THE REPORT

The Magazine of the International Institute of Marine Surveying

DECEMBER 2021
ISSUE 98

The state of superyachting

Green Shipping: The not so distant future?

Campaign to save and renovate a once great ship

Review of the year 2021

Bottom Fouling: Whose head does it fall on?

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Editor's Letter

Dear Colleague

Welcome to another bumper edition of The Report Magazine. Issue 98 offers you an eclectic mix of informative articles, Institute news together with some hard-hitting articles that might well leave you scratching your head and asking the question why!

I have chosen *The State of Superyachting* as the lead feature (page 60). The article has been adapted from a report that was published earlier this year by Superyacht Times – and is inspired by it. The world of superyachting remains shrouded in secrecy (for obvious reasons) and whilst this article does little to address that aspect, it provides an invaluable insight into this burgeoning industry sector, which despite the pandemic, continues to flourish.

I have tackled the subject of Continuing Professional Development to coincide with the move from 10 to 15 points per year as voted for by members at the last AGM, which takes effect from 1 January 2022. It is clear to me that this is a topic that is misunderstood by some. Unlike other professions, it is not a mandatory requirement, but why anyone would not want to take advantage of the available mechanisms to shout and tell the world about their new skills and knowledge is beyond me.

Linked to CPD is competence. Now there's a word to conjure with. We all want to be competent, but what does it mean to be competent and how do we prove it? I am grateful to IMCA for tackling this topic - see page 41.

The article entitled '*The story of one stuck humble box of fertilizer highlights the global supply chain crisis*' by Ann Koh (Bloomberg) gives a fascinating glimpse into the fate of one container as it makes its arduous journey across the world - page 80.

Recently, I read some of the Golden Ray accident investigation report and was frankly staggered. Fortunately, Sal Mercogliano is on hand to help me make some sense of it all with his opinion article about the case on page 82, entitled '*The missing question from the NTSB Report on MV Golden Ray: WHY?*'

Unsurprisingly, the green shipping agenda shows no sign of letting up any time soon. This is reflected with a couple of informative articles on this topic that are filling our inboxes. *Green Shipping: The not so distant future?* is one (page 73), and *'Green' building – the future of boatbuilding?* (page 96) is another.

Karen Brain has authored two short articles. In particular, I would encourage you to read her words about what you can learn from other professions. It is an interesting take and her words will make you stop and think, I believe - page 122.

I am grateful to Captain Zillur Rahman Bhuiyan, who is the subject of the *'A day in the life of'* feature. It seems particularly fitting given the recent news that the status of Chartered Master Mariner has been bestowed upon him by the Court of the Honourable Company of Master Mariners.

Please have a read of my *Review of the Year* (page 43) for it will give you an insight into life at IIMS and our progress during 2021.

It has been my absolute please to edit The Report Magazine this year for your benefit and I thank all those contributors who have helped me make it an essential read. As this is the last edition of the year, it is only right that I should send you my personal wishes for a Happy Christmas (if you celebrate it), but more importantly good luck and prosperity for 2022 in our turbulent world.

Survey well.

Mike Schwarz, *Chief Executive Officer*

The President's Column

Dear Colleague

Is it me, or has this year gone past at an alarming rate? I find it difficult to grasp that this column is for the last Report Magazine of 2021. Having said that, a great deal has happened this year, not least of which has been a focus on maritime safety, both in the large commercial vessel sector (which has suffered over 130 serious ship casualties to date) and the small craft sector too. Keep an eye out for the excellent new Safety & Loss Prevention Briefings Compendium which will be published by IIMS early in the new year.

The *Maritime Professional Council of the UK (MPC)* has been created recently because of industry concerns in the commercial ship sector with a particular interest in the standards of crew training. Having conversations with Mike (Schwarz) only just this week, I was amazed to learn that another vehicle carrier *(The Golden Ray)* could capsize and be declared a total loss at great expense to all involved just because the crew did not understand how to operate the ballasting system, especially as this situation has happened far too many times before.

I took an active role on behalf of the IIMS in replying to the public consultation on the use and classification of recreational and personal watercraft (PWC) which had to be submitted by 1st November 2021. Our response was included in the submission by the MPC. Although the deadline has now passed, the link following will take you to the document if you would like to read it. If so, go to **https://bit.ly/3nsETIt**.

For those of you who did not become involved or engaged with the proposal, it was by and large to change the wording of the current legislation to include PWC. The reason being that in a court case in regard to a serious accident involving a PWC, the Judge ruled that as PWC are not covered by the Merchant Shipping Act 1995 the operators of such vessels could not be prosecuted. I recall many years ago rowing my tender back across Christchurch harbour with my wife and three children on board, only to be almost cut in half by a racing catamaran. In the middle rowing, as I was, I managed to deflect the offending hull with my head, so no harm done there! But the dinghy's insurers quoted the Merchant Shipping Act in an attempt not to settle my claim. Needless to say, I was not impressed.

I would not be in favour of imposing laws and licencing to restrict the freedom of the individual from enjoying safe use of vessels afloat, but I do feel that the industry has a responsibility to ensure that the purchasers of PWC are given the necessary advice in regard to their safe operation, as in most activities, education is the key.

You may recall the RIB ride which ended in tragedy on Southampton water last year. This incident has caused the operation of these vessels to come under closer scrutiny. It appears that some operators of these craft are flouting the rules. The Professional Charter Association (PCA), appear to be taking an active role in improving fast craft, commercial operator standards, which is to be applauded. I know that Mike (Schwarz) has a close relationship with them and has recently attended as 'guest of honour' at their annual general meeting. Personally, I am not a supporter of using fast craft to carry fare paying members of the public on thrill seeking rides. My opinion is that if you want to enjoy what

is to all intents and purposes a fairground ride, then the best place to go is a fairground, not the sea. The reason for my observation is that the sea is not a controlled environment and there are far too many uncertainties. Even just hitting a wave at the wrong angle during a fast turn at over 40 knots can result in a vessel flipping over (known as hooking or spinning out I believe). I have been involved with the operation of plenty of fast craft in my time and I recall all too well being taken for a 50 to 60 knot ride in a client's small speed boat along the river in Moscow in failing daylight and finishing in complete darkness; and bear in mind that the river is actually about half a mile wide in places, used by large commercial vessels and all that that brings, flotsam and jetsam, debris, tree trunks and so on. I was mighty pleased to set foot on dry land at the end of that I can assure you.

To continue on the safety theme, many of you may recall our open letter to the worldwide yacht and boat manufacturing industry which we published in October 2019 in regard to professional standards and the response to known defects in vessels, engines and equipment. We are often requested by some members, and non-members, to research our small craft surveyor members' personal data banks and publish a list of these known defects. This however could be a very risky thing to do as I suspect that some manufacturers would not hesitate to take legal action against any such revelations and publication. Whilst dealing with one such request, my phone rang and a boat owner recanted a tale of woe in regard to his boat's diesel heater, which was filling his boat with fumes. This started immediately after he had fitted a new fuel pump that he had bought online. The clue was that the pump he bought cost about £25. A genuine pump costs about £150. The heater manufacturer's agent explained that the cheap imitation was supplying too much fuel; exasperatingly as I write this I am still trying to resolve that one.

In October's News Bulletin, I wrote about surveying standards in regard to Inland Waterways Craft, which was triggered by an Insurer refusing to cover a steel narrowboat with a hull under 4mm thick. Previously we had insurers setting a limit of 3mm, even though some vessels were originally built using 3mm steel plate. IIMS Board Member, David Pestridge, contacted me because he had recently been involved with a case where several insurers were insisting that all the surveyor's recommendations, even minor advisories, should be rectified before insurance cover could be granted. Reading between the lines it would appear that there is a shift in the attitude of Insurers and Underwriters to accept even low risk in the Inland Waterways market. On reflection, I can see that there are some underlying themes running through all of this. I know all too well that the standards of both vessels and the surveying of vessels on inland waterways leaves a lot to be desired in some circumstances. I am sure that this has an influence on an Insurer's decision-making processes. I won't bore you with the details here as this will be covered in greater depth in a soon to be released article.

As you will doubtless be aware, the 500-year-old IIMS headquarters, Murrills House, has been the subject of extensive refurbishment this year, both inside and out. This has involved some structural work, replacement of doors and windows and cosmetic updates. This work is complete and on my recent visit to the offices, I must say I was stunned to see how superb the building and grounds are now looking.

And finally, before I go. I would like to wish you a happy and prosperous New Year.

Geoff Waddington
I.Eng; IMarEng.M.I.Mar.EST; F.I.I.M.S.
(President IIMS)

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SUPERYACHTS MUST DO MORE TO RAISE ON-BOARD SAFETY SAYS LLOYD'S REGISTER

Lloyd's Register, the world's largest yacht classification society, is calling on the industry to step up enforcement of safety at sea rules.

"The number one priority of any yacht should be to provide a quality service, but with safety being one of the most dominant values," said Thomas Zeferer, manager of marine training services for Northern Europe at Lloyd's Register.

"A culture of behaviour-based safety must start from the top (and) filter down to the guests. Setting the right example means providing quality service, but also telling guests when they are doing something that is fundamentally unsafe."

In a recent issue of Lloyd's Register's Horizons magazine, Zeferer discussed superyacht safety with Engel-Jan de Boer, yacht segment manager at Lloyd's Register. The latter said safety "can often be taken for granted" by guests who pay a lot for some luxury yachting and are coddled by crews bent on keeping guests happy. "We should never forget those guests can only enjoy the luxury because of safety," said de Boer.

de Boer also said the industry should share details of both serious accidents and near-misses. "Accidents that get reported are usually investigated by flag states, which means a serious accident has taken place. That's too late. There needs to be more emphasis on not just the big disasters but the near misses and learning from them as well."

Design of safety systems and technology for human operators is often the root cause of maritime incidents. "We can gain more in terms of safety and quality by looking at human factors than by just increasing regulations and requirements," said de Boer.

OYSTER'S NEW 60-FOOT YACHT BREAKS COMPANY'S SALES RECORD

The much-anticipated Oyster 595 has launched to international acclaim with 16 yachts already sold pre-launch, which the company claims is the fastest selling Oyster to date. Oyster says the 595 can be handled effortlessly by two people thanks to its retractable bow and stern thrusters and hydraulic push-button in-mast furling.

The Oyster 595 is versatile and includes many design features from the company's larger yachts. The flexible, spacious layout sleeps eight, and can be configured to provide an optional crew cabin if required. Externally, there are flush aft and foredecks, wide walkways with concealed lines and high guard rails. There is plenty of space around the centre cockpit and helm position, which can be protected by a sprayhood and optional bimini. There are also options of a swim platform and retractable telescopic passarelle, and a choice of standard keel or retractable centreboard.

EXTENT OF EVER GIVEN'S DAMAGE REVEALED

Recently, the container ship Ever Given arrived at a shipyard in Qingdao, China for repairs to her bulbous bow, which was damaged when she ran aground in the Suez Canal in March. That infamous grounding delayed billions of dollars worth of trade for six long days, prompting a billion-dollar fine from the Suez Canal Authority (later negotiated down) and a brief backlog of supply-chain disruption.

Shipping scholar Sal Mercogliano, associate professor of history at Campbell University, has obtained photos from the Ever Given's yard period showing the damage to the vessel in detail. The images show that the impact pushed the bottom of the bulbous bow upwards, inside the hull, folding the shell plating inwards.

The repair plan is a full "nose job," cutting out and replacing the bulbous bow with newly-built steel sections - all the way back past the bow thrusters. The sections have already been pre-built in anticipation of the ship's arrival.

REVIEW STUDY ON THE RECREATIONAL CRAFT DIRECTIVE 2013/53/EU – FINAL REPORT PUBLISHED

The report has been created in line with the review clause set out in Article 52 of the Directive 2013/53/EU which requires the European Commission (EC) to submit a report to the European Parliament and the Council by 18 January 2022. The final report/study has been carried out by Panteia, TNO and Emisia on behalf of the EU Commission in terms of the RCD Review 2022 process and has been published.

