and are looking for a cheap deal. What phrases will you search for? A cost effective ferry crossing to France, a low ferry fare or a cheap ferry sailing to France? Well it is most unlikely that anyone will search for the phrase a cost effective ferry crossing to France.

And as a word of caution, remember it is human nature to big ourselves up by making us sound much better than we really are. We embellish, we use fancy words and phrases, or technical jargon. But your website visitor is looking for familiar words to comfort them, not over exaggerated claims.

6. Writing great copy for lazy people

Ensure you do not make your website visitor work too hard for the information they are seeking as previously stated. Make your copy easy to read and understand. Here are some pointers:

- use short paragraphs, a maximum of four sentences;
- use short sentences and not Dickensian style endless prose;
- avoid unnecessary words and jargon;
- avoid presenting your copy in the passive tense;
- steer clear of repetition
- address your website visitors directly by using the word you

7. Expect people to arrive anywhere on your website

People usually read a book from chapter one, via chapter two to three and four and so on. Importantly, websites are accessed and read in an entirely different way. Imagine someone picking up a book and starting to read completely at random, perhaps at the start of the last chapter or ten pages from the end. That is how the web is and many people will not start to browse and scan from your home page.

There is sophisticated, free software to help you understand where people land on your website, such as Google Analytics. You can easily see how many web visitors arrived on each web page.

So what does that mean for you if each web page can be an entry page?

Well here are a few pointers for consideration:

- Each page should be easy to scan and understand.
- Each page should clarify to people whereabouts they are on your website and should explain simply what your site is about and what you do.
- Each page must have a call to action telling people where to go next and how to contact you, or where to read other relevant content.
- A telephone number and/or email address that appears in the top right hand corner of your website header ticks this box.
- However, just relying on your navigation bar to tell people what to do next will not always work and the addition of a link or button in the body copy of the page will help too.

8. Make it simple for searchers to find you

Remember that someone who lands on your website is looking for something specific. You must try to help them find what they are looking for. You are looking to lure potential customers to your website by providing useful information that will fulfil what they are searching for.

- Make sure you answer the questions potential customers are likely to ask – best done by discussing only one key topic per page.
- Include internal site links that steer searchers to other related content.
- Remember to use phrases and words that are likely to be the ones these searchers are looking for.
- Be helpful and upbeat with exaggeration.

http://

9. Make a visual impression

Web copy and web design should work together ideally. Web design may not be your skill, but you need to have an idea of how you want the page to look. The visual appeal of your website impacts the readability of your text. It instantly gives visitors an idea of what you are about and what services you offer.

Some tips to increase the visual appeal of your web copy are:

- Replace long rambling text with images or even short videos.
- Think about using different font sizes. Some visitors will scan large text first.
- Break a long headline into a headline with a sub headline for impact.
- Use emboldened headlines.
- Experiment with highlights, bold text to grab attention, capitals and italics.
- Use bullet points for effect.

Most important though is to de-clutter the page by reducing noise and adding white space. It will make your website easier to read.

Your creative writing should be enhanced with an image, infographic or video. It really is worth a thousand words. Images help to break up text making your page easier to read and more visually appealing. You should publish at least one image on each page of your website.

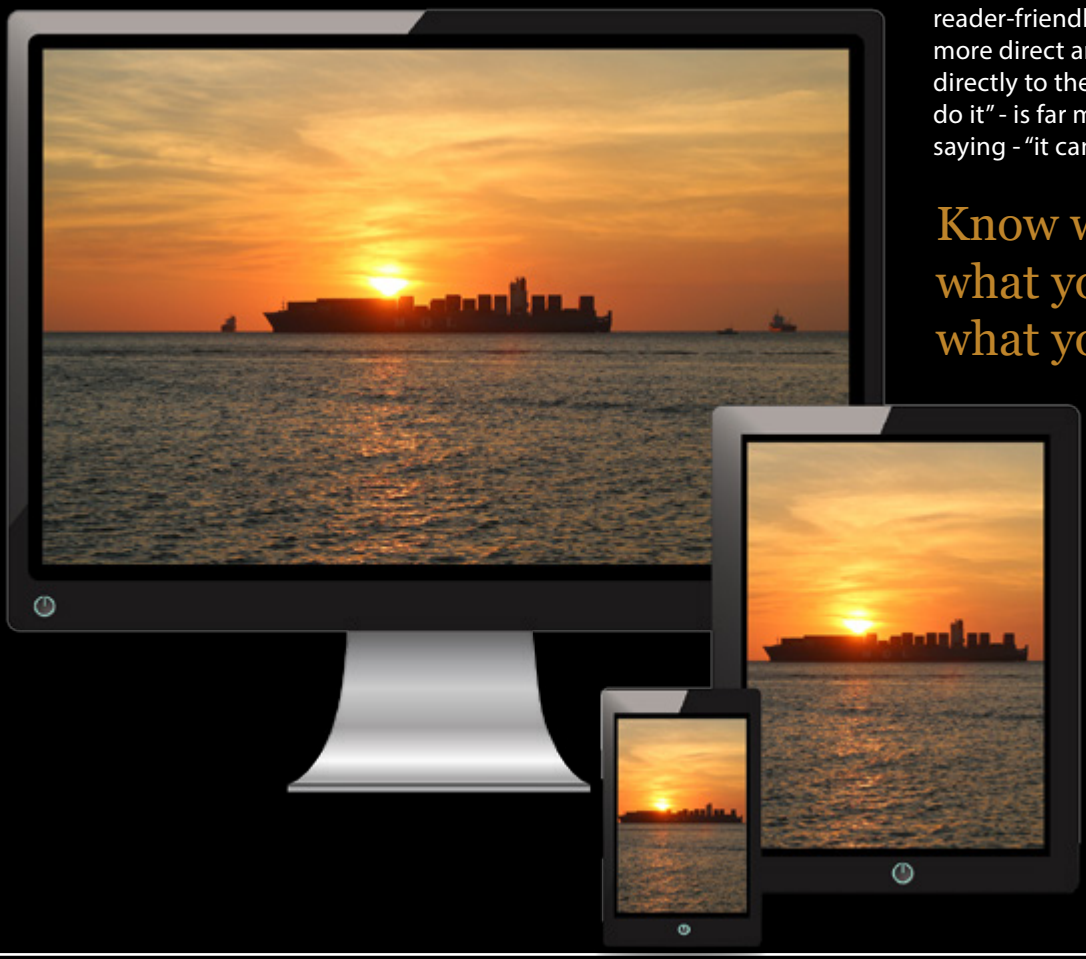
Consider including a photograph of yourself too. Whilst this is not for everyone, your site visitors are more likely to decide to connect with you if they feel some sort of personal connection. By adding a photo you are establishing trust and likeability.