The specific objectives of the study are:

- To quantify the share of exhaust emissions produced by recreational marine engines in the EU, compared to exhaust emissions produced in related sectors in the EU.
- To find out if it is technically feasible and cost-beneficial to further reduce the emissions of pollutants from marine propulsion engines (nitrogen oxides NOx, hydrocarbons HC, particulates PT and carbon monoxide CO), the cost efficiency of those approaches and/or technologies, and the need to agree globally harmonised values for the sector have to be taken into account.
- To find out if other engine testing procedures listed in the Directive 2013/53/EU would be more appropriate for the recreational marine propulsion engines, including hybrid installations as well as if these procedures would better contribute to reduction of pollutants' emissions
- To list the possible options of further reduction of exhaust emissions from recreational marine propulsion engines.
- To access the possibility to set out requirements on evaporative emissions and fuel systems. To list possible options and accompany them by cost/benefit analysis.
- To assess the adequacy and impact of the current specification of watercraft design categories (based on combination of resistance to wind force and to significant wave height) on manufacturers and end-users.
- To assess the need to introduce further specifications, eventually to introduce further subdivision of the current design categories. Potential options to modify current specification of watercraft design categories are accompanied by cost/benefit analysis.

Read the full article and access the 174-page report at **https://bit.ly/31waPDk**.

DSME INVESTIGATES POSSIBLE CYBER ATTACK

DSME completed South Korea's first domestically-built ballistic submarine in 2021 (RoKN photo)

South Korean shipbuilder and defence contractor Daewoo Shipbuilding & Marine Engineering (DSME) confirmed yesterday that a new investigation is underway regarding a possible breach of the company's computer systems. While admitting that it was the second possible hack into its systems this year and the third in 12 months, DSME stressed that no defence information had been compromised in the latest cyber-attack.

"We are doing our best to find out what happened and are cooperating with the investigation," DSME said in a written statement released to the Korean media.

The shipbuilder said it had become aware of hacking attempts on its systems and reported the situation to the police on October 25 for investigation. In recent days there had been numerous rumours of a possible security breach on an unnamed company before a leak appeared in the media over the weekend quoting an unnamed government source who identified DSME as the target.

AUTONOMOUS PROTOTYPE VESSELS TAKE TO THE CANALS OF AMSTERDAM

Roboat – a research project by Massachusetts Institute of Technology (MIT) and Amsterdam Institute for Advanced Metropolitan Solutions (AMS Institute) – has successfully developed two full-scale autonomous prototype vessels for use on Amsterdam's waterways.

The boats are fully electric and can operate for up to ten hours. They are self-learning and adapt their abilities based on experiences on the water, and can find waypoints, autonomously dock and undock, and avoid collisions.

To autonomously determine a free path, Roboat uses LIDAR and cameras to enable a 360-degree view. This is also referred to as the 'perception kit' and lets Roboat understand its surroundings. When the perception picks up a new object, the algorithm flags the item as 'unknown'. Once the team has reviewed the day's collected data, the object can be manually selected and tagged enabling the algorithm to recognise specific items.

"Every time the vessel navigates the area, it gains experiences and learns from previous situations and object encounters. As a result of the continuous feedback loops Roboat can now autonomously navigate in this area," says Ynse Deinema, Roboat project lead at AMS Institute.

The boat's latching mechanism allows it to connect to a docking station or to another Roboat. Using this feature, Roboats can form temporary bridges to create new urban infrastructures, as well as floating stages and bridges.

THE SUPERYACHT BUSINESS IS BOOMING

Photo credit: Damen. 'Game Changer', 70-meter yacht support vessel by Damen

As the number of billionaires grows and COVID-19 has added to incentives for avoiding crowds, the multi-billion-dollar global luxury boat industry is rebounding fast after near-paralysis at the start of the pandemic.

"2021 is significantly outperforming any of the last 12 years," said brokers Fraser Yachts.

Sales of luxury vessels over 30 meters (98 ft) rose over 8% in the first nine months of 2021 from the same period of 2019 pre-pandemic, according to industry publication the Superyacht Group. The cost of a superyacht can range from $10 million second-hand to $600 million new, industry figures show. Over 200 new ones hit the water for the first time this year until September, up from 165 in the same period of 2019, the Superyacht Group said. Some 330 have been ordered to be ready before 2023.

NEW CHAPTER FOR SAFE DISPOSAL OF MARINE FLARES FROM THE PLEASURE BOAT SECTOR

The Maritime and Coastguard Agency (MCA) is to work with industry to develop local self-regulated schemes for the safe disposal of redundant pyrotechnics (flares) from the pleasure vessel sector. It follows a consultation with the industry, industry regulators and boat-owners to seek ways considered acceptable to all for the effective means of disposing of flares.

The MCA supported a proposal for an industry-led, self-regulated disposal service that complies with existing legislation. It was also felt this was an opportunity for small regional businesses to tailor a disposal service that meets local needs, enabling an effective geographical spread of options available to boat-owners.

Now the results of the six-week consultation have been published, the Government will engage with those in the sector, who through the consultation said that they were willing to engage and support the development and delivery of such a set of schemes.

The current service was put in place as an interim measure to allow for industry to develop a long-term solution and has been provided for free to pleasure boat owners by the MCA since 2010. Redundant flares can currently be taken to 17 coastguard stations around the UK plus the RNLI station in Poole, Dorset.

Read the full published consultation results at **https://bit.ly/3d3Ub1B**.

CE MARKING ACCEPTANCE FOR BOATS EXTENDED UNTIL 2023 BY UK GOVERNMENT

The UK government has announced an extension to the start date for the new post-Brexit certification rules for CE products by 12 months. This extension means that the CE mark will continue as a recognised trademark into next year, after the Department for Business, Energy and Industrial Strategy agreed to push back the deadline for the UK Conformity Assessed (UKCA) stamp until 1 January 2023.

Any CE marked goods that meet EU requirements may continue to be placed on Great Britain's (GB) market for another year.

The UKCA marking is a new UK product marking that is used for goods being placed on the market in GB. UKCA gives the UK control over its goods regulations and covers most goods that previously required the CE marking, known as 'new approach' goods. The UKCA marking came into effect on 1 January 2021 and is now being used. However, to allow businesses time to adjust to the new requirements, businesses will now be able to use the CE marking until 1 January 2023 in most cases.

OCEAN CLEANUP RETURNS HOME TRIUMPHANT WITH UNUSUAL PLASTIC DEBRIS HAUL

Environmental campaign the Ocean Cleanup has completed its trial of its sweeping ocean cleaning system and collected the most debris from the Pacific Ocean Garbage patch. The final trails were completed in early October, with large hauls of plastic waste being cleaned from the ocean.
While on the mission, the organisation collected a lot of unusual debris and rigid plastics from the ocean, including mannequins, snow sleds, snow shovels and toilet seats.

The non-profit organisation returned to Victoria Harbour on 20 October and officially announced that after the successful completion of System 002 test campaign, it is ready to return to the Great Pacific Garbage Patch and start the clean-up in earnest.

LIFEBOAT REPAIR AND MAINTENANCE FRAMEWORK AGREEMENT

Photo credit: RNLI/Nathan Williams

Shipyard group Harland & Wolff has signed a framework agreement with the UK's Royal National Lifeboat Institution. Under the terms of this framework agreement, Harland & Wolff (Appledore) will be responsible for the repairs, maintenance and other works programmes defined by RNLI for its fleet of lifeboats and other vessels. This agreement will span multiple years and each docking will be priced as a bespoke agreement based on the scope of works required to be performed on each vessel.

As part of this agreement, Harland & Wolff will also support the RNLI with free bi-annual haul outs and wash down of its Appledore lifeboat.

ANCIENT SHIPWRECK DISCOVERED IN GREECE

An ancient shipwreck from the classical era was discovered during a marine survey for the Crete-Peloponnese subsea interconnection by the Independent Power Transmission Operator (IPTO) in Cythera.

According to the preliminary results of the research conducted by the Ephorate of Underwater Antiquities and the Hellenic Center for Marine Research (HCMR), the shipwreck, which was located at a depth of 222 meters, dates from the end of the 5th to the mid-4th century B.C – making it approximately 2500 years old.

LLOYD'S REGISTER AND UK P&I CLUB LAUNCH NEW PORT STATE CONTROL CHECKLIST MOBILE APP

Lloyd's Register (LR) and UK P&I Club have released a new and improved Port State Control (PSC) checklist app. The app helps ensure that ship personnel are trained in how to inspect, maintain and operate life-saving equipment and that equipment is ready for use at all times. The app also includes a list of common deficiencies to ensure compliance with regulatory requirements and help reduce the risk of PSC detentions.

The full list of checklists featured include ILO MLC, ISM & ISPS, Life Saving Appliances, Marine Fire Safety, Marine Pollution Prevention and Port State Control into one, easy-to-use app. Checklists on the new and improved app are continuously updated to reflect new or amended legislation as it comes into force, so users remain up to date.

The app includes functionality that enable ships' crews and their managers to easily view necessary legislative and regulatory requirements, save multiple checklists, check-off completed activities, add essential notes, use the device camera to take images and has the ability to print and send files via email. The app is available to all shipowners and operators regardless of classification provider.

The PSC pocket checklist app is available now for free on iPhone, iPad and Android devices.

UAE Maritime Cluster- H.E. Suhail Al Mazrouei
The UAE Minister of Energy and Infrastructure

UAE MARITIME CLUSTER LAUNCHED TO BOOST THE NATIONAL MARITIME ECONOMY

The Ministry of Energy and Infrastructure has launched the UAE Maritime Cluster to be an umbrella for the local and federal government and private organisations in the maritime sector. The move aims to promote the UAE's maritime sector globally. It also supports the Ministry's role in building alternative economic components to the oil sector, supporting its strategy to be a key contributor to the 'Projects of the 50' initiatives. The cluster brings together organisations and individuals in the sector and unites the capabilities of the UAE maritime sector to build a unified force that enhances the UAE's position as one of the top five global maritime hubs.

To launch the Cluster, the Ministry will build a communication network consisting of the various entities in the maritime sector. This will act as a platform for launching various activities and events that the UAE Maritime Cluster will implement. It will also be a knowledge hub for external maritime authorities around the world to learn about the opportunities available in the maritime industry and invest in the UAE's blue economy.

H.E. Eng. Suhail Al Mazrouei, Minister of Energy and Infrastructure in the UAE, said, "The UAE is a unique success story in government excellence. Building on the model of the UAE Union, we will unify the UAE maritime sector by launching the UAE Maritime Cluster, which will be a platform that integrates the capabilities of the various entities and organisations, whether federal, local or from the private sector. The Cluster will enhance their performance by bringing together the competencies and experiences of professionals and experts working in the UAE's maritime sector, many of whom are world-class experts. This will build a giant think tank and a portfolio for the national maritime capabilities, to create new opportunities for the development of the maritime sector. This is similar to the Union among the Emirates that created new opportunities for the people of the UAE to achieve growth and prosperity."

ICOMIA SUSTAINABILITY GUIDE UPDATED AND REPUBLISHED

ICOMIA has released an updated Sustainability Guide which was previously known as the Environment Guide. Highlighted in blue are the areas that have changed or had new information added in this edition.

The guide features clear and concise outlines of the latest environment legislation affecting the EU, US, Asia and Australia, plus international organisations such as the International Maritime Organisation. In simple terms, the guide explains what the legislation is, why it has been imposed, when it will take effect, who it may affect and how. The Sustainability Guide is an invaluable tool for anyone who is operating in the global recreational marine industry.

Some of the areas covered include:

– Australian climate change;
– Recycling and Waste Reduction Bill;
– Work Health and Safety Regulations (WHS Act);
– The European Green Deal;
– COM/2019/640 final;
– EU Zero Pollution Action Plan;
– Industry related legislative developments within the USA and Canada, plus many other topics.

Download the guide at **https://bit.ly/3j0FBdI**.

MARITIME UK LAUNCHES ITS COASTAL POWERHOUSE MANIFESTO

Maritime UK and the Local Government Association Coastal Special Interest Group (LGA Coastal SIG) have urged the UK government to come up with a clear strategy to stem the brain drain by launching a new Coastal Powerhouse Manifesto.

The Coastal Powerhouse Manifesto sets out proposals to boost connectivity to the rest of the country, extend freeport benefits to all coastal areas, install a shore power network across the coast to charge tomorrow's Teslas of the seas, and develop new skills in coastal communities, including digital skills.

Maritime UK chair, Sarah Kenny, said, "There is nothing inevitable about coastal decline. These areas are Britain's gateway to the world and can have a high-tech, high skilled future as the engine room of our green industrial revolution. Our industry invests and creates quality jobs in coastal areas, and we are ambitious to do more, but we need the right policies and backing to unleash our full potential."

The poll, commissioned by Maritime UK and conducted by Survation, also revealed the majority (46%) of young people are yet to see evidence of new investment, or improvement in living standards, despite the government's so called levelling-up agenda.

The Coastal Powerhouse Manifesto urges government to ensure the coast is a central part of infrastructure planning, to attract inward investment through reduced congestion. Rail freight and green coastal shipping are identified as significant growth areas which could decarbonize the supply chain and increase connectivity with the rest of the country.

Download the manifesto at **https://bit.ly/3j6XmIh**.

NEW PREDATOR 65 FROM SUNSEEKER SET FOR LAUNCH IN EARLY 2022

Sunseeker plans to launch its latest model, the Predator 65, at boot Düsseldorf in January 2022.

Sunseeker has revealed details about the all-new model, which benefits from the latest Volvo Penta IPS-1200 or IPS-1350 offering enhanced performance, comfort, efficiency, and manoeuvrability, complete with joystick control and 35-knot capability.

The company will have ten yachts on display at boot Düsseldorf, including the recently launched Sunseeker 'Famous Five' models.

IMO 104TH SESSION OF THE MARITIME SAFETY COMMITTEE CONSIDERS REMOTE SURVEYING

The International Maritime Organization (IMO) held its 104th session of the Maritime Safety Committee (MSC) from 4–8 October 2021. This meeting was conducted remotely and a number of topics will be of interest to the superyacht, commercial vessel and yacht and small craft leisure sector, including remote surveys, which came up for discussion:

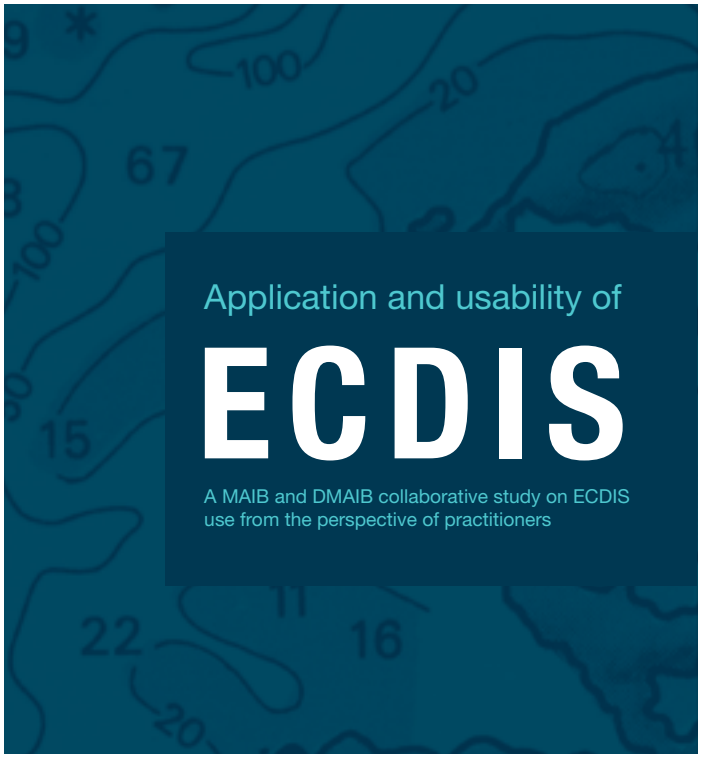
Remote surveys
One result of the pandemic has been the sharp increase in remote vessel surveys, inspections and audits. Whilst classification societies have rules and procedures for remote inspections e.g. underwater surveys of ships' hulls, there is no current harmonised system for ensuring that remote surveys can be conducted to a similar standard as in-person attendance. Recognising this need, a number of papers were submitted on the subject under agenda item 15, Work programme. Following a discussion of the topic in plenary, the Committee agreed to include a new output in the biennial agenda of the Implementation of IMO Instruments (III) Sub-Committee for 2022-2023, with a target completion year of 2024. The title of the output is "develop guidance on the assessment and applicability of remote surveys, ISM Code audits and ISPS Code verifications".

MAIB SAFETY DIGEST 2/2021

The MAIB has released its latest Safety Digest 2/202 featuring 25 essential case studies following maritime incidents and accidents. Introducing the MAIB Safety Digest 2/2021, Andrew Moll, Chief Inspector of Marine Accidents, says, "I would like to start by thanking Matthew Easton, John Clark and Iain Elliott for writing the introductions to the Merchant, Fishing and Recreational Craft sections of this digest. As always, their perspectives on maritime safety make compelling reading. There are many aspects to safe operations and, purely by coincidence, our three introduction writers have focused on different parts of the safety effort."

Download the Safety Digest at **https://bit.ly/3lEJ3w5**.

MAIB AND DMAIB PUBLISH COLLABORATIVE REPORT ON ECDIS USE FROM THE PERSPECTIVE OF PRACTITIONERS



The UK's Marine Accident Investigation Branch (MAIB) and the Danish Maritime Accident Investigation Board (DMAIB) have published a comprehensive 94 page study focusing on the practical application and usability of ECDIS. The study follows a qualitative methodology, primarily based on semi-structured interviews with 155 ECDIS users and observation data gathered between February and July 2018 during sea voyages in European waters on 31 ships of various types.

Challenges

The report showed that while the standardisation and allocation of simple and repetitive tasks (plotting the ship's position and chart update for example) has brought about tangible benefits, the required user interaction with ECDIS has introduced challenges that cut across system design, practices and training. These challenges include:

- The distraction of alerts and alarms, particularly during pilotage, that leads to coping strategies ranging between alarm 'normalisation' and physical disablement.
- The frequent impracticality of the setting of an efficient safety contour, leading to the use of 'official workarounds' (e.g. included in recognised guidance) and 'unofficial workarounds' (e.g. alarm disablement) to optimise the display to make the best of a bad job. Alternatively, the safety contour is ignored altogether.
- The number and types of alerts generated during automatic route checks that leads to them either being ignored or increases the risk of planners missing safety critical alerts among numerous more trivial ones.
- Interfaces and menu complexity that increase cognitive workload, particularly in busy environments, which results in users focusing on ECDIS to the detriment of other sources of information.
- The difficulty of residual manual tasks such as planning radar parallel indices, plotting limiting danger lines or writing text notes, which are often time-consuming, deters users from their application.
- ECDIS requires significant cognitive resources to use its functions, which has contributed to a minimalist approach by users.
- ECDIS use continues to be framed and audited within the context of paper chart practices with Flag State, PSC and SIRE inspections often not recognising new ways of working such as the use of radar information overlay to verify position.
- Users are trained to distrust the ECDIS and continuously verify the ship's position by alternative means. However, significant discrepancies are rarely encountered.

The findings of this study identify many of the problems ECDIS users experience with the system at sea today, and in the short-term it is the ambition of the DMAIB and MAIB to engage with ECDIS stakeholders to try to effect the changes required to improve ECDIS performance through better bathymetry along with changes in design and training.

However, the findings also point towards deep-rooted, structural flaws in the way that new navigation technologies are implemented. Flaws that continue to hinder system development and the evolution of new ways of working, and which also promote reactive rather than proactive approaches in many areas.

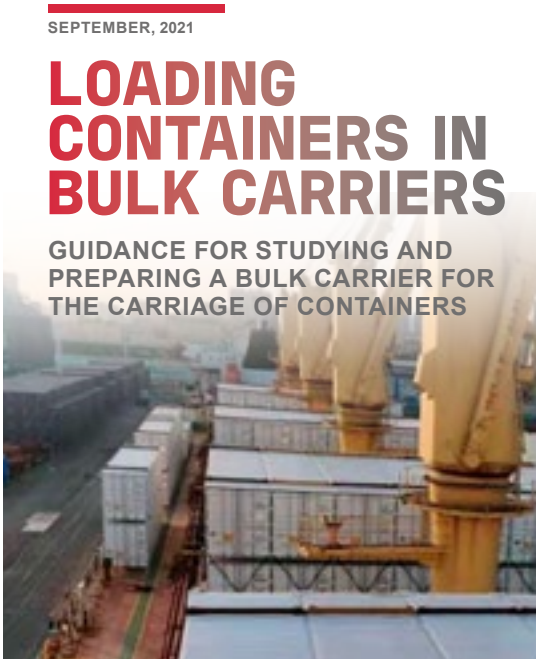
Download the report at **https://bit.ly/3nIMAeq**.

ENSURING SAFE CARRIAGE OF CONTAINERS IN BULK CARRIERS GUIDELINES ISSUED BY BUREAU VERITAS

Bureau Veritas has published a comprehensive set of guidelines to promote and support the safe carriage of containers in bulk carriers. In recent months there has been unprecedented demand for the carriage of containers. This has prompted charterers to explore the possibility of using of bulk carriers for that task. Bulk carriers, in general, are non-cellular vessels compared to container ships.

Whilst the carriage of containers in bulk carriers is possible, but only after extensive planning, assessment and scrutiny, operators must liaise with their insurance carriers, the Class society of their vessel(s) and corresponding Flag Administration for advice and guidance on the necessary modifications and/or additions to satisfy their requirements.

he fact that bulk carriers are indeed "not specially designed and fitted for the purpose of carrying containers" combined with the potential need to maximize the intake of containers, creates issues of concern related to the integrity of the vessel's structure and the cargo itself, as well as the safety of the crew and the stevedores.



Download the guidelines at **https://bit.ly/3AlATO3**.

Ensign Patricia Carrow, a Coast Guard vessel inspector, examines a passenger vessel. (U.S. Coast Guard photo by Petty Officer 3rd Class Andrea Anderson)

US COAST GUARD VESSEL DEFICIENCY REPORTS TO BE POSTED MONTHLY

The Coast Guard will begin posting monthly data reports of all deficiencies to foreign and domestic vessels on the Office of Commercial Vessel Compliance (CG-CVC) website in an Excel file format. Access to data such as common vessel deficiencies or marine casualty occurrences can inform vessel owners and operators of current trends on similar vessels. Armed with this information, vessel owners and operators may proactively take action to identify potential deficiencies on board their vessel and improve safety.

For years, the Port State Information Exchange (PSIX) XML data service has provided a means for the public to access large quantities of Coast Guard vessel deficiency and marine casualty data. However, XML data service requires a level of programming knowledge that can make it difficult for the average user to access the information.

The data presented in the monthly data reports will mirror what is available on the PSIX vessel reports. No "Security," "Self-Reported," or "Worklist Item" deficiencies will be reported. If there are any discrepancies in the reported data, owners or operators should contact the cognizant OCMI who issued the deficiency.

A new report will be posted at the beginning of each month and updated with all "Closed Deficiencies." The updated monthly file will include deficiencies from previous months that were still "Open" and did not show in earlier generated reports. Additionally, full annual reports going back to 2018 will be available to download.

CANAL & RIVER TRUST 2020/2021 ANNUAL REPORT PUBLISHED

The Canal & River Trust 2020/21 Annual Report and Accounts document a year dominated by Covid-19, from the pandemic's operational and financial impact on the Trust, to the lifeline the waterways and towpaths provided throughout for millions of people across England and Wales. The Canal & River Trust 2020/2021 Annual Report also looks ahead to the 2021/22 Government Grant Review, and demonstrating the waterways' benefit to the nation.

The Trust's income was £215.4 million in 2020/21 (2019/20: £216.1m), reflecting the actions taken in recent years to ensure that its income, vital for looking after the ageing waterways infrastructure, is secure. Whilst overall spend on charitable activities decreased year-on-year by £10.8m to £183.3m, partly the result of provisions for Toddbrook Reservoir made a year ago, underlying expenditure on core maintenance, repairs and infrastructure works continued to grow.

Download the report at **https://bit.ly/3nKOtW7**.

Ra – solar powered boat part of the ETB partnership

GREEN BOATING ETB PARTNERSHIP SECURES NEW FUNDING TO ELECTRIFY THE UK NORFOLK BROADS

The ETB partnership, comprising researchers and Norfolk Broads businesses, has been announced as a winner of the Clean Maritime Competition, alongside 55 other projects to investigate how to decarbonise the maritime sector. As part of a range of measures to tackle climate change, the UK Government is planning to phase out the production of new fossil-fuel powered vessels by 2050. This funding will enable the 'Electrifying The Broads' – ETB partnership group to research how the transition to cleaner fuels and propulsion could take place in the Broads.