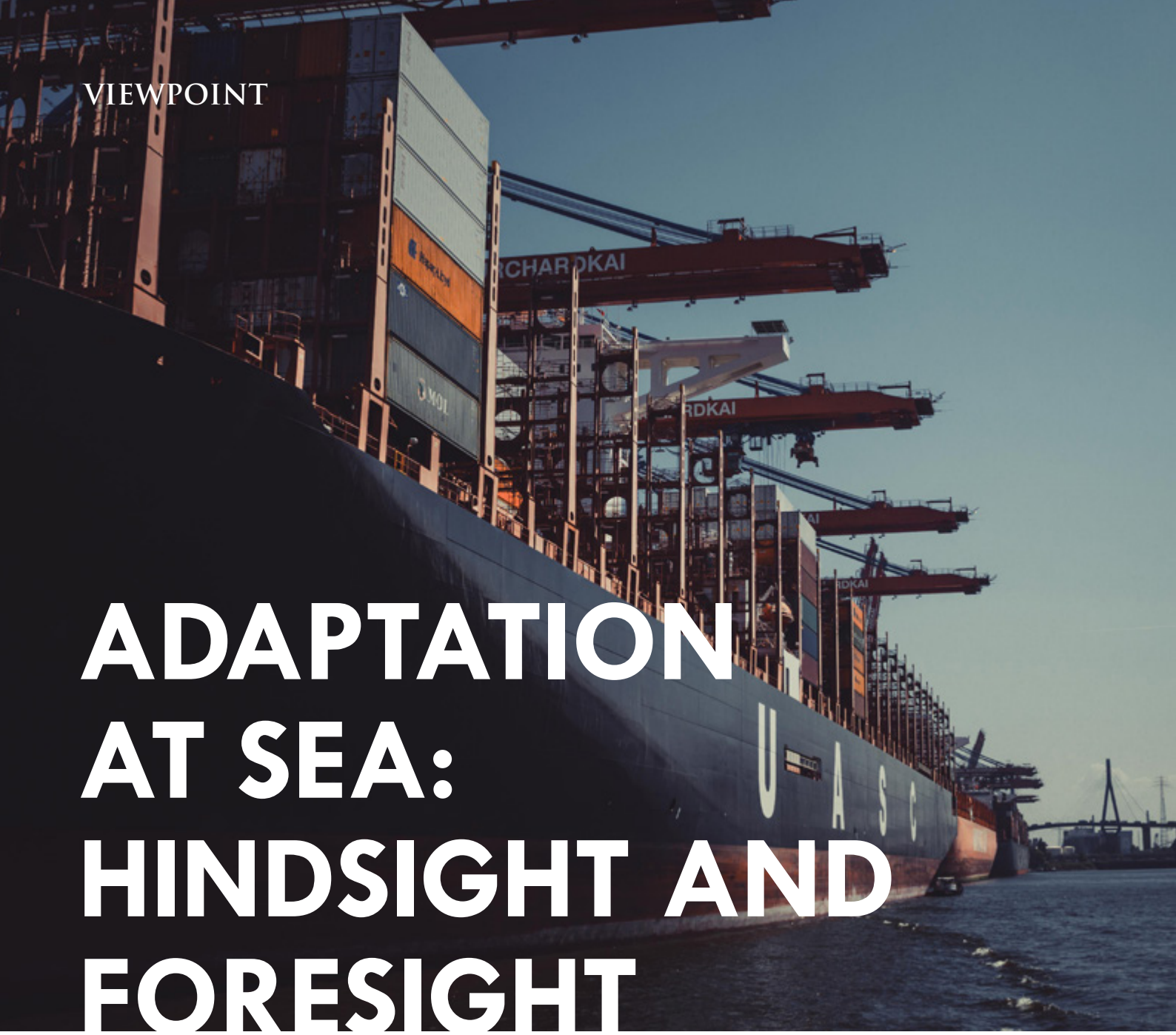
10. Writing persuasive website copy

Writing simple, useful copy is hard! Remember do not treat your web visitors like academics and specialists who love reading text. Do not treat your visitors like legal specialists pouring over the small print. Do not use more words than is necessary to make your point clearly and concisely. Just keep it simple.

Stick to active voice. So, use active rather than passive verbs. For example, rather than writing "A survey was commissioned," write "The client commissioned a survey." Active voice helps create succinct, reader-friendly sentences. It's also more direct and when you speak directly to the audience -"you can do it" - is far more engaging than saying - "it can be done."

Know who you are, what you do and what you offer.





ADAPTATION AT SEA: HINDSIGHT AND FORESIGHT

BY **NIPPIN ANAND**

First published in **HindSight28** | WINTER 2018-2019

In all industries, people work in an imperfect environment, in terms of people, procedures, equipment and organisation. This environment often degrades further over time, though this may be hard to see. Because of this, those charged with doing operational work have to 'make do' and adapt, in ways that may not be desirable. Master Mariner, Nippin Anand, walks us through an example of this in the maritime environment.

Nippin Anand is a Principal Specialist in Safety Management System and Human Factors, and a former Master Mariner with a PhD in Social Sciences. His research interests include applied sciences, storytelling, cultural anthropology and safety management.
nippin.anand@nippinanand.com

KEY POINTS

- **Procedural compliance in time-pressured, under-resourced, messy environments is problematic. Procedures are extensive, complex, conflicting and inaccessible when needed.**
- **Working alone without proper monitoring and supervision is common at sea, and is associated with many lost lives.**
- **Safety audits and inspections rarely reveal many of the day-to-day adaptations to degraded work environments.**
- **A hindsight perspective may consider unwanted human performance as non-compliant behaviour, which requires more behavioural control.**
- **A foresight perspective may consider unwanted human performance as adaptations to a badly designed and degraded environment, which requires more attention to the system as a whole.**

Why is it that no one noticed the deeper symptoms of Jo's behaviour in everyday work?

It's 4PM and a container ship is getting ready to depart from port. The crew has had a long day going through an intensive safety audit with a company superintendent onboard. Now the mate is dealing with last minute cargo manifests. Cargo lashing is still not completed by the shore gangs. The engineers are waiting to test the main engines but for this the gangway needs to be cleared off from the quayside. The duty officer is down in the engine room ballasting the ship to bring her upright. The harbour pilot is on the bridge pressing the captain to leave the berth soon.

The tug boats have arrived, and the captain calls for harbour stations to be manned within the next 15 minutes. The captain then announces on the radio, "Single up forward and aft as soon as you can", implying that all but one mooring line should be dropped off and retrieved onboard once the cargo operations are complete to avoid any further delays to the vessel schedule.

At the back deck, there are two able seamen, Jo and Max, eagerly waiting for the duty officer and the ordinary seaman to arrive before they can commence the undocking of the ship. Once they hear on their hand-held radios that cargo operations have completed, and the gangway is cleared off from the quayside, Jo and Max feel the pressure of time. While Max proceeds to the seaward side of the ship to make fast the tug, Jo takes the responsibility to drop off the mooring lines all by himself.

The winch control is located at the centreline of the ship. The position makes it difficult for one person to operate the controls and watch the mooring lines clear off from the quayside at the same time. Jo has a solution, but one that may not align with the design intent and company procedures. He pulls in the winch control lever, ties it with a rope (see Figure 1) and leans outwards from the shipside to monitor the rope. But to his bad luck, the harbour pilot watches Jo from the bridge and informs the captain. The captain calls Jo to the bridge and reprimands him for violating the procedures.

A detailed investigation follows soon after departing from port. The management is now seeking an explanation. With policies and procedures that preach so hard to prioritise safety over commercial interests, the management is annoyed with Jo's actions. There are at least two ways of understanding this situation – the hindsight view and the foresight explanations. Let's look closer into each.

THE HINDSIGHT VIEW

If I were the safety manager, it would make perfect sense to disapprove of Jo's 'reckless' behaviour. I would have difficulty proving otherwise. If I approved of Jo's behaviour, what is the difference between me and him? What examples of (safety) leadership am I setting? What message am I sending down the chain? I have invested so much in behavioural safety programs, I have warned each one of them not to take undue risks, I have asked them to reach out to me when in doubt. I expect them to follow procedures, conduct thorough risk assessment, and I always encourage them think in the moment. Think about your families and your loved ones before you do something silly! Clearly, Jo did not think. He chose to go against the rules, violating procedures. He needs to be disciplined. They must take risk assessments and tool box talks more seriously. We will continue to enforce better (more) procedures for mooring operations. This is certainly one way of looking at this event in hindsight.

Figure 1: Winch control lever tied with a rope

THE FORESIGHT EXPLANATION

We now consider some foresight explanations and for this, we should get rid of what we know so far. Let go of the fact that anyone saw Jo overriding the winch control and ask some fundamental questions. Notice there was a company safety representative on the ship and a safety audit had just been completed. Why is it that no one noticed the deeper symptoms of Jo's behaviour in everyday work? Why is it that such behaviours are so hard to detect until they show up? What does this tell us about the state of safety audits and the overall effectiveness of control measures in ensuring safety? Is it really Jo's problem alone or is there more to it?

SAFETY AUDITS

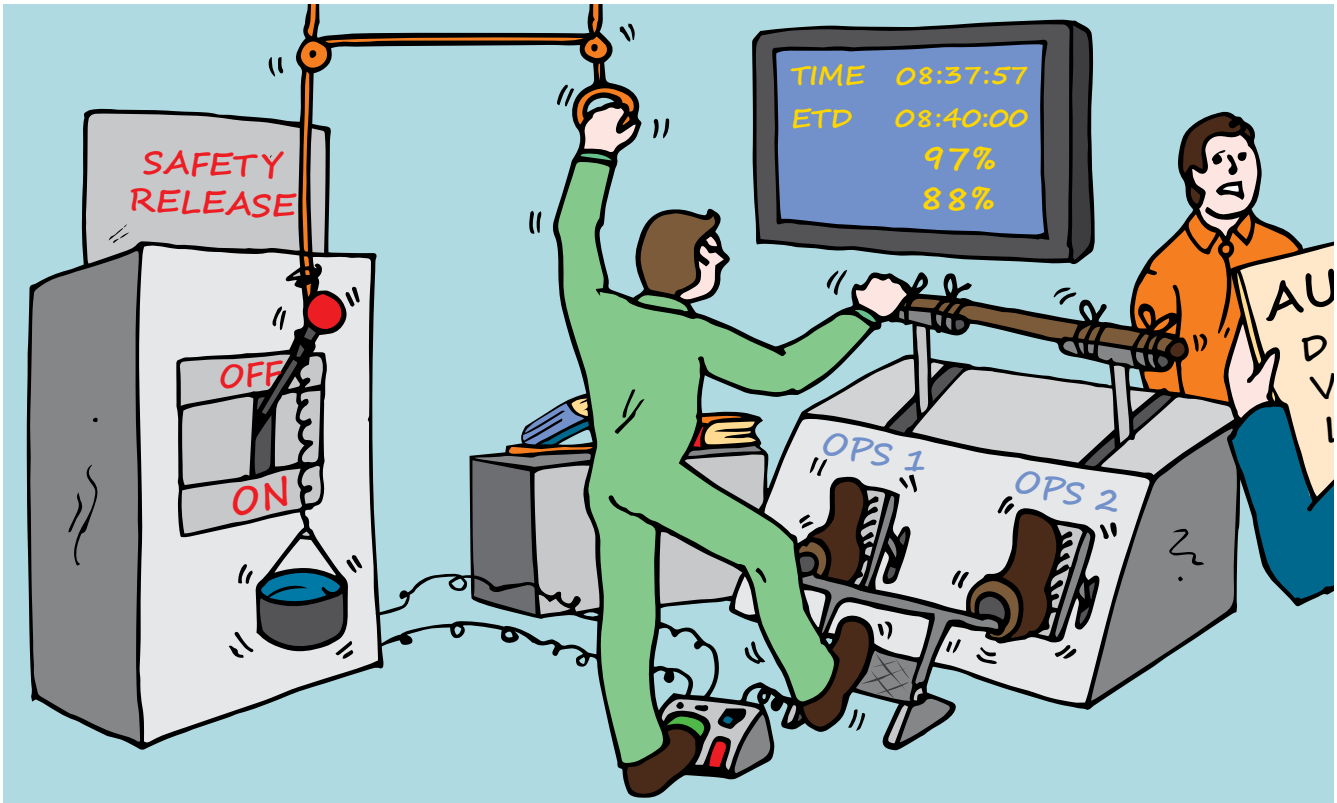
In my view, safety audits (and other forms of shipboard inspections) are not designed to uncover such issues. Rather, the focus is just the opposite, which is to conceal deep-rooted problems under bureaucratic, paper-heavy controls. Who would inform an inspector about shortcuts and compromises that form the basis of everyday work, and risk their jobs? The inspector is not interested, and neither are safety departments in most companies. Their goals are different. The inspector has an incentive to find fewer problems and those that do not do this ruffle too many feathers. The safety department has an incentive to aim at zero deficiencies, whatever it takes. Questions aimed at understanding messy realities (such as manual overriding of safety devices) are seldom directed at understanding the users' perspectives – their 'local rationality' (see EUROCONTROL, 2014). Rather, the aim is to provide an accurate (procedural) response from the highest rank on the ship to avoid confrontation and skim through the safety inspection. Contributions from crew members in lower positions who actually carry out the work are not considered necessary. In many cases they are sidelined. Jo's behaviour on the day gives us an insight into the state of safety audits in many safety critical industries including the maritime sector – superficial exercises aiming at minimum compliance.

PRESSURE AND PROCEDURES

What can we learn from Jo's behaviour about the effectiveness of control measures? Closer to departure time, there was an enormous build-up of time pressure and far too much to be achieved in limited time. Cargo securing, cargo planning, gangway watch, ballasting and stabilising the ship, preparing the bridge and engine room for departure, communicating with port officials, discussing the voyage plan with the pilot, manning the harbour stations, undocking the ship and making fast the tugs.

There is a procedure for each of these activities but the boundaries between where one activity ends and the next one starts become blurred. With a handful of crew members performing multiple activities, it is problematic to identify which procedure is most suited to the situation, who is responsible at what point and where exactly lies the 'violation' from procedures. In order to follow all the procedures one may well end up not complying with the hours of rest and work.

Indeed, there are detailed and extensive procedures for most shipboard operations in most safety management systems, but what is their real usefulness? Many of these procedures cross-refer to other procedures, regulatory requirements, industry standards and the so called 'best practices', whose practical usefulness for an average seafarer is questionable. This is not to raise questions about the competence and intellect of the end users of procedures. It is to understand the intent behind including such detailed documents that are both inaccessible and impractical for front-line work. Here it is important to raise a few more questions. How do people make sense of procedures and instructions in a time-constrained and a constantly evolving work environment? Are procedures readily available and accessible as work is being performed? Are we expecting people to carry procedure manuals along with them while they perform their jobs? Or do we expect them to memorise all of the procedures beforehand?



Ensuring that every operation at sea involves at least two people may save so many more lives than reprimanding a crew member.

STAFFING AND ORGANISATION

It is important in managing operational safety risk that one can monitor (watch for) and intervene (prevent) an escalating situation. Jo's story serves as an example to understand how the most effective risk control measures are forgotten in paper-based risk assessments and checklists. When Jo requested that Max go away and make fast the tug, he unknowingly removed a crucial control measure from the scene. Far too many lives are lost at sea whilst rigging the gangway in the dark, operating incinerators, working in confined spaces and painting aloft. It is not uncommon that the person is left alone without proper monitoring or direct supervision. Ensuring that every operation at sea involves at least two people may save so many more lives than reprimanding a crew member.

SEAMANSHIP

A final thought on Jo's behaviour. When people see the picture of a winch control being tied with a rope, their eyes tend to pop out. When I first encountered this situation I too felt deeply concerned and agitated. But such examples are reported in numerous industry publications (UK P&I Club Mooring Report). We may choose to call it a 'behavioural problem' and impose further controls. But we could also view Jo's behaviour as adaptation in the face of bad design, poorly written procedures, ineffective monitoring and limited resources. Interestingly, very little of these issues surface even with copious safety audits, inspections and other forms of governance.

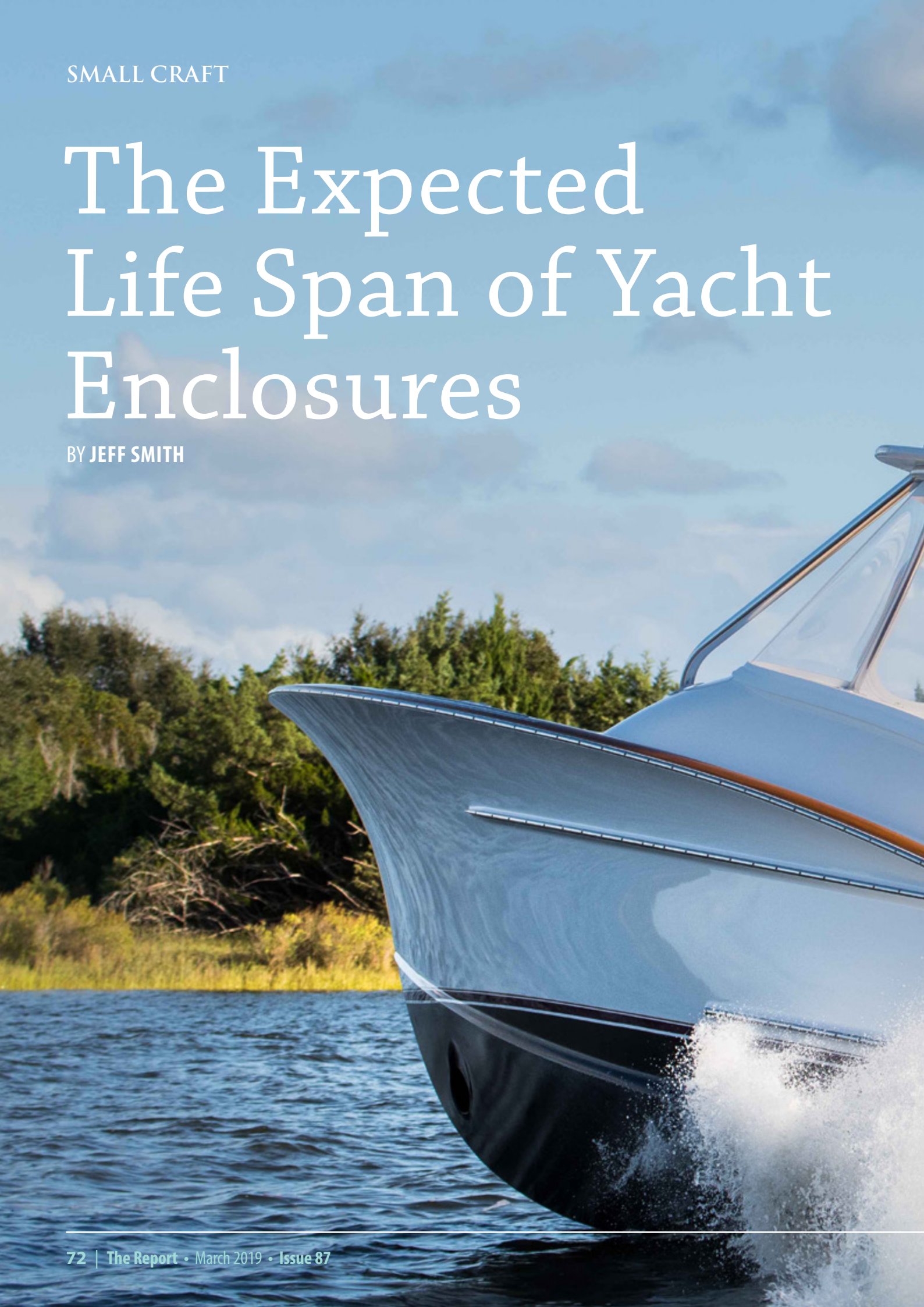
Merchant seamen have long been acclaimed for their ability to 'make do' and adapt against the odds. Until such time as everything is properly designed to ensure things go well (or no one has spotted it), people will adapt. This is commonly referred to as 'seamanship'. But when things go wrong, the same adaptation turns into 'error' or 'violation'. Through the story of Jo, we have seen adaptation in hindsight and foresight. The one we choose defines our frame of reference as much as what Jo did in the heat of the moment.