To date, electric motors are only widely used on small outboard vessels, electric day-boats and sailing yachts. The 'cruiser' fleet of private and hire boats is almost entirely fossil-fuel powered, and there are currently no environmentally-friendly options for hire vessels that spend weeks away from their base.

The ETB partnership includes RenEnergy, the Broads Authority, Net Zero East, Norfolk Broads Direct and Hethel Innovation, who will investigate ways to decarbonise propulsion of the most polluting cruising vessels and explore the need for electric charging infrastructure throughout the Broads.

The second phase of the project by the ETB partnership will look to demonstrate potential technologies (such as biofuels and Hydrogen fuel cells) to Broads' river users and how they could apply to inland waterways.

To ensure that the Authority supports river users in any changes that the Government applies to fuel and engines, it recently ran a survey amongst Broads boaters, who, for the majority, were supportive of greener cruising. Over 80% of boat users surveyed would like to use greener fuels, but felt that it would be inconvenient for them to do so e.g. a lack of electric charging infrastructure or lack of biofuel availability. Cost was also cited as a major barrier to adopting greener boating.

INDUSTRY BODIES JOINT INITIATIVE TO TACKLE SAFETY OF DANGEROUS GOODS STORAGE AND TRANSPORT

Container ship fires and explosions in port storage facilities continue to be the result of poorly packed and misdeclared hazardous materials as they move through the global supply chain. A Memorandum of Understanding (MOU) recently signed by two influential industry bodies, ICHCA International and IVODGA adds impetus to disseminating effective guidance on the correct safety procedures that need to be employed. According to international transport and logistics insurer TT Club, it is estimated that a major containership fire incident at sea occurs on average every 60 days.

The MOU has been signed by ICHCA International, representative of global cargo handling operators, including many of the leading cargo and container terminal groups, and the International Vessel Operators Dangerous Goods Association (IVODGA), whose membership consists of the world's ocean carriers.

The collaboration of these two expert bodies, whose influence spans the globe will be significant in producing clearly defined guidelines to best practice based on years of practical experience in handling dangerous goods. They will work closely on joint projects to improve standards across numerous common safety issues affecting the transport of dangerous goods.

FIRST BUILD RULING FOR OFFSHORE WIND SUPPORT VESSELS PUBLISHED BY US COAST GUARD

Photo credit: Robert Allan

The US Coast Guard National Vessel Documentation Center has published a new ruling regarding the construction of crew transfer vessels (CTVs). This is the first guidance issued on the construction of the many offshore support vessels that will be required to construct and maintain thousands of power generating wind turbines intended to be installed off the US coast.

To provide services to an offshore wind farm in US waters, a CTV must be considered "built in the United States" as required by US coastwise laws (commonly referred to as the "Jones Act"). For a vessel to be considered US built, it must meet two basic tests – "all major components of its hull and superstructure" must be US "fabricated;" and the vessel must be "assembled entirely in the United States."

The Coast Guard has interpreted these tests to permit the use of an unlimited quantity of foreign steel incorporated in the hull or superstructure, but only so long as the materials incorporated are "standard steel stock as delivered from the mill." A US shipyard building CTVs requested confirmation during September that certain aluminum materials to be incorporated in the hulls would not be subject to that 1.5 percent limit. The Coast Guard applies the same tests to aluminum as it does to steel. Specifically, the shipyard asked whether either extruded aluminum planks produced in standard sizes, or panels formed by the joining of such planks into panels by friction stir welding, should be counted against the 1.5 percent limit given that they were available in standard sizes from a foreign mill and were not purpose-manufactured for the US vessel project.

The Coast Guard confirmed that the extruded aluminum planks could be incorporated into a CTV's hull in unlimited quantities and any vessel constructed in that fashion would qualify as "built in the United States." The Coast Guard declined to rule as to whether the panels were "fabricated" outside the US by virtue of the friction stir welding, but instead determined that use of such panels violated the requirement that a vessel be "assembled entirely in the United States."

Two recently published reports make for interesting reading...

SOUNDS: STATUS OF UNDERWATER NOISE FROM SHIPPING

Report analyzing the impacts of underwater noise in Europe published by EMSA

The European Maritime Safety Agency (EMSA) has commissioned a study to consolidate information on the subject of continuous Underwater radiated noise (URN) from shipping, in order to derive recommendations for a future multi-stakeholder strategy within Europe. The 103 page report is now available to read.

The study focussed on four main subject areas, with noise sources, environmental impact and policy providing the basis for the main goal, mitigation. The main source of URN from shipping is broadband propeller cavitation, radiating noise over a large frequency range. Machinery, primarily main propulsion engines, can also have an important contribution.

These are typically the mechanisms targeted by mitigation measures. Both measurements and modelling of ship noise are important for effective mitigation, with the standardisation of terminology and procedures, as well as uncertainty quantification, being the focus of recent and ongoing work.

While deep water conditions have been treated thoroughly in the past, work on shallow water propagation effects is in progress, with final results expected in 2024. However, the limited access to Automatic Information System (AIS) data, required for experimental analyses and modelling purposes, also contributes to uncertainties, and should preferably be expanded.

In addition, the report notes that the simplification of ship noise measurements is a rapidly developing subject, with several studies on the use of onboard sensors and drones recently published.

Such technologies could help in increasing the amount of data available to researchers and policy makers in the future, as well as reducing costs for ship owners, when performed either on a voluntary or mandatory basis In terms of underwater noise monitoring, many researchers go beyond the suggestion of the MSFD to consider the 63 and 125 Hz one-third octave (OTO) bands, often analysing higher-frequency bands (up to 50 kHz), or broadband levels, related to the communication frequencies of specific marine fauna.

There is also evidence that recreational craft might be the dominant noise generators in certain EU coastal waters, with these vessels typically producing sound at higher frequencies than larger merchant ships.

Underwater noise policies

So far, several policies are being developed and implemented at different levels for managing underwater noise. These are being developed under the auspices of the Regional Sea Conventions, International Multi-party agreements and at European level.

Nevertheless, only the guidelines released at IMO, providing recommendations for underwater noise reduction from shipping, are exclusively dedicated to the shipping industry.

The Marine Strategy Framework Directive is the only piece of regulation implementing binding actions at European level. Other policies that can be implemented are related to incentives. In fact, while numerous classification societies offer "Quiet Class" notations, few merchant vessels have, so far, been built with noise requirements. For this reason, ship owners could be encouraged to obtain such notations through incentive schemes, which may also accept voluntary sustainability certification as evidence of noise performance.

Download and read the report at **https://bit.ly/2YOVyft**.

New report highlights significant acceleration in maritime digitalisation

Inmarsat in partnership with Thetius has published a new report pinpointing the impact of Covid-19 in helping to force the acceleration of global maritime digitisation. The report, 'A Changed World: The state of digital transformation in a post-Covid-19 maritime industry', captures a sector fast-tracking IT based solutions from November 2019. It also characterises Covid-19 as a "universal disruptor and catalyst for digital transformation".

The Covid-19 pandemic has led to a large increase in the adoption of digital tools across the industry. But there is more to digital transformation than adopting digital tools; genuine transformation is still some years away. There is zero doubt that the pandemic has accelerated the process given that average daily data consumption per vessel increased from 3.4 to 9.8 gigabytes between January 2020 and March 2021.

Stefano Poli, VP Business Development, Inmarsat Maritime commented, "Digital solutions are now pervasive in maritime, and one consequence of Covid-19 has been that our customers – and their customers – increasingly think digital first."

The impact of Covid-19 on ship operations is evidenced by a massive increase in the use of remote services such as pilotage and surveying. Similarly, crew training and officers examinations went fully online for the first time ever in some jurisdictions.

2020 saw a small dip in spending growth on digital tools developed specifically for the maritime industry. However, overall there was significant investment in general IT infrastructure. Before the pandemic, global spending on digital products and services in the maritime sector was forecast to be $124bn in 2020. The report estimates that the actual spend was $2bn lower, at $122bn. Pre-pandemic forecasts estimated that the digital maritime industry would be worth $135bn in 2021. But we estimate that the global maritime digital products and services market will turn over $159bn this year, an increase of $24bn or 18% on previous forecasts.

Based on this new data, we are forecasting that by 2022, industry turnover will be three years ahead of pre-pandemic growth forecasts By 2030, we estimate the industry will be worth $345bn, up from a previous forecast of $279bn. Similar patterns are seen at a local level in the UK, with 2020 seeing spend reduced by c. £100m ($135m) and 2021 seeing a c. £1.0bn ($1.3bn) lift on pre-pandemic spending forecasts.

Venture investment patterns saw a similar, but more extreme, dip followed by a rapid recovery. Investment values fell from $1.4bn in 2019 to just $345m in 2020. Inmarsat estimates that by the end of 2021 a total of $2.5bn will have been invested with total deal flow up by 85% on 2020 levels, bringing the level back to pre-pandemic forecasts.

The UK maritime technology sector has weathered the pandemic well. The UK has produced more maritime technology businesses in the ship operations and management sector than any other G7 nation since 2008 and the government has recently announced several measures to boost maritime innovation. The UK is progressing well against the short-term measures of the government's Maritime 2050 strategy, particularly in areas such as technology, people, and trade. But the government lags behind its own targets on areas including the environment, infrastructure, and security.

Looking ahead, decarbonisation is the biggest long-term issue facing the industry. Changing fuel infrastructure is a complex and lengthy process, as evidenced by the 97-year journey to remove tetraethyl lead as an additive in the petrol supply chain. But digital tools can play a strong role in the immediate future of the industry's decarbonisation journey.

For example, there is evidence of fleet-wide fuel savings of up to 20% just from changing the handling behaviour of a ship's bridge team. Although the industry has undergone a rapid shift in the last 18 months, there is no doubt that there is much more disruptive change ahead. Efforts to decarbonise the maritime industry will need to eclipse the impact of the pandemic by a long way.

To facilitate this change, the authors recommend that industry stakeholders create a long-term transformation plan, that government boosts non-financial support for innovation in the sector, and that innovators take the time to fully understand the various levels of market maturity before creating and launching new technology products.

Download and read the report at **https://thetius.com/changed-world/**

REPORT bites

Two-time Formula 1 World Champion Fernando Alonso has commissioned a custom 60 Sunreef Power Eco catamaran with Sunreef Yachts.

Horisont Energi and the Port of Rotterdam have announced an MoU regarding setting up a corridor for transport of blue ammonia from Norway to Rotterdam.

With US boat sales in 2020 hitting a 13-year high – fuelled largely by pandemic created demand – and order books for many builders full for 2022 and creeping into 2023, industry veterans are wondering how long before the bubble bursts.

Volunteers who have spent the past three years painstakingly rebuilding a Georgian lock on the Grantham canal by hand are celebrating after it was used by a boat for the first time in more than 90 years.

Yamaha Marine Precision Propeller has announced that its new propeller manufacturing plant in the Midwestern US has reached full production capacity.

The Maritime and Port Authority of Singapore has announced that shipping industry giant Thome Group has won its 'Outstanding Contribution to Search and Rescue Efforts' award.

As ports struggle to keep up, delays are soaking up capacity leading to frustration on the shippers' side and leaving carriers struggling to keep up whilst making record profits, shipping organization BIMCO reports.

Sunseeker and its official distributor in Hong Kong, NextWave, have opened the brand-new 4,500 sq ft Sunseeker showcase in the Repulse Bay district of Hong Kong.

Families of the 34 victims of a California dive boat fire have sued the U.S. Coast Guard alleging the vessel was allowed to operate with faulty electrical and inadequate safety systems.

Draft interim guidelines aimed at providing international standard provisions for ships using fuel cell power installations have been agreed by IMOs Sub-Committee on Carriage of Cargoes and Containers (CCC 7).

South Korea-based Tas Global has commercialised a hull cleaning robot system, claimed to be the first in the world.

Safety Briefings

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- The distraction of alerts and alarms, particularly during pilotage, that leads to coping strategies ranging between alarm 'normalisation' and physical disablement.
- The frequent impracticality of the setting of an efficient safety contour, leading to the use of 'official workarounds' (e.g. included in recognised guidance) and 'unofficial workarounds' (e.g. alarm disablement) to optimise the display to make the best of a bad job. Alternatively, the safety contour is ignored altogether.
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- The difficulty of residual manual tasks such as planning radar parallel indices, plotting limiting danger lines or writing text notes, which are often time-consuming, deters users from their application.
- ECDIS requires significant cognitive resources to use its functions, which has contributed to a minimalist approach by users.
- ECDIS use continues to be framed and audited within the context of paper chart practices with Flag State, PSC and SIRE inspections often not recognising new ways of working such as the use of radar information overlay to verify position.
- Users are trained to distrust the ECDIS and continuously verify the ship's position by alternative means. However, significant discrepancies are rarely encountered.