REFERENCE

EUROCONTROL (2014). Systems thinking for safety: Ten principles. A white paper. Brussels: EUROCONTROL, August 2014. See **http://bit.ly/ST4SAFETY**

The Expected Life Span of Yacht Enclosures

BY **JEFF SMITH**



What is the expected life span of an enclosure? There are a lot of variances, and this article is prepared to give you the information needed to determine the life of a given enclosure.

SOFT ENCLOSURES

The least expensive of boats will typically have roll vinyl curtains. These are made from a clear pvc material that typically comes 51" wide on a roll and can be .015, .020 or .030 in thickness. It is soft and the life span is very short and unremarkable.

Better boats may have pressed polished sheets. These are made using the roll vinyl that is cut to approximately 101" long by the 51" width. Two pc are pressed together between highly polished heated metal plates. This process renders a sheet with a firmer hand and a polished surface less susceptible to distortion. Use of .015 roll goods produces .030 sheet, .020 produces .040 sheet (most common) and .030 produces .060. These sheets are quite susceptible to scratching therefore fresh water life is greater than that of harsh saltwater. Life on the saltwater provided proper rinsing after use is 3 to 5 years. These panels should not be stored rolled up as moister between layers will magnify and burn plasticizers out of the pvc. This is notable by the burn yellow/brown color.

Two Premium scratch resistant Pressed Polished Sheets are currently on the market that are made from the pressed polished sheet with the addition of coatings. Neither product is visibly different than conventional pressed polished. Strataglass first came on the market in 1994 boasting its scratch resistance. Longevity is quoted from the Strataglass site; "Strataglass will have a useful marine life of 2-5 years when properly cleaned and maintained using Strataglass Protective Cleaner and Strataglass Protective Polish by IMAR, as directed by the manufacturer." It should be noted that sunscreen will ruin Strataglass. The second Premium coated product and more recent to the market is O'Sea. O'Sea is resistant to sunscreen and hydrocarbons which can be important on diesel boats. Its longevity is stated to be 4-7 years when properly cared for. When either product is scratched beyond its resistance that scratch is permanent.

RIGID ENCLOSURES

Polycarbonates

Polycarbonate enclosures are rigid and have been around since about 1993. Polycarbonate is subject to degradation by UV prompting several different versions with various claims to preventing the yellowing that naturally occurs in this product. Polycarbonate is easily identified by looking through polarized sunglasses at an angle, a rainbow effect will be present like that of oil on water. When new, polycarbonate transmits approx. 86% of light making it near the clarity of glass which is 89%. It comes in various thicknesses that can be sewn ranging from .030 to .080.

- **Uncoated** Polycarbonate is soft, will scratch easily and turn yellow quickly. The usable life expectancy is short and its light transmittance goes down rapidly.

- **Coated Polycarbonate** such as Makrolon/Tuffak AR has more resistance to yellowing and to scratching. In a flat stable application this product can be expected to last 3-4 years however it is not meant for flexing applications and when used around curves the outer coating is stretched and the interior coating is compressed resulting in vertical crazing in relatively short order.

- **Makrolon/Tuffak Marine 5 Polycarbonate** has a five year warranty that covers crazing. Thicknesses of .080 should not be used on a radius tighter than 30" and .060 should be no tighter than 20" or the warranty is void. Its warranty will replace sheet material on panels when more than 25% of the panel is crazed and that crazing is visible from 3 feet.

Acrylics

The first rigid enclosure, "Clearview Hard Curtain" utilized Acrylic and was invented in 1989. Acrylic is inherently resistant to UV and will not turn yellow. Its light transmittance is 92% and does not change more than 3% over ten years. So, even after ten years it is as clear as glass and no rainbow colors with polarized glasses. Acrylics cannot be sewn so a bonding process is used for fabrication of enclosure panels. This makes it particularly important that it be fabricated by a reputable or certified shop. Acrylic can be used on curves up to 220 times its thickness meaning that .080 can be used on up to an 18" radius and .118 a 26" radius. Tighter radius will stress the acrylic and shorten its life. Acrylic can be line bent with heat. Acrylic has a 9,800 Lb tensile strength which is utilized when cruising with panels in the closed position. However, when bent beyond its limit acrylic can break. The most common causes of this is due to zippers not being fully open when pulling a panel up to an open position which exerts excess pressure at that given point. An expected life span of acrylics is ten years and beyond. The life span of the enclosure is largely dictated by the border fabric used. There are several different acrylics currently being used for enclosure fabrication;

- **AquaGlass®** Acrylic is used after 2009 by EZ2CY® and used by other marine enclosure fabricators. This acrylic blocks approximately 70% of UV. It is a modified acrylic and the extent of those modifiers makes buffing scratches out more difficult than some other acrylics.

- **clear2sea uv™** patent pending acrylic blocks 98% of UV. It is exclusively available through members of the 4U2SEA™ Fraternity of fabricators. It is a modified acrylic to the extent that buffing scratches out remains relatively easy.

- **cool2sea™** patent pending acrylic blocks 98% of UV and approx. 23% of infra-red heat making it almost ten degrees cooler than any other

Polycarbonates such as Makrolon/TUFFAK (Makrolon is now known as TUFFAK) efforts to emulate Acrylics inherent attributes need to utilize coatings. Once coating is scratched or broken then UV is allowed to damage the polycarbonate sheet internally.

	Makrolon Marine 5	Makrolon AR	Makrolon VR	AquaGlas® Acrylic	clear2sea™ Acrylic	clear2sea$_{uv}$™ Acrylic	cool2sea™ Acrylic
Optically clear	√	√	√	√	√	√	√
Low distortion	√	√	√	√	√	√	√
Abrasion resistance	coated	coated	not	inherent	inherent	inherent	inherent
Wrinkle free	√	√	√	√	√	√	√
Sewable	√	√	√	no	no	no	no
Rollable	no	no	?	no	no	no	no
5 year warranty	*	no	**	?	8yrs***	8yrs***	8yrs***
Curved applications	.080/30",.060/20"	no	√	?	.080/18"	.080/18"	.080/18"
Bent applications	no	no	?	heat	heat	heat	heat
Proven performance	new	failed curves	?	since 2009	since 2011	since 2011	since 1989
Buffable	no	no	no	difficult	yes	yes	yes
Color distortion	(1) inherent to polycarbonate			no	no	no	no
heat blocking	no	no	no	no	no	no	yes
enhanced night vision	no	no	no	no	no	no	yes
glare reduction	no	no	no	no	no	no	yes

*warranty covers breakage, microcracks over .5" when more that 25% of entire panel when seen from distance of 3', yellowing of 5 points.

**warranty for breakage only if it breaks in a brittle manner into separate pcs with sharp edges.

***warranty that light transmittance of panel will not change by more that 3% over a period of Eight years.

(1) Inherent to polycarbonate; when looking through polycarbonate with polarized glasses, at extreme angles and various light conditions one may see a rainbow effect of colors similar to that of oil on water.

enclosure. From the outside it is easily identified by its green hue, however, from the inside looking out this hue is not evident. Additional properties imparted include reduction of glare and enhanced night vision. It is exclusively available through members of the 4U2SEA™ Fraternity of fabricators. It is a modified acrylic to the extent that buffing scratches out remains relatively easy.

The clear is only one component of an enclosure. As one advances to the longer life products, other components need to advance as well, or it will be for naught. High end enclosures should be constructed with lifetime threads so they will not have to be re-stitched during that lifetime. Border fabrics need to be of sufficient quality to survive the years as well. Currently zippers are the weakest link but some companies take steps during fabrication to insure the longest life possible out of them. One thing to note; if one zipper goes bad, its time to replace all.

Have Questions? Feel free to contact me.
Jeff Smith (Pioneer of the Rigid Enclosure)
Website: http://www.4u2sea.com/cool.php
Email: Jeff@cy4ez.com | +1-410-507-1122

Boat docking simplified by Raymarine DockSense

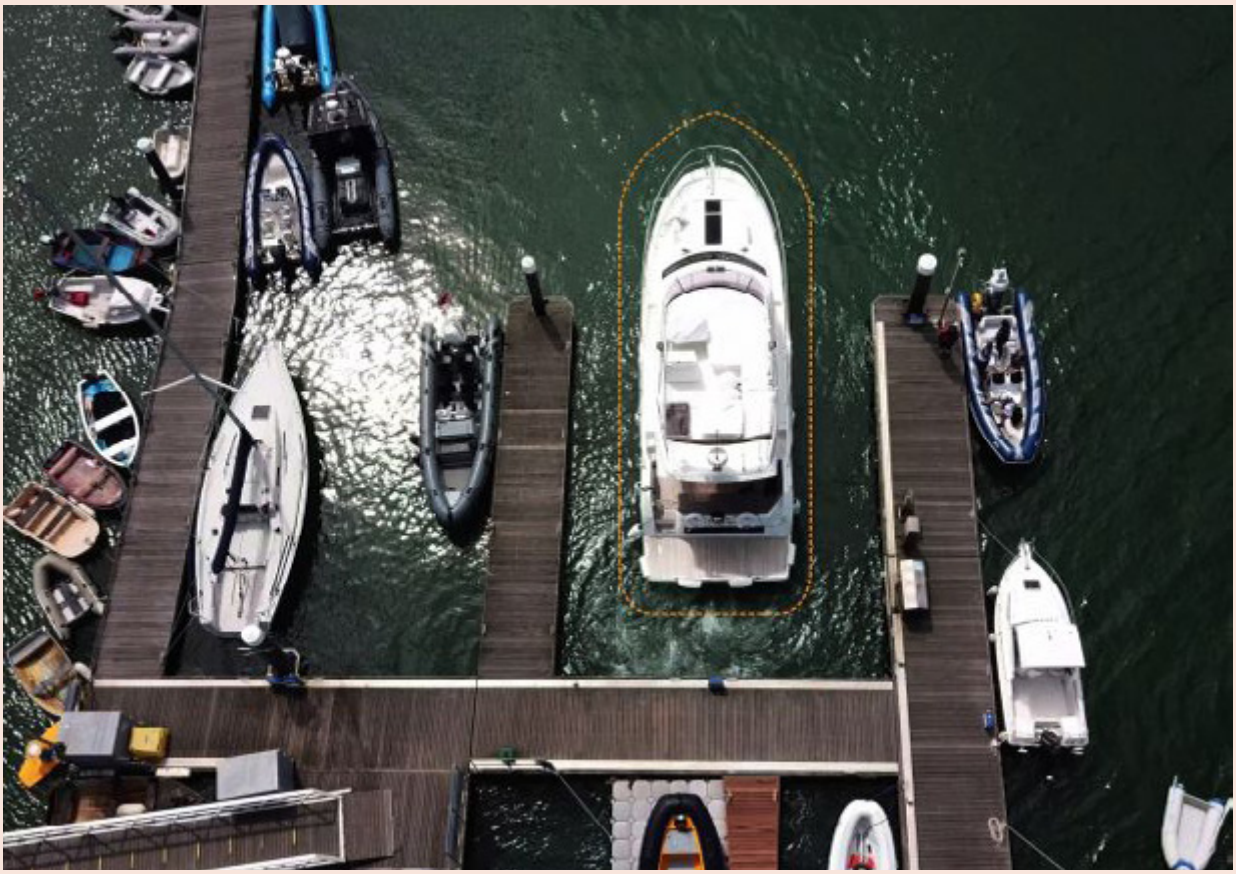
FLIR Systems has launched the Raymarine DockSense assisted docking system, which it bills as the marine industry's first intelligent object recognition and motion sensing assisted docking solution for recreational boating.

The DockSense system uses FLIR machine vision camera technology and video analytics to integrate intelligence gathered from surrounding imagery with the vessel's propulsion and steering system to assist boat owners in tight quarter docking manoeuvring.

The system is designed to augment a captain's boat handling skills using the system's Virtual Bumper zone technology around the vessel.

Should an object or another vessel encounter the Virtual Bumper, DockSense has been designed to automatically introduce corrective steering and throttle commands to avoid the object and assist the captain in guiding the vessel to the dock.

The system uses GPS and attitude heading reference system position sensing technology to compensate for wind and currents.



Dockmate has announced enhanced functionality for its wireless remote control system.

Available in four models, Dockmate allows boaters to operate electronically controlled engines, bow and stern thrusters, anchor winches and horns from anywhere on board using a handheld device.

"After many years of building prototypes and extensive testing, we have developed a system that is highly-reliable, intuitive and most of all, affordable," said Dockmate's Brian Sheehan.

"With our enhanced remote controls boaters can move around any vessel for better visibility when manoeuvring and enjoy complete confidence in even the tightest of waterways."

Enhanced range

The device now has an enhanced range of 50m and offers users visual and audible confirmation on the receiver's status. The transmitter will automatically shut down after 30 minutes of non-use to optimise performance and is compatible with both 12 and 24-volt systems.

Approval given for new dropped object prevention device

A safety device that securely encloses and tethers overhead fixtures to prevent objects dropping and falling from height has received type approval recognition from ABS in accordance with the new 'ABS Guide for Dropped Object Prevention on Offshore Units and Installations'.

The stainless-steel mesh Dropsafe Net is a pioneering solution to dropped objects in the offshore energy industry, while the equipment certification scheme is set to complement continuous safety improvements in the offshore and maritime sectors.

The Dropped Object Standardisation Scheme was developed in 2017 by ABS, following industry reports of an increasing rate of Dropped Object (DO) incidents, and the absence of industry standards for the design of equipment and prevention systems.

Birchwood Marine is to relaunch the Birchwood brand

The company, headed by Ernie Vick, has acquired a Memorandum of Understanding /Joint Manufacturing Agreement with an established yard in Argentina to build a range of models from 34ft - 74ft with both sport and flybridge models custom built to customer requirements.

"Due to the recession, we stopped manufacturing in the UK and decided to look further afield," said Ernie. "Subsequently we had boats built at a shipyard in South East China, but due to the economic downturn in China, the yard decided to close."

The company is now hoping to raise funds through Crowdcube with the investment initially being used to fund at least two boats to be displayed at the Southampton Boat Show.