Download the full report at **https://bit.ly/3nIMAeq**.

GOLDEN RAY NTSB REPORT REVEALS INACCURATE STABILITY CALCULATIONS AS THE CAUSE OF THE CAPSIZING

Inaccurate stability calculations caused the capsizing of the vehicle carrier Golden Ray that resulted in $200 million worth of damages, the National Transportation Safety Board reveals in its marine accident report. The report gives details of the NTSB's investigation into the capsizing of the roll-on/roll-off vehicle carrier as it transited outbound through St. Simons Sound near Brunswick, Georgia on 8 September 2019.

All 23 crewmembers and one pilot on board were rescued, including four engineering crew who were trapped in the vessel for nearly 40 hours. Two crewmembers sustained serious injuries. The Golden Ray sustained significant damage due to fire, flooding and saltwater corrosion and was declared a total loss estimated at $62.5 million. An estimated $142 million worth of cargo, including more than 4,100 vehicles, was also lost.

Less than 40 minutes after leaving port, the 656-foot-long Golden Ray began to heel rapidly to port during a 68 degree turn to starboard. Despite attempts by the pilot and crew to counter the heel, the rate of turn to starboard increased, and the vessel reached a heel of 60 degrees to port in under a minute before it grounded outside of the channel.

Probable Cause
The NTSB determined the probable cause of the capsizing of the Golden Ray was the chief officer's error entering ballast quantities into the stability calculation program, which led to his incorrect determination of the vessel's stability and resulted in the Golden Ray having an insufficient righting arm to counteract the forces developed during a turn while transiting outbound from the Port of Brunswick through St. Simons Sound.

Contributing to the accident was G-Marine Service Co. Ltd.'s (the vessel's operator) lack of effective procedures in their safety management system for verifying stability calculations.

The NTSB concluded the Golden Ray did not meet international stability standards at departure and possessed less stability than the chief officer calculated.

According to the NTSB, after the vessel capsized, open watertight doors allowed flooding into the vessel, which blocked the primary egress from the engine room, where four crewmembers were trapped. Two watertight doors had been left open for almost two hours before the accident. No one on the bridge ensured that the doors were closed before departing the port.

The circumstances of this accident show that even when transiting in protected waters, watertight integrity is critical to the safety of the vessel and its crew. It is essential that the operator ensures that crews verify that all watertight doors are closed in accordance with safety management system procedures.

Read the full report at **https://bit.ly/3CosGcO**.

REPORT bites

Rolls-Royce is set to launch a range of sustainable solutions for yachts, starting with IMO III propulsion for production yachts from spring 2022.

Maersk CEO Søren Skou has thrown down the gauntlet on decarbonization, challenging IMO to set a timeline for phasing out the use of fossil fuels in shipping.

A new forecast of the energy transition from DNV has warned that even if all electricity was 'green' from this day forward, the world will still fall a long way short of achieving the 2050 net zero emissions ambitions of the COP21 Paris Agreement.

A restoration scheme to revitalise one of Salford's most historic sites has won a top award. Worsley Delph was the birthplace of the Bridgewater Canal in 1761 which was a catalyst for the Industrial Revolution.

Swedish builder and operator Green City Ferries has unveiled plans to introduce a new series of low-emission catamaran ferries into service in 2023.

Carnival Corporation, the world's largest cruise company, confirmed its aspirations to build zero-emission ships by 2050 that will be operated globally by its nine cruise line brands.

French start-up Guinard Energies is preparing to redeploy its P154 tidal turbine in southern Brittany in France, which will be coupled with a photovoltaic installation to provide power for an electric barge servicing an oyster farm.

The Brazilian market has reportedly bounced back in 2020 following successive years of declining leisure boat sales with 40,000 new boat licences issued during the pandemic.

A.P. Moller-Maersk has agreed to buy a minority stake in a green-fuel startup backed by Warren Buffett, as the world's largest container line latches on to new technologies to de-carbonize its fleet.

Costing an estimated £3.5 m, with a contribution of around £600,000 towards the project from the People's Postcode Lottery, the project is the most extensive repairs programme to be undertaken at the Tees Barrage.

Safety Briefings

DREDGER FIRE CAUSED BY OIL CONTAMINATED INSULATION PANELS

The Federal Bureau for the Investigation of Maritime Accidents (FEBIMA) has published its investigation report into the circumstances surrounding a fire onboard the Trail Suction Hopper Dredger 'UILENSPIEGEL' whilst she was moored at Lisnave shipyard in Portugal during January 2021. The investigation has established that insulation panels contaminated with oil were installed during the re-assembly of the main engine after dry-dock.

On January 26th, 2021, Trail Suction Hopper Dredger UILENSPIEGEL was moored at pier 0 at Lisnave shipyard, Setubal, Portugal. The vessel was refloated again after a period in dry dock where maintenance had been carried out, including an overhaul of the vessel's main engines. During the running-in of the PS main engine, smoke appeared and fire broke out at the exhaust of PS main engine. The engine was stopped and the fire emergency response plan was activated. The shipboard fire team observed the situation under command of the Master and the chief engineer.

The fixed fire extinguishing system was not to be activated. When flames were no longer visible and normal operating temperatures were measured; controlled ventilation of the engine room was started. After starting the fans and measuring of the oxygen level, the engine room was once again accessible.

Nobody was injured during this incident and the damage was limited to some carbon deposits inside the engine room and fire damage at the exhaust of the PS main engine.

Probable causes

- The fire was caused because insulation panels contaminated with oil were installed during the re-assembly of the main engine.
- Insufficient control measures were in place to verify the condition of the insulation before installation.
- The oil ignited when the temperature in the exhaust line increased during the running-in of the engine.
- The contamination with oil happened when the insulation was stored unprotected under a thermal oil line.
- During maintenance of the oil line, an oil spill occurred and contaminated the insulation. The maintenance on the thermal oil line was not properly prepared and thus contributed to the accident.
- It was not communicated that the spilled oil had contaminated the insulation panels. The lack of communication about the spilled oil is also considered as a contributing factor to the incident.

Download the full report at **https://bit.ly/3lPEiyT**.

ALERT ISSUED FOR SURVEYORS BY STEAMSHIP MUTUAL ABOUT CORROSION IN THE EXHAUST GAS SCRUBBER SYSTEM

Steamship Mutual had published a risk alert to highlight the issues around the corrosion in the exhaust gas scrubber system. According to Vijay Rao, Loss Prevention at Steamship Mutual, corrosion in the exhaust gas scrubber system is a recognised issue requiring adequate corrosion protection measures to be in place in the installation. Despite this several cases of acidic corrosion within the scrubber discharge piping system have been reported and this is an increasing cause for concern. Steamship Mutal notes that of particular concern is the case of severe corrosion in the section of the discharge piping outboard of the scrubber overboard valve – the distance piece. Wastage and failure of this piping section could, in worst case scenario, lead to flooding of the engine room.

"In the event of failure, arresting water ingress by temporary means is also difficult given the size and location of the discharge connection. Depending on the circumstances, and the area of the vessel operation at the time of a failure, outboard plugging and repairs to the connection may not be an immediately available option", says Vijay Rao.

Reason for failure
The vulnerability of seawater piping due to pitting, galvanic reaction and cavitation is well known. Similarly, the corrosion of discharge piping associated with the inert gas systems on tankers is also a known issue. The difference with the exhaust gas scrubber system is that it is a far more corrosive environment with the lower pH values (higher acidity) of discharge washwater, higher temperatures and variation in flow in the drain piping.

The continuous operation of the scrubber system, improper selection of material and poor workmanship are also identified as likely causes for early failure of the piping.

Given the number of instances of the wastage of the distance piece; some classification societies have issued requirements and recommendations for enhanced inspection and assessment of the discharge connection.

Sea connections and overboard discharge valves, including the attachment to the shell plating, are required to be inspected during the periodical docking surveys. Thickness gauging of the distance piece is to be carried out if wastage is noted and renewed as required.

Recommendation
It has now been suggested that the thickness gauging of the connection should be carried out annually, to ascertain the rate of any diminution in the piping thickness. Diminution could suggest damage to the applied corrosion protection where such is provided. It is, however, recommended, that where possible, the thickness measurement is undertaken at 6 monthly intervals and that a diver inspection of the overboard discharge connection is undertaken to ascertain the condition of the diffuser, attachment and any protective coating that might have been applied.

REPORT bites

Japan's leading boat and engine maker, Yamaha Motor, has announced a new range of YAM TAf inflatable boats equipped with aluminium hulls.

Campaigners say the Solent has 'never smelled so bad' after the UK Environment Agency warned of an 'abnormal situation' off Southsea and Hayling Island.

Finally avid James Bond fans will have seen a modern classic yacht on the big screens as No Time To Die was released. Bond, after leaving active service, is seen enjoying a tranquil life in Jamaica onboard his Spirit 46 sailing yacht.

Ecuador's government is considering creating a new marine reserve near the Galapagos Islands to protect migratory species of turtles, whales, and sharks threatened by industrial fishing and climate change.

Windship Technology's patented triple-wing rig has received a coveted 'Approval in Principle' (AiP) status from shipping classification society DNV.

The Port of Calais has inaugurated a new extension. The revamped port includes a two-mile dike, 220 acres of additional docking area, three new ferry berths and new buildings.

ICE Marine Design has completed the construction and successful trials of two zero-emissions ferries; 72-metre Amherst Islander II and the 99-metre Wolfe Islander IV for the Ministry of Transportation of Ontario, Canada.

Leon Slikkers, a marine industry pioneer, whose career building boats dates back to the 1940s, has retired from Tiara Yachts at the age of 93, the company announced.

With boat charter activities proving extremely popular in Singapore during the pandemic, charter operators in the island state have taken the initiative to form their own representative body.

The International Cargo Handling Coordination Association and the International Vessel Operators Dangerous Goods Association have signed an MOU to tackle safety issues of dangerous goods, storage and transport.

Volunteers have taken to Southampton's River Itchen as part of a mass paddle board clean-up of litter.

Safety Briefings

NTSB SAFER SEAS DIGEST PUBLISHED AND REVEALS 14 KEY FINDINGS FROM INVESTIGATIONS IN 2020

The latest NTSB Safer Seas Digest report includes lessons learned from US maritime incident investigations. Following analysis of 42 cases NTSB warns that new lithium-ion battery hazards can be every bit as deadly as the worst storms.

NTSB commented, "The real world is a peculiar academy. We hope that this collection of lessons learned in the investigations closed in 2020 helps readers to take a step back and view their own operation with a cold, critical eye, then return to their day-to-day routines ready to take the appropriate action."

The 42 marine accidents included in Safer Seas Digest 2020 involved contact with fixed objects, sinkings, collisions, fires, explosions, floodings, groundings, and capsizings. The vessels involved ranged from the small dive boat Conception, on which the loss of life nevertheless rivalled the worst maritime disasters of recent years, to a US Navy destroyer - the second such investigation completed in the last 2 years.

The accidents recounted here resulted in numerous injuries, significant property damage, and worst of all, the loss of crewmembers and passengers. In the fire aboard the Conception alone, 34 lost their lives. This year also saw the conclusion of the investigation of the collision that took 11 lives aboard the Fitzgerald.

These tragedies remind us that whether we are serving in the nation's armed forces, scuba diving for recreation, fishing on a trawler, or keeping commodities flowing on tankers and freighters, we are all reliant on the safety measures that must be in place before we step aboard.

The NTSB investigates the voyages that go wrong to ensure that future voyages go right, and, drawing from the findings of these accident investigations, we recommend safety improvements to prevent recurrences. It is up to the marine industry and its regulators in the US Coast Guard to act on these recommendations and lessons learned to improve marine safety.

Download the report at **https://bit.ly/3CnjYeA**.