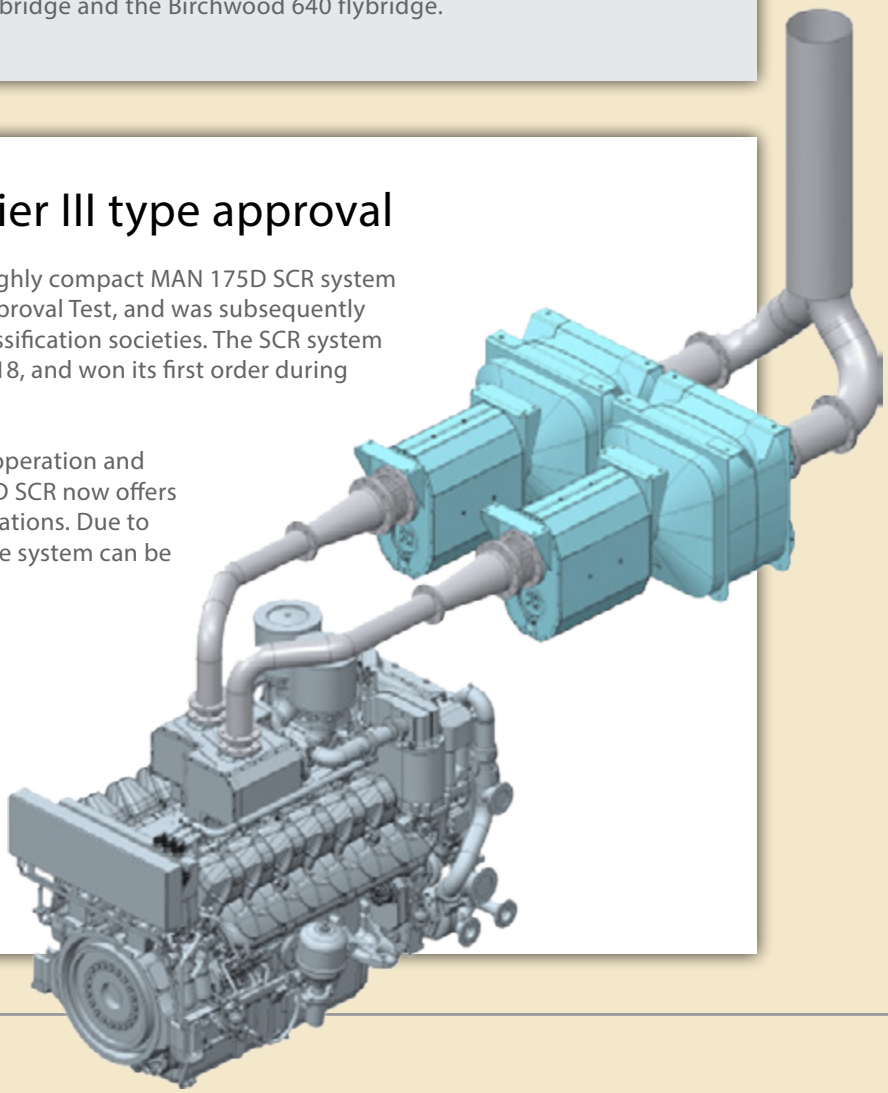
"The name Birchwood traditionally was considered to be one of the top five boat companies from which to buy a new boat," said Ernie. "Half a century of being known as a quality boat builder with a committed dealer network speaks for itself.

Initial models will include the Birchwood 430 flybridge and the Birchwood 640 flybridge.

Compact SCR earns IMO tier III type approval

MAN Energy Solutions has announced that its highly compact MAN 175D SCR system recently successfully completed its final Type Approval Test, and was subsequently awarded IMO Tier III certification by all major classification societies. The SCR system was released for serial production in October 2018, and won its first order during January 2019.

With an excellent power-to-weight ratio, airless operation and closed-loop NOx emission control, the MAN 175D SCR now offers a very competitive solution for IMO Tier III applications. Due to its IMO NOx Scheme A certification procedure the system can be installed directly without further on-board confirmation tests. The family concept of the MAN 175D SCR also allows the bundling of the full group of 175D engines into one parent-engine concept. MAN Energy Solutions reports accordingly that the type approval covers not only the 12V175D in all its released applications, but also the 16V and 20V versions, which will be launched in the near future employing identical SCR components as used in the 12V system.



New dripless shaft seal from VETUS

VETUS has expanded its range of stern gear equipment with the introduction of a triple-lip ZWBH dripless shaft seal. The latest model includes a self-aligning inner bearing and the addition of one extra lip seal to keep water out.

The product has been developed for use with water-lubricated stern gear and to be oil and grease resistant. It is flexible to absorb shock and vibration and features an updated monoblock design. The unit has a 10mm vulcanised hose pillar for water injection and is supplied with two stainless steel hose clamps and grease.

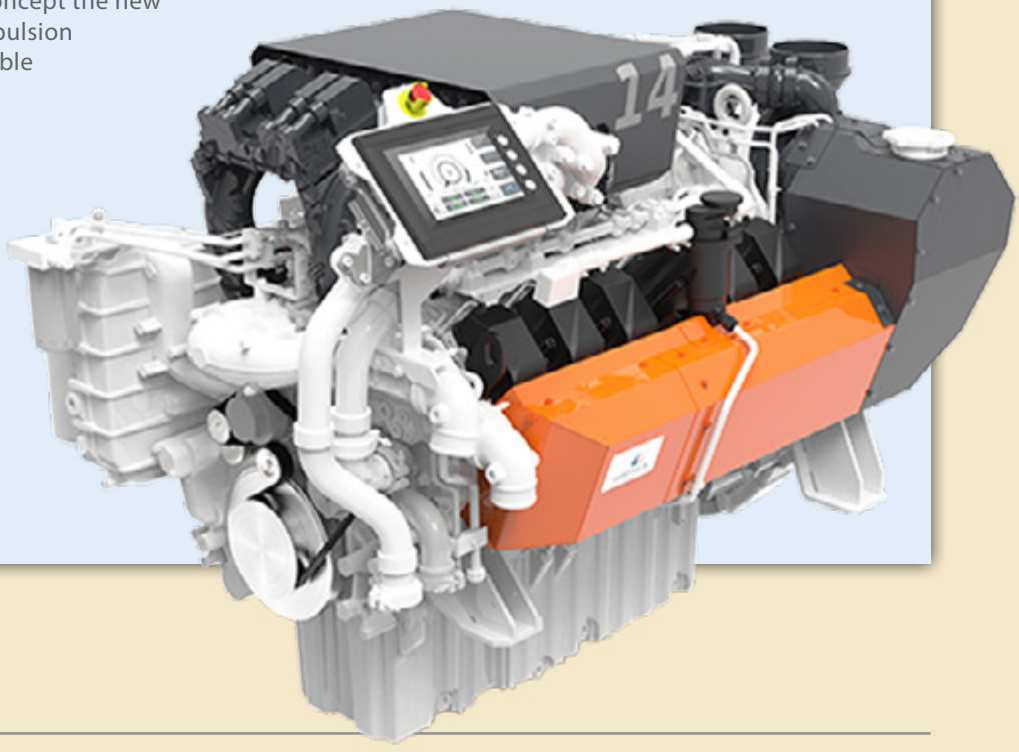
"This rugged, highly-durable stern gear seal is able to withstand a wide range of temperatures and will give the maximum performance while requiring minimal maintenance," said Babette van Waes.

Technology group Wärtsilä has introduced its first high-speed engine

Developed in collaboration with Liebherr, the Wärtsilä 14 is a high-speed, compact engine designed to fit requirements for limited space and weight, lower capital expense and to meet current and future global emissions targets.

"We are very proud of this small but mighty high-speed engine," said Stefan Wiik, vice president, marine power solutions, Wärtsilä, "because it heralds entry into a new, strategically important market for our brand, it reinforces our global position as leader of fully integrated technologies and hybrid solutions and bears testimony to the tangible benefits of our close cooperation with Liebherr".

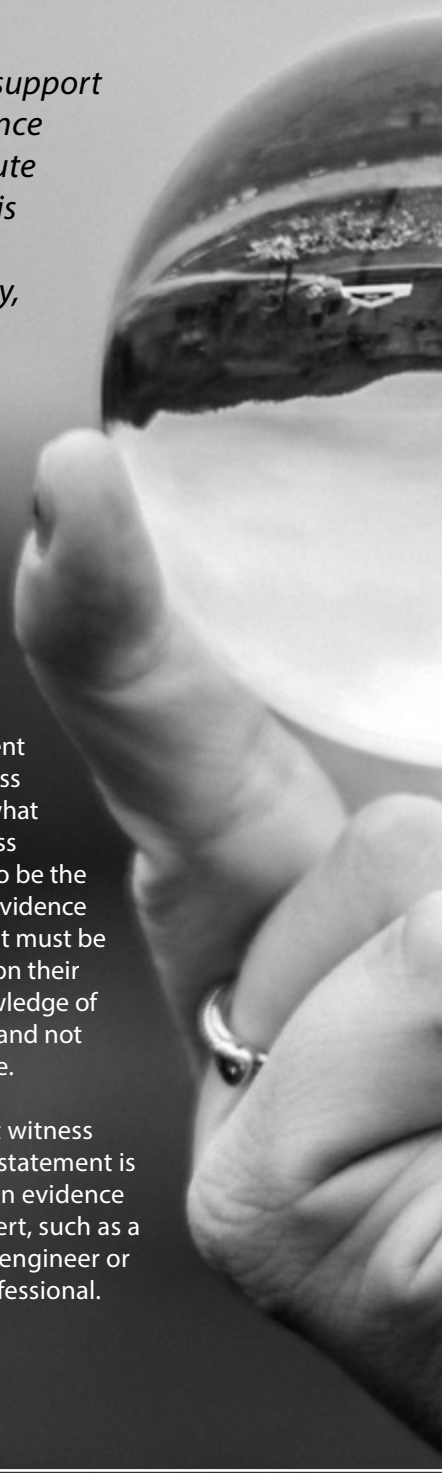
Using Wärtsilä's Smart Marine concept the new engine serves as both main propulsion and auxiliary genset and is suitable for hybrid installations. It is available in 12 and 16-cylinder configurations, delivering a power output of 755-1340 KW in mechanical propulsion, and 675-1155 KWe in auxiliary and diesel-electric configurations.