ENSURING SAFE CARRIAGE OF CONTAINERS IN BULK CARRIERS GUIDELINES ISSUED BY BUREAU VERITAS

Bureau Veritas has published a comprehensive set of guidelines to promote and support the safe carriage of containers in bulk carriers. In recent months there has been unprecedented demand for the carriage of containers. This has prompted charterers to explore the possibility of using of bulk carriers for that task. Bulk carriers, in general, are non-cellular vessels compared to container ships.

Whilst the carriage of containers in bulk carriers is possible, but only after extensive planning, assessment and scrutiny, operators must liaise with their insurance carriers, the Class society of their vessel(s) and corresponding Flag Administration for advice and guidance on the necessary modifications and/or additions to satisfy their requirements.

The fact that bulk carriers are indeed "not specially designed and fitted for the purpose of carrying containers" combined with the potential need to maximize the intake of containers, creates issues of concern related to the integrity of the vessel's structure and the cargo itself, as well as the safety of the crew and the stevedores.

Download the guidance booklet at **https://bit.ly/3AlATO3**.

SAFE WORKING PRACTICES ON CO2 SYSTEMS

Following a recent fatal incident involving the release of a carbon dioxide fixed firefighting system, North P&I Club has highlighted the importance of ensuring the system is safe before carrying out maintenance. On 27 September 2021, the vehicle carrier SANG SHIN was alongside a shipyard repair berth in Changtu, Zhoushan, China. During an inspection of the vessel's carbon dioxide (CO2) fixed firefighting system, an unintentional release occurred. CO2 flooded into the engine room, killing three people and further injuring two more.

This tragic incident serves as a reminder than any maintenance – planned or unplanned – to be carried out on the system must be properly risk assessed with the necessary control measures in place. Always check the vessel's safety management system (SMS) and the manufacturer's recommendations. IMO guidelines on the maintenance and inspection of fixed carbon dioxide fire-fighting systems provides guidance on who should carry out the maintenance and repairs. It recommends that the onboard maintenance plan should indicate which tasks may be performed by competent crew members and which should be performed by specially trained persons.

The guidelines stress the importance of developing a safety plan prior to commencing any work on the system. The plan should:

- allow for all personnel to be accounted for;
- establish an effective communications system between those working on the system and the on-duty crew;
- identify measures to avoid accidental discharges such as locking or removing the operating arms from directional valves or shutting and locking the system block valve;
- ensure all personnel are notified of the impending activities before work is begun.

REPORT bites

RS Sailing has released details of its first production-ready electric RIB, the RS Pulse 63, which will see 50 hulls launched in 2022.

Following a nine-month public consultation, Cyprus' Shipping Deputy Ministry has launched SEA Change 2030, a long-term strategic vision for Cyprus shipping.

Refitting a superyacht can pose many challenges. Precision is key to ensuring that the task at hand is solidly completed. To overcome some of the challenges involved in superyacht design Bravo Yacht Design Group has developed 3D high-tech laser scanning.

Boston-based developer of autonomous vessel software and systems Sea Machines Robotics has revealed that it will send an autonomous, remotely commanded tugboat on a 1,000 nautical mile voyage around Denmark.

River Canal Rescue has said that in the first six months of this year, 26 (21%) of the 122 emergency rescues undertaken by RCR were due to grounding.

The 2019 loss of the superyacht Andiamo in Miami was caused by unattended candles, an inoperable fire alarm and too much firefighting water, according to a recrnt report from NTSB.

In its ongoing efforts to resist all forms of automation in the maritime world, the powerful U.S. International Longshoremen's Association announced that its members would not service automated vessels operating without crews.

Maersk CEO Soren Skou says the International Maritime Organization should take a tip from the European auto industry by banning the construction of fossil fueled ships.

Athens based Euroseas Ltd. says it has entered into a new record-setting time charter contract for its 2009-built panamax capacity MV Synergy Oakland for a mind-boggling $200,000 per day rate.

The global fleet of Floating Production Storage and Offloading vessels is aging creating increasing safety challenges as many of the ships are nearing or are now at the end of their design life, according to ABS.

Safety Briefings

SAFETY BULLETIN ISSUED BY MCA OVER CONCERNS WITH LIFTING EQUIPMENT INSPECTIONS ON FISHING VESSELS

A chain link used in the lifting equipment of a fishing vessel showing fractures identified during inspection

Following a number of near misses and accidents during lifting operations onboard UK fishing vessels, the UK Maritime and Coastguard Agency (MCA) has published a safety bulletin.

It is a requirement of the Merchant Shipping and Fishing Vessels (Lifting Equipment and Lifting Operations Regulations) 2006 (SI 2006/2184) that the owner and/or employer shall ensure all lifting equipment is thoroughly inspected, as a minimum, at least every 12 months with regular inspections in between. Depending on the findings of the Company risk assessment, in certain applications, the frequency of inspection may need to be increased. Specifically, the attention of the inspection regime, established by the owner, may need to be increased in areas of high load, high wear rates, and high impact.

Examples of high load, high wear, and high impact areas include all fishing gear, its lifting apparatus, chains, wires, and pulleys, typical of that found on beam trawlers and scallopers.

It is the owner's and/or employer's responsibility to ensure that sufficient technical information is provided to the competent person to enable appropriate assessment of the in-service operation and the limits of acceptance of each item, according to the MCA. Where equipment is being assessed for continued service, the items should be appropriately cleaned – sufficient for a proper assessment to be made.

If novel, new or modified equipment is placed into service, the owner has an obligation to ensure that the equipment is used in accordance with the manufacturer's instructions and according to the inspection regime. For the avoidance of doubt, the manufacturer or supplier should be consulted about the intended use of the lifting equipment.

Lifting equipment or an accessory for lifting that is exposed to conditions causing deterioration which is liable to result in dangerous situations should be inspected by a competent person. This should be maintained at suitable intervals to ensure that health and safety conditions are maintained and that any deterioration can be detected and remedied in good time. The results of these inspections may lead the owner to consider inspection intervals being reduced. Any deficient item of lifting equipment should be removed as soon as it has been identified as being potentially deficient.

Read the article in full at **https://bit.ly/3zenRk1**.

MAIB REPORT INTO IMMOBILISATION AND FLOODING OF DREDGER SHEARWATER FOLLOWING REPEATED COLLISIONS PUBLISHED

At about 2000 on 9 April 2020, the UK registered dredger Shearwater was immobilised after its propeller shafts were fouled by a towline being used to tow the barge Agem One. The dredger and barge collided with each other repeatedly resulting in Shearwater being holed and flooded, before the towline parted and Agem One drifted away. There was no pollution or injury.

Shearwater had been towing Agem One in an alongside configuration on a coastal passage when a significant swell was encountered. This made the alongside tow untenable, causing Shearwater's crew to switch to an astern tow. Within minutes of switching, the 80m towline failed. Shortly after reconnecting the towline, it failed again, and the decision was made to abort the planned passage and seek shelter at Kinlochbervie.

During the passage to Kinlochbervie the crew had reverted to an alongside tow and, in preparation for entering the narrow channel into the harbour, the towing arrangement was again reconfigured to tow the barge astern. It was during this evolution that the towline became fouled around Shearwater's propeller shafts and the immobilised dredger was damaged. The situation was eventually brought under control after the intervention of a lifeboat, the emergency towing vessel, Ievoli Black, and the workboat Forth Drummer.

The accident happened because there was insufficient planning, risk assessments, or safe systems of work for the towing operation being conducted. Shearwater was not suitable for use as a coastal towing vessel especially through hazardous areas such as the Pentland Firth, and the crew did not have the necessary competence to undertake the operation.

Shearwater was too large for certification as a small commercial vessel but under the tonnage requiring a safe manning certificate or safety management system. This investigation has identified that the flag state's arrangements for certifying Shearwater using exemptions from the Load Line Regulations did not provide sufficient guidance to assure safe operation of the vessel.

Since the accident, Shearwater's owner has purchased a small tug for use when repositioning barges.

Nevertheless, recommendations have been made to Shearwater's owner to assess all on board hazards and provide safe systems of work to mitigate the foreseeable risks, and to ensure the vessel is safely manned. This report also makes a recommendation to the Maritime and Coastguard Agency to ensure that certification of vessels such as Shearwater includes the application of all appropriate regulatory conditions relevant to the vessel's intended function and area of operations.

Key Safety Issues

- Shearwater was not a suitable vessel to conduct a lengthy coastal tow, and there was insufficient planning or safety procedures for the voyage
- Shearwater's crew did not have the necessary competence for the towing voyage, and there was no tow master
- Safety certification by the flag state did not provide sufficient assurance for safe operation of the vessel

Download the full report at **https://bit.ly/2Z8iGpC**.

REPORT bites

Freedom Boat Club Jacksonville has created a new boating group called Freedom Boat Sisters to promote boating participation among women.

The RNLI has appointed Di Bush as the full-time coxswain for Harwich RNLI, the first woman in the charity's almost 200-year history to hold the position.

Maritime competition authorities from across the world are continuing to keep a close eye on the actions of ocean carriers amid the unprecedented cargo boom that has contributed to supply chain bottlenecks and soaring freight rates.

China has completed the hull construction of Changjiang San Xia 1, a purely electric-drive cruise ship. The 100m-long and 16.3m-wide vessel is said to be the world's largest all electric-drive cruise ship.

MB92 La Ciotat, France's leading superyacht refit shipyard, has announced that the new 4,300t shiplift is on track for delivery mid-September next year.

Bureau Veritas has given Approval in Principle to an offshore floating solar technology solution being developed by Dutch renewable energy company SolarDuck for the first time.

Biosecurity New Zealand is strengthening its testing processes for the oyster parasite Bonamia ostreae after a review found that human error contributed to incorrectly interpreted results being reported for Foveaux Strait.

The ICC International Maritime Bureau has reported the lowest number of reported piracy and armed robbery incidents for the first nine months of any year since 1994.

Facebook, Google, Microsoft and Amazon are seeking to meet Malaysia's prime minister to ask that foreign vessels be allowed to repair undersea cables in its waters, a Google spokesperson said.

Egypt is proceeding with efforts to preserve and display the world's oldest intact ship following the relocation of a 4,600 year old Pharaoh's ship to a new museum that is set to open outside the capital Cairo.

DP World is to invest $415 million in new fourth berth at London Gateway.

Safety Briefings

LACK OF BOATING EXPERIENCE WAS A FACTOR WHEN THE NORMA G BOAT CAPSIZED LEADING TO FATALITY

The MAIB has issued a report on the incident involving Norma G. On 25 May 2020, a family were enjoying a day out on the water in the Camel Estuary, Cornwall, on their 5.4m motor cruiser Norma G. The boat was capsized by a large wave close to the Doom Bar. The owner's 17-year-old daughter became trapped in the cabin when the boat capsized, and she was unable to escape before the cabin filled with water and she sadly drowned.

Safety issues:
- the owner's daughter died as a result of drowning after being trapped in the cabin of Norma G when it was capsized.
- Norma G's owner's limited boating experience meant he did not fully appreciate the dangers of being so close to the Doom Bar around low water.
- the owner's daughter's inflated lifejacket prevented her from swimming down and out of the submerged cabin door

Statement from the Chief Inspector of Marine Accidents, Captain Andrew Moll, who said:

"This sad accident highlights the need for leisure boat users to get properly trained and equip themselves with the necessary navigational tools to stay safe. Conditions at sea can change rapidly, boat owners should check the weather forecast before setting out and know the limitations of their boat.

"There are many reasons to operate an older craft, but it must be appreciated that some were built to lower safety standards than modern craft and may not be suitable for use at sea. Owners of craft not marked with a CE plate are urged to seek advice from a qualified marine surveyor on the suitability of their craft for its intended use."

Recommendations
Recommendations (2021/129 and 2021/130) have been made to Padstow Harbour Commissioners to consider placing a navigation mark at the north-east extremity of the Doom Bar. A further recommendation (2021/131) has been made to the Wadebridge Boating Club to review and amend the navigation information available to users of the Camel Estuary.

Read the full report at **https://bit.ly/3vgIV96**.

CONSTELLATION CYBER CONSULTANCY SCOOPS SEATRADE CYBER SECURITY AWARD

At the recent Seatrade Global Virtual Awards in association with Lloyds List, held online on Wednesday 3rd November, fifteen more outstanding winners joined maritime's greatest roll of honour and were recognised for their outstanding achievements; unwavering resilience and inspiring dedication over the last 18 months. The Seatrade Awards were sponsored this year by ADNOC Logistics & Services, Bureau Veritas and DNV.