Chapter 3
Fifty Shades of Law

WHAT IS EVIDENCE AND WHEN IS IT ADMISSIBLE

All parties in court cases in England and Wales must produce evidence in support of their case. Without supporting evidence a claim or prosecution or defence is highly likely to fail. Therefore it is vitally important that all who contribute to providing evidence understand what constitutes evidence and when it is admissible. In law, rules of evidence govern the types of evidence that are admissible in a legal proceeding. Types of legal evidence include testimony, documentary evidence, and physical evidence.



WHEN IS EVIDENCE ADMISSIBLE

Not all evidence produced is admissible in court and there are clear legal rules as to what evidence is admissible.

Under the rules of evidence, the first rule is that it must be relevant to be admissible. For the evidence to be relevant, the facts which are subject to being proved or disproved must amount to:

- Facts in issue, i.e. those which need to be proved by one party.
- Relevant facts, i.e. those which tend to prove the facts in issue.
- Collateral facts which may, for example, affect the credibility and/or competence of a witness.

TYPES OF EVIDENCE

Oral evidence

The parties, witnesses and experts will usually give oral evidence in open court. Oral evidence is evidence put forward as the truth of its contents. Oral evidence is made on oath in open court and put forward as evidence of its truth.

Witness statements – lay and expert

Lay witness statements should be a true and accurate summary of a lay witness's evidence as to the facts that occurred. Statements should not be in the word of another person. They should be written in the first party.

A statement of a witness sets out what the witness believes to be the relevant evidence in a case; it must be based upon their own knowledge of the facts, and not conjecture.

An expert witness report or statement is the written evidence of an expert, such as a surveyor, engineer or other professional.

Witness statements must make clear what is based on the witness's own knowledge, and those matters which are their belief. Care should be taken with opinions and hearsay rules should be complied with. Opinion evidence is not generally admissible – though expert opinion is an exception.

Real (tangible) evidence

Real evidence is usually tangible, and takes the form of some kind of material object produced before the court. It is normally produced to show that it exists, or so that an inference can be drawn from its physical properties or condition.

Real evidence can take many forms. Material objects such as faulty products or parts, the appearance of people, photographs are all real evidence.

This evidence is usually produced for inspection by parties and courts draw inference from this evidence when deciding on causation.

Documentary evidence

Documentary evidence can be wide-ranging and includes any documents or written records that help prove or defend a claim. It is essentially anything that contains writing, including digital records so documentary evidence ranges from: diaries, spreadsheets, work accident log books, employment contracts, and medical notes, to repair invoices, pay slips, transcripts of phone calls and emails, texts, whatsapp messages, metadata. Even draft documents are evidence including draft reports subject to the privilege rule.

Certain information may be privileged. Only documents created for the dominant purpose of actual or contemplated litigation will qualify for litigation privilege purposes. Where documents have been provided for another purpose the document will fail the dominant purpose test. Where documents have been provided for more than one purpose, the court must be satisfied that the dominant purpose is litigation, from an objective standpoint. It is not sufficient if litigation is a secondary or equal purpose.

So what do courts mean by actual or contemplated litigation. Litigation will be in contemplation if it is 'anticipated', 'apprehended', 'pending' or 'threatened' and will be a question of fact in each case. While there is no need for more than a fifty percent (50%) chance of litigation, it is not enough that there is a 'mere possibility' or even a distinct possibility that sooner or later someone might make a claim. Litigation should be reasonably in prospect, or reasonably anticipated, when the relevant communication/ document is made.

Hearsay evidence

Hearsay evidence is where a witness in proceedings seeks to give evidence of a particular fact on the basis of what was said to him or her by a third party. The general rule is that hearsay evidence is admissible in civil proceedings under the Civil Evidence Act 1995, however you (i.e. your solicitor) must give notice to the other side of your intention to rely on hearsay evidence.

Hearsay evidence is basically second hand evidence. A written or oral statement made otherwise than by a witness giving their own first-hand evidence in proceedings, which is tendered as evidence of the matters stated and which is relied on in court to prove the truth of the matters stated.

So a court is likely not to give so much weight to hearsay evidence as it would to other evidence. The court will take a number of factors into account when weighing up the strength or otherwise of the hearsay evidence.

The strongest type of evidence is therefore that which provides direct proof of the truth of an assertion.

Karen Brain

Managing Director

Matrix Insurance Services Ltd

Tel: 01892 724060

Enquiries @matrix-ins.co.uk

Figure 1 Ed O'Connor - Inspection Mid-shore Patrol Vessel.

Q1. How did you make your way into the surveying profession Ed? Was it a conscious decision to follow this career path, or, like some others, did you drift into it and what was your route into it?

I started my marine career with Canada Steamship Lines, in their fleet operations on the Great Lakes of North America, at the time, it was a fleet 32 dry-bulk self-discharging vessels. Over a period of 10 years, I gained experience in vessel operations, fleet preventive maintenance programs, crewing, shipping

Figure 2 Salvage Master - Abandon 135ton Vessel

A day in the life of...

Ed O'Connor MIIMS

Ed O'Connor is the current Chairman of the IIMS Canadian Branch and operates from his base in St Catherines, Ontario. In conversation with Mike Schwarz, who poses the questions, Ed talks openly about his career as a surveyor and his passion for the profession.

Figure 3 Salvage of CAL 29 sailboat - Lake Ontario

economics, and chartering. Later, I moved into their marine bunkering group, which operated two marine storage terminals, two bunkering/refuelling vessels, and a fleet of fuel trucks. During this time, my interest grew in carving my own interests in marine ventures, after 5 years, I struck out on my own, starting a company which focused on marine safety auditing, tankship charter vetting, and whatever else generated revenues. Eventually, pairing up with a likeminded partner, we purchased are own tug/barge, and began moving spot cargoes, ranging from construction equipment, cranes, over-dimensional and project cargoes. Eventually, bareboat additional tug and hopper barges for the movement of agricultural commodities, and fertilizers. During this time, we leased a fleeting yard with a small dry-dock, to services our vessels. It did not take long, to develop a business plan to expand our operation into a small commercial vessel repair facility. It was at this point in my career, where I realized the level of experience I had in marine cargo and material handling, vessel conversions, vessel damage and repairs, and good working knowledge of regulations. I began self-studying and taking courses in marine surveying from State University of New York, and Lloyds Maritime Academy, the learning processes is continuous. Over the past 10 years, my survey activities include, vessel salvage, pre-docking hull & repairs inspections, cargo damages, condition valuations, trip in tow surveys, warrantee's , expert opinions in law claims, and claims adjusting.

Q2. Marine surveying is notorious for its breadth and variety, but is there an area you regard yourself as a specialist in and, if so, what is it?

In 2010, I opened my marine surveying company called Coastwise Management Inc., in my business/marketing plan, I originally focused on ship repair and cargo work. Realizing, in my area there is well established marine survey companies, with committed business from the major lake carriers, and not too much room or interest for another surveyor. In my mind, to be successful, I had to find new business, so I excluded the obvious market in my business plan, and embarked on major self-promotion to small commercial operators, repair companies, cargo owners, charterers and eventual the momentum rolled into, legal reviews/opinions, insurance companies and adjusters. In my view, there is a degree of commonality in the concentration of my marine surveying activities, and in times where a special concentration is need, I will call upon a laboratory, naval architect, metallurgist, or other fields of expertise.

Q3. What are the differences between surveying vessels on one of the Great Lakes versus say the St Lawrence Seaway?

There is no difference in marine surveying activities in any North American ports, the only distinction can be made, is within structural design and construction, between domestic inland water fleets, versus ocean going vessel. Essentially, guidelines for surveys, assessment and repairs of hull structures will differ between bulker carriers, tankers, RoRo's, and passenger's vessels, to mention a few. Subject to the type of marine survey activities, there may be special instructions, or notations for the surveyor to undertake at the time of survey.

Q4. Canada is used to experiencing sub-zero temperatures and extreme weather conditions. How challenging does this make your job as a surveyor in the depth of winter and do you need to put any special arrangements in place?

The marine surveyor as part of his/her job, must evaluate the risks presented to him or her, whether it's climatic conditions, working environments, and changing conditions. Being prepared and job ready is as important, as doing the job safely, and going home. In Canada, the seasons are fairly common across the country, with the exception of the Arctic Region, with a navigation season between Junes and early November, when most marine traffic and cargo operation occur. Extreme temperature occur both in the summer and winter months,

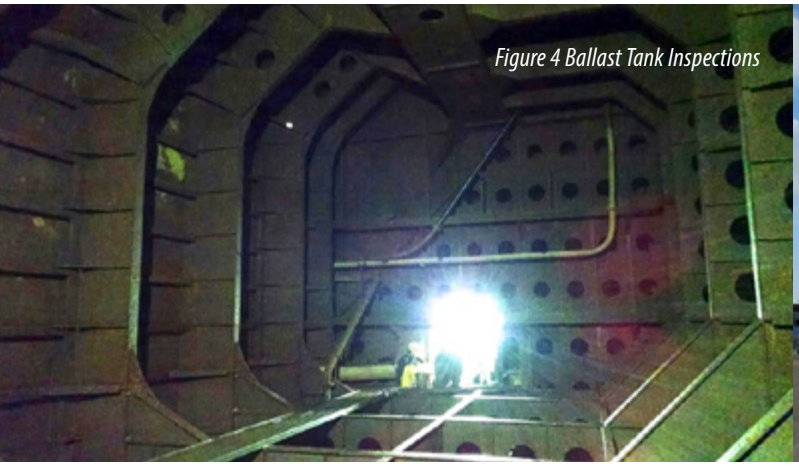


Figure 4 Ballast Tank Inspections

Figure 5 Load Warranty Survey - Project Cargo

preparing the appropriate gear to keep cool and or warm is critical, as well as, types of hydration in all temperature. On-sites, it's important for the marine surveyor to evaluate specific requirements of personal protective equipment, work permits, safety and evacuation equipment, changing atmospheric conditions, and other relevant risk to the project.

Q5. How important is it for a marine surveyor to keep him/herself abreast of new technologies and to show he/she is continuing to show career progression?

To be successful in producing the desired or intended results for clients, the marine surveyor must keep relevant, through continuous learning, understanding, and developing a level of knowledge to keep pace in his or her concentration of marine surveying. Technologies are growing at a rapid pace, keeping up presents challenges to the surveyor, greater opportunities exist for flag/port state, and class inspectors through conduits within their organizations, as for independent surveyors, belonging to professional associations, such as International Institute of Marine Surveying, provides access to relevant industry information, seminars, and training courses.

Q6. What would you say are the most important personal traits for a surveyor (apart from being competent to survey) in today's modern, fast moving business world.

The most important component is the level of physical condition of the marine surveyor, good health and nutrition, keeps the mind and body stable, energetic, and tolerate to fatigue. Conditioning lends itself, to a more positive and optimistic approach to projects and or tasks, the ability to clearly think, interact, and respond the needs or requirements before you, as well managing interpersonal relationship of the job. Importantly, being approachable, respectful, and demonstrating professional integrity, and being timely with appointments and commitments.

Q7. What would you say has been the most hazardous survey you have ever undertaken and what made it such a challenge?

The most hazardous survey undertaken was a confined space situation, I attended a Federal sheriffs auction with a client preparing to bid on a small fleet of tank barges, these barge had be out of services for over three years, with no supervision or maintenance from the Federal receivers. Time of year was mid-summer, plus 30 C temperatures, the barges were laid-up in a fleeting yard, some tanks and machinery space had been opened during the past few years. Bidders were granted permission for inspection the week before the court auction, the client and I arranged to inspect each of the barges at our own risk. The Federal Receivers did not provide any means and or services to prepare for confined space entry, total at your own risk. The last contained material on the barges was bunker C petroleum and coal tar, all tanks having residuals bottoms.

We jointly made a decision to inspect the tanks from the topside only, the machinery space, I would entry the compartment to inspect diesel engines, pumps, manifolds, and condition of the space, which essentially is another tank, with a flush mount hatchway. The second barge to inspect, the machinery space hatchway was missing, and it appear to have been open for extended period of time, I tested the atmospheric levels in the tank, and proved safe for entry. I made my way down the ladder with the meter and light, I stepped onto the deck plates, there was startling growls and several racoons scurrying about my feet, as I charge up the ladder, unknown to me, under the hatchway entrance in the tank, was a very large wasp's nest, humming from being disturb from my tank entry.

Fortunately, I managed to escape the compartment with only a few wasp stings. With all the confined space training, never has there been a conversation about the hazards of meeting insects, rodents or animals in confined space. This situation could have had significantly different outcomes.

Q8. If you could give three pieces of advice to younger, less experienced surveyors making their way in this profession, what would they be?

Focusing on achieving their highest level of academics, or field of concentration.

Find an industry mentor that can challenge you, listen to you, and or bounce your ideas off of.

Include a lifelong learning process in your personal and professional life, and take care of yourself.

Q9. The size and landscape of Canada must make your job challenging. How tough is the travelling to deal with and how often are you having to make long distance trips on survey?

Canada is vast, in the marine industry, it's divided into the Atlantic Region, Quebec Region, Ontario Region, Prairie and Northern Region, and Pacific Region. The major challenge is the cost of air travel throughout Canada, most companies sourcing marine surveyors will look regionally for surveyor availability and competencies. In my case, I operate primarily in Ontario and Quebec Regions, whereas I have several transportation options, usually flying several time per year, to other locals.

Q10. As regional Director for the IIMS Canada Branch, what specific issues are there for Canadian surveyors to be aware of?

There is a number specific topics that should be addressed with marine surveyors on an annual

Figure 6 Tow Warranty Survey

Figure 7 Trip In Tow Survey – Marine Construction

Figure 8 Deadship Tow Warranty survey

Figure 9 Cargo Damage Surveys

Figure 10 Load Warranty Survey

Figure 12 Salt Cargo Quantity Survey

Figure 11 Bulk Cargo Draught Survey

Figure 13 Ground Ariel Maintenance of Channel Lights

Figure 14 Hull Damage and Structural Survey

basis, particularly as independent marine surveyor and/or small business owner. Professional indemnity insurance cover, codes of conduct and ethics, client relations, health and safety practices. Marine surveyors have very demanding and compressed schedules, resulting at times, complacencies in cores operating practices. Providing an annual refresher to marine surveyors on good business practices, and operating standards, provides a qualitative approach to continuous improvements, and integrity.

As a National marine surveying body, keeping the marine surveyor relevant on regulations, legislation, marine safety bulletins that guide their opinions in their specific concentration. Keeping abreast of changes within industry sectors such as ship repair, cargo markets, marine insurance, claims and adjusting.

Influence the marine surveyor's curiosity to challenge himself, to building his brand, and that of the International Institute of Marine surveying, by just involved.

Q11. Marine surveying can be an unpredictable, full on job at times. How do you ensure you get the 8work life balance right and at the end of a long working day, how do you choose to relax and unwind?

Balancing work and personal life is always work in progress, on the Great Lakes, to some extent there is seasonality to some aspects of work, being a little slower in the winter months. Although with the aging demographic some surveyor have retired, leaving gaps in fill year round. For me, physical and mental conditioning requires me to be at the gym minimum 3 times a week, and making time to be with family and friends, regardless of schedule.

Q12. You live in a country renowned for its natural beauty and wide open spaces. But where do you like to go on vacation?

Summer vacations in Canada, take me to the French River in Northern Ontario, and on staycation close to home, enjoying the wonders of Lake Ontario. Winter's, anywhere in the Tropics from 0 to 13 degrees north.

Figure 15 On-Hire Survey - Marine Construction

Figure 16 On-Hire Survey Dump Scows

Figure 17 Great Lakes St.Lawrence Seaway

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