Constellation Cyber Security, (part of the Constellation Marine Services Group), managed by IIMS Past President, Capt Zarir Irani was announced as the winner in the prestigious Cyber Security category, beating off strong challenges from CyberOwl and GTMaritime. This Award recognises a solution to the challenge of improving the robustness, accessibility and cost effectiveness in cyber security across the whole maritime industry.

Speaking following the award ceremony, Capt Zarir Irani, said "We are grateful to the judging panel from Seatrade in collaboration with Lloyds List for believing in our innovative capabilities to deliver professional cyber resilience service to our maritime fraternity.

"At Constellation Marine we understand "Risk" more holistically, looking to offer practical solutions for loss prevention due to cyber compromise. Over the past 15+ years, we have consistently delivered "trust" to the maritime industry by being independent and innovative. With cyber compliance now paramount, we identify and educate our community and mitigate our clients' cyber risk exposure.

"Digital automation is the way forward for all aspects of Maritime trade. Speed of change is the current challenge. Adapting to newer technology comes with unique risks and Cyber vulnerabilities", he said.

For more information: https://thecyberconsultancy.com

Christopher Keenan

Matthew Willis

THE JOHN EXCELL AWARD FOR OUTSTANDING ACHIEVEMENT IS GIVEN TO CHRISTOPHER KEENAN AND MATTHEW WILLIS

The launch of the ***John Excell Award for Outstanding Achievement*** was announced earlier this year following his death at the age of just fifty-one. John was an Honorary Fellow member of the Institute and held high office. He was Director of Yacht & Small Craft Surveying, a member of the management board and an MCA coding examiner. John was passionate about training, educating the next generation and sharing his knowledge with fellow surveyors and gave generously of his time to do so. His memory will continue to live on through this award.

The citation for Chris Keenan presented to the education committee for their consideration was as follows:

On a personal level Chris is courteous, friendly and has enjoyed meaningful and inciteful interactions with the assessors. He was always happy to ask for guidance and clarification and was keen to seek improvement. His positive attitude and passion for the industry, as well as his drive to learn and progress make him, in my opinion, an excellent candidate for this award.

Said Chris, 'As my studies continued, the depth and detail required was more work than I had realised at or before the beginning, which I see only as a good thing. It will make me a better surveyor and that is very much the focus of my striving.'

Assessor feedback on some of Chris' work:

"A superb submission."

"He is an exceptional student, and his paper would do for a published technical paper on the subject. Can we please give him a Distinction? His work really is that good!"

John Excell AWARD for Outstanding Achievement

"He could write the textbooks! Please give him another Distinction!"

"I have thoroughly enjoyed reading this assignment. The discussions of your personal experiences and expertise make this particularly interesting."

Speaking about his award, Chris said, "Gosh! What an honour. To say I am delighted doesn't even come close. This is completely unexpected and caught me absolutely by surprise. Thank you. It feels very good to be appreciated. There were times during the course when my wife and I were at a low ebb, Covid-19 notwithstanding. This award makes the effort all worthwhile."

The citation for Matt Willis presented to the education committee for their consideration was as follows:

Matt stands out for his tenacity and a determination to accomplish aspects of the course he found most challenging. He is thorough and keen to learn, asking meaningful questions of the assessors. Matt is unwaveringly affable and pleasant and, with his superb assignment marks, is an excellent candidate for this award.

Geoff Waddington recently published part of Matt's Unit 26 assignment in his recent article ***'Beware the challenges of surveying steel hull inland waterways***

craft – and other considerations'. Said Geoff, "Below is what I consider a well written preconceived piece by a current IIMS student, Mr Matthew Willis, who readily admits that he is not a surveyor, but someone who would wish to become a surveyor."

Assessor feedback on some of Matt's work:
"It's very good indeed with some interesting bits of input as well. Very professionally written answers and report template. A well-deserved Merit and a pleasure to read."

"What an amazing piece of work! Really great to see such quality, depth and obvious knowledge. A ray of sunshine midst the gloom."

"Not many students reach this level, but this is the standard that they should all be striving for."

In an extract from a personal letter, Matt Willis, said, "I am honoured to been selected as one of the inaugural recipients of the J***ohn Excell Award for Outstanding Achievement***. I never had the pleasure of meeting John myself, but the brief description you wrote in the press release makes it clear that the world is a poorer place due to his tragic and untimely death. He was just two years older than me which puts life into perspective."

NORMAN FINLAY MEMORIAL DEVELOPMENT SCHEME LAUNCHED TO DISCOVER NEW TALENT IN THE SMALL COMMERCIAL VESSEL SECTOR

A new scheme has been established that aims to support the development of talent ashore within the small commercial vessel sector. The Norman Finlay Memorial Development Scheme is designed to increase the amount of small commercial vessel seafarers and those with a passion for these types of craft moving onto advanced careers ashore within the sector.

This includes vessel owner/operator organisations as well as within the supply chain such as manufacturers, regulators, surveyors, inspectors, charterers and professional services. The stakeholders will work together to provide a variety of resources towards the development of small commercial sector seafarers.

Norman Finlay MBE receiving his award from Her Majesty The Queen in 2018

The stakeholders of the Norman Finlay Memorial Development Scheme include the International Institute of Marine Surveying (IIMS), Marine Society, MECAL, Mercator Media, the Society of Consulting Marine Engineers and Ship Surveyors Benevolent Fund (SCMS) and The Workboat Association.

Speaking about this initiative, IIMS Chief Executive Officer, Mike Schwarz, said, "I had the pleasure of sitting with Norman Finlay in the quarterly meetings of the Small Craft Forum for several years. Norman's knowledge of and passion for this sector was plain to witness and I am delighted that IIMS is able to join with the other organisations mentioned to support this worthwhile scheme."

The stakeholders have committed to supporting the Marine Society's 'Coming Ashore Project' to help seafarers get the support and skills they need to transition to a shoreside career in the maritime sector, tailored to the requirements of the small commercial vessel industry.

Norman Finlay MBE was known to many as the 'Grandfather' of the workboat industry. He was a key stakeholder in the development of The Workboat Association in 1994, of which he took the role as secretary until 2011, then life President. He is pictured in 2018 receiving his MBE from Her Majesty The Queen for 'Services to UK Shipping'. This award is further recognition of the dedication and commitment he has shown throughout a long and illustrious career in the maritime and workboat industries.

Obituary: Nigel Ling *MIIMS*

By Dr. Anthony Wells

The passing of Nigel Ling on Monday 30 August 2021 at the age 74, witnessed not just the loss of a fine human being and extraordinarily capable marine engineer and surveyor, but the United Kingdom also lost an incredible public servant whose contributions have never been publicly acknowledged, or indeed made known to the British public.

I first came to know Nigel well over forty years ago. In addition to being a gregarious, sociable, and hugely likeable person, who would help anyone, he put his great engineering and ship knowledge to the benefit of British Intelligence at a time when the UK was at the height of the Cold War when the Soviet Union was a serious threat to the UK in ways which the greater British public had no knowledge. Nigel put his incredible knowledge, skills, time, and energy at the disposal of a program that was in the vital national interests of the United Kingdom, the NATO allies, and the Five Eyes Intelligence Community.

Nigel helped in the tracking of what may be generically described as the unconventional uses of the Soviet and Warsaw Pact merchant fleet. One of the most insidious aspects of this activity was the clandestine insertion into the United Kingdom of the most undesirable types of Soviet agents and their surrogates. These were long term undercover 'plants' trained to penetrate the most sensitive of British facilities, organizations, and to create networks and obtain intelligence separate from the traditional Soviet KGB and GRU organizations.

Nigel was invaluable in the north of England in assisting in our efforts to counter these threats, and in addition rendering overall inputs to various aspects of local merchant shipping movements and other technical domains.

Nigel remained a lifelong friend after I came to the United States to work permanently. We stayed close, and only very recently Nigel was instrumental with Admiral Lord West and I in bringing to public attention the wonderful work during World War Two of another fine Yorkshire person, Mrs. Gladys Lewis. Gladys worked at Bletchley Park during World War II. Nigel was simply wonderful in working with Lord West to both celebrate Gladys' 98th birthday this year and also to have the official historian and archivist at GCHQ record for posterity her great contributions to the war effort.

The above is symptomatic of Nigel as a terrific caring and compassionate human being, and a public servant of the highest order. It has been truly a privilege to know and work with Nigel.

Nigel will be sorely missed. We all send our deepest condolences to his wonderful partner, Susan Bailey. Thank you for your wonderful life, Nigel. You were the best of the best.

Dr. Anthony Wells, The Plains, Virginia, USA.

***Note:** Dr. Wells is the only living person to have worked for British Intelligence as a British citizen and US Intelligence as an American citizen. He is the author of the recent book," Between Five Eyes", published by Casemate, Oxford, UK.*

OTHER IIMS MEMBER DEATHS

IIMS has been notified of the death of two further members:

Steve Warren
Mark Dorrington-Nibblett

At the time of publication, no obituaries were available for either men.

RECENT NEW IIMS MEMBERS

Full members

Benjamin Marcy	*MIIMS*	Chile
James Michael Hunter	*MIIMS*	USA
Jan Tanski	*MIIMS*	UK
Mohamad (Rizwan) Bin Samsudin	*MIIMS*	Singapore
Piyush L. Patel	*MIIMS*	India
Shahid Basheer	*MIIMS*	India

Associate members

Massimiliano Panessa	*AssocIIMS*	Italy
Stefano Cioni	*AssocIIMS*	UK
Vispy Dadimaster	*AssocIIMS*	UAE

Affiliate members

Christopher Keenan	*AffilIIMS*	Grenada
Gordon Buffett	*AffilIIMS*	Canada
Mark Hampton	*AffilIIMS*	UK
Thomas Crosby	*AffilIIMS*	UK
Vangelis Leontopoulos	*AffilIIMS*	Greece

Graduate members

Matthew Willis	*GradIIMS*	UK
Victor Skinner	*GradIIMS*	*Bahamas*

*IIMS congratulates Christopher Keenan, Matthew Wills and Victor Skinner for completing thier studies in the **IIMS Professional Qualification in Yacht and Small Craft Marine Surveying***

BROADREACH MARINE AND IIMS ANNOUNCE THE LAUNCH OF THE SHIPBUILDING ACQUAINT COURSE

The Shipbuilding Acquaint Course has been developed by Broadreach Marine Ltd and is presented exclusively in conjunction with the International Institute of Marine Surveying. The course is recognized by the Nautical Institute for CPD points. The aim of this unique one-week online course starting from 7 February 2022 is to provide an opportunity for the student to gain an understanding of modern shipbuilding procedures, from placing a contract to delivering a completed ship.

The course content and objectives can be summed up as follows:

– The Shipbuilding Acquaint Course content follows the logical processes and timeline required to build a ship from scratch.
– For example: it is obviously necessary to have a contract in place before we start building; as it is necessary to complete the design approval before we cut steel and start building the vessel; and to carry out onboard commissioning before we go to sea trials.
– There are 11 Units to this course. Unit 001 is an introduction to the course and a meet and greet session. Units 002 to 010 are the main course content which can be viewed in the prospectus.

Who should apply?
Applications are sought from individuals who have a basic knowledge of shipping and want to expand their practical knowledge of shipbuilding in particular with a view to embarking on a career in the industry. But applications from those who are working for a shipping company, or related marine industry, such as P&I Insurance Clubs, and who are keen to extend their knowledge in this area are also welcomed.

The course prospectus with full details can be downloaded at **https://bit.ly/3BWKURJ**.

FREE VIDEO TO WATCH ENTITLED: THE SURVEYOR'S TOOLBOX REVEAL

IIMS is grateful to board member, David Pestridge FIIMS, who gave up 75 minutes of his time in late November to reveal the contents of his toolbox to 40 yacht and small craft delegates live via Zoom. He explained what and why he used certain items of equipment and then took a number of interesting questions from the online audience.

View the video on YouTube at **https://bit.ly/3HLryDm**.

NEW IIMS CPD POINTS TABLE EFFECTIVE FROM 1 JANUARY 2022

At the IIMS Annual General Meeting in June 2021, members voted overwhelmingly to increase the number of continuing professional development (CPD) points required each year to be compliant from 10 to 15. Over the past few months, the Professional Assessment Committee (PAC) has been considering how to implement that change with the specific goal of not making it any harder to acquire 15 points than it was previously to gain 10 points. The new points table is presented below.

Activity	1	2	3	4	5	Comments
Work shadowing and or observing surveying work. (Signed off by a member)	✓					Maximum 5 per year
Subscription to a relevant marine publication, journal or magazine	✓					Maximum 3 per year
Visiting a technical exhibition, boat show or other maritime related show	✓					Maximum 3 per year
Face to face or online attendance at an appropriate marine industry networking event	✓					Maximum 3 per year
Associate or above member assessing another member, e.g., scrutineering, membership application processing, etc.	✓					Maximum 3 per year
Listening to an original IIMS or another recognised maritime organisation audio podcast relevant to marine surveying		✓				Maximum 3 per year
Watching an original IIMS or another recognised maritime organisation video relevant to marine surveying		✓				Maximum 3 per year
Award of a non-maritime recognised qualification. E.g., CAD, photography, cyber security.		✓				Maximum 2 per year
Purchase of a book or technical manual/guide by a recognised maritime organisation		✓				Maximum 3 per year
Presenting a paper at an industry relevant meeting or Training Day		✓				Maximum 3 per year
Researching a technical subject - computer, literature search, or seeking advice on technical helplines		✓				Verification and/or endorsement will be required
Appointment as a Director of a Marine Institute or other Professional Organisation and/or attendance at Board meetings and Committee meetings		✓				Online or face to face attendance
Face to face or online attendance at an IIMS Regional Branch AGM		✓				
Face to face or online attendance at the IIMS AGM		✓				
Online attendance at another recognised maritime organisation training seminar		✓				Maximum 3 per year
Purchase of an IIMS handy guide			✓			Maximum 3 per year
Purchase of a single education module from the IIMS education programme			✓			3 points for purchase of a module
Online attendance at an IIMS training seminar			✓			Maximum 3 per year
Being mentored by an IIMS Member, Associate or above			✓			
Mentoring a marine surveyor			✓			
Face to face or online attendance at an IIMS Branch networking or training event			✓			
Preparation of technical reports for insurers, litigation or arbitration purposes				✓		Maximum 3 per year
Purchase and passing of a single education module from the IIMS education programme				✓		
Face to face attendance at a recognised maritime organisation training event/seminar/conference				✓		
Attendance as an expert witness (court, arbitration, or mediation)					✓	
Face to face attendance at an IIMS organised training event/seminar/conference					✓	
Publication of an article in a marine related Journal or newsletter (including The Report)					✓	Per article published not per magazine published
Authorship of a Unit for IIMS Professional Qualification programme					✓	
Award of a recognised maritime qualification					✓	Details and dates of award will be required
Ad Hoc CPD for items not in the above table. Submission and points to be reviewed and approved by PAC. For example: Generated an IMCA audit verification template for Oceaneering Renewables & Subsea Projects					✓	Details to be submitted by member

Once a member achieves the required 15 points, the CPD compliant roundel logo will be added to both the member's IIMS website and Marine Surveyor Search App listings.

Providing acceptable evidence
To ensure your points are awarded promptly when you enter and submit your claim via the CPD App, you must provide sufficient supporting evidence. All applications are individually reviewed before being accepted. To ensure disappointment from a rejected claim, please be certain to add some evidence. A selfie taken at a boat show with your claim via the App is, for example, quite acceptable evidence.

You are encouraged to read the article in this edition of the Report Magazine which goes into great detail about what CPD is and why it is something to be considered as part of a surveyor's personal development.

MARINE CORROSION PROFESSIONAL QUALIFICATION - 2022 COURSE DATES ANNOUNCED

The International Institute of Marine Surveying launched a standalone professional qualification in marine corrosion earlier this year. Already over 30 delegates have signed up to study for the qualification and the delegate feedback so far has been highly positive. The qualification comprises 10 modules of which 7 must be passed and is offered separately from the Institute's two award-winning professional qualifications in marine surveying.

The course that supports the qualification itself is entitled Marine Corrosion and Prevention in Small Vessels, Ships and Offshore Structures.

The programme has been written primarily with marine surveyors in mind, those whose job it is to inspect, understand and report on corrosion. The new Professional Qualification in Marine Corrosion is pitched at education level 4.

Who should study for this qualification?
The qualification is intended for marine surveyors of yachts and small craft, ships and offshore structures. It is also relevant for design engineers, material specifiers, other professional engineers and students of marine science and engineering.

The course is open to members and non-members of the Institute. Members and students are entitled to a discount.

New course dates have been announced for 2022 in March/ April and October/November

Download the detailed pdf prospectus at **https://bit.ly/3az430w**.

Or for more general information about the course and dates go to **https://bit.ly/39PG3qG**.

FOLLOW IIMS ON SOCIAL MEDIA

IIMS is active on several social media channels and you are encouraged to follow the Institute and mix online with people who matter and industry influencers.

The IIMS LinkedIn channel is now followed by more than 7,000 marine surveyors and other maritime movers and shakers. You are welcome to engage. To join the IIMS LinkedIn discussion group, head to **https://bit.ly/3ClaQ9T**.

In recent months IIMS has opened up WhatsApp channels for members in Australia and New Zealand. It is free for members to participate and is a simple and effective way to way.

IIMS JOINS FORCES WITH FOUR OTHER LEADING ORGANISATIONS TO FORM THE UK MARITIME PROFESSIONAL COUNCIL TO INFLUENCE LAWMAKERS

Shipping and boating are going through huge technological changes, but the industry's professional bodies say their expertise needs to be listened to when policy decisions are made in these vital sectors. To make this easier five professional bodies have formed the Maritime Professional Council (MPC) of the UK to make sure policy makers are aware of the considered professional opinions of those with the qualifications, expertise and experience to provide informed advice on the many policy decisions that need to be made.

HQS Wellington in the city of London hosted the MPC launch

The MPC will bring together the collective voices of the United Kingdom based professional organisations for the British Merchant Navy and associated maritime industry. It will promote professionalism within the industry and offer expert opinion on maritime matters to the maritime community, industry, government and the media.

The founding organisations of the MPC are the Honourable Company of Master Mariners, The Nautical Institute, International Institute of Marine Surveying, Institute of Seamanship, and the United Kingdom Marine Pilots Association. The MPC's position is that the government and government aligned bodies charged with the policy and direction of the Merchant Navy and associated sectors of the maritime industry, need the best practical pool of experience to draw upon.

Speaking at the launch, IIMS CEO, Mike Schwarz, said, "I am delighted that IIMS is in such good company and is a founding member of a group that hopes to make a difference, however small. I look forward to lending my weight to support the work and efforts of the MPC in the coming months."

While the individual maritime professional bodies are respected within the shipping and boating industry, their knowledge and experience are rarely sought when decisions are made on key policy and legislative changes. The MPC believes that having a strong collective voice will be a game changer.

One area of great concern to the professional bodies is maintaining the quality of seafarer training and the MPC will provide guidance to regulators and employers on the professional training standards for maritime professionals.

More generally the MPC will be able to provide independent expert advice and guidance based on its combined professional knowledge and experience unhindered by any financial or commercial interests.

The MPC is intended to provide a common space for collaboration, and exchange of ideas between the major technical organisations, closely allied with the Merchant Navy and associated sectors of the shipping industry. It is intended that the MPC will become a key source of knowledge and opinion reflective of the skills, experience, and professional status of the membership of the individual member organisations.

The formal launch of the MPC took place on HQS Wellington at 1200 hours on Merchant Navy Day, 3rd September 2021.

Members of the MPC Council onboard HQS Wellington

House of Lords VIP guests - (from left to right) Lord Berkeley, Admiral Lord West and Lord Mountevans

What is CPD?

Why does IIMS encourage its members to do it? Why is it important?

It has become clear from recent dialogue and exchanges with members that some are confused by CPD - not necessarily understanding the reason for it, or its importance or how points can be gained. Busting the myth and a key misconception for starters - gaining CPD points does not require any member to attend paid for training delivered by IIMS (contrary to what some believe). It is possible to gain points without paying anything and IIMS will and does accept training and knowledge shared by other organisations as you will see shortly.

So, let's start with the basics and then drill down a bit deeper into the detail.

What does CPD stand for?

CPD stands for Continuing Professional Development. It is often a mandatory requirement of membership of some professional bodies. For example, in the UK, doctors, nurses, ophthalmologists and architects are just some of the professions where annual CPD is mandatory as a systematic way to show and prove that individuals are keeping up to date with their professional knowledge, skills and personal development. IIMS does not impose such a rigorous condition on its members, preferring gentle encouragement. And those who gain sufficient points each year are rewarded with a CPD compliant logo on their web site and Search App listing pages.

What exactly is CPD?

The purpose and importance of continuing professional development is to:

a) Ensure your capabilities maintain the same (or higher) standards of others in the same field;
b) Ensure you maintain and enhance the knowledge and skills you need to deliver a professional service to your customers and clients;
c) Ensure that you and your knowledge stay relevant and up to date so that you remain at the top of your game.

CPD is a mechanism to show continuous learning, development and improvement is actually taking place. Even if it is not a mandatory requirement, it is hard to fathom why a marine surveyor would not want to do this. Of course, CPD is relevant to the profession, trade, industry or organisation in which a person operates.

CPD is the process of tracking, documenting and evidencing the skills, knowledge and experience that an individual gathers as they work. It is simply a record of experiences, learning and practical applications, all of which have helped towards enhancing your knowledge in a particular subject or area of work.

Your CPD achievements can be placed and kept neatly in a physical folder, data file or portfolio documenting the development of your career. IIMS launched a standalone CPD App several years ago which makes it simple for a marine surveyor to log his/her points. Indeed, the Institute encourages members to use the App in real time to record and submit activities for approval by head office.

The origins of CPD can be traced back hundreds of years. It was first developed in the medicine and teaching of the Royal Medical Colleges. At that time, it was decided that peer-to-peer learning was viewed as an essential way to progress the latest medical developments and knowledge. So, in that sense the idea and concept that you never stop learning was born. IIMS can point to members, some of whom are in their 90s and, whilst no longer practising as a surveyor, have a continuing thirst for knowledge!

As the industrial revolution took hold, more professional bodies, institutions and societies were created, leading to more professions and skilled trades being represented. It has already been stated that as knowledge and skills advanced these organisations began to require their members to demonstrate or prove that they were current. And so, CPD was born.

Why is CPD important?

If you are engaged in one of the aforementioned professions in the UK (and elsewhere in the world), it is both vital and essential if membership is to be maintained that CPD is undertaken as a method of proving currency.

As an example, The Royal College of Nursing requires 35 hours of CPD to be undertaken. Furthermore, it is a requirement that the CPD is relevant to the scope of the area of the profession the individual is engaged in.

Is CPD a recognised qualification?

CPD is not recognised as a qualification in the UK or anywhere else in the world for that matter. CPD is not a single course, or a one-off event and there is a clue in the word continuing. CPD is a system or methodology of logging evidence that someone is keeping their skill base and knowledge up to date as well as learning new skills.

What are CPD points?

CPD points are often earnt and awarded at the end of some learning or training. The awarding body, in this case the IIMS, determines how many points should be awarded and for which activities. But it is a broad area and points can be awarded for all manner of things and not only those organised by the IIMS. Any relevant activity can count as valid CPD.

Many organisations will award CPD points for attending seminars or conferences, both face-to-face and online. Others award points for demonstrating a practical skill. There is no simple one rule suits all.

By way of a practical example and as a guide, here are some activities that IIMS members have successfully claimed points for with appropriate supporting evidence during the past year.

- Director attending Nautical Institute Executive Board Meeting
- Training webinar attended: Hazardous cargo under the IMSBC Code presented by Brookes Bell
- Azimut 58 - Marine Salvage & Damage Survey Report prepared for QBE Hong Kong
- Delivery of a course online via ZOOM to the Professional Insurance Brokers Association
- Appointed as a Court expert for a pleasure boat investigation
- Attendance at inaugural training session supplied by Centre de Formations Experts Maritimes & Fluviaux- French based training institute for marine surveyors
- Tea gathering of Members of Hong Kong Surveyors Association to promote RPL certification
- Webinar by The West of England - Introduction to General Average
- Damage Survey Report prepared for Pantaenius Australia
- American Boat and Yacht Council - Online training day for marine surveyors
- Britannia P&I Club - Loss prevention webinar on container stowage

How can you improve your CPD and what is a CPD plan?

This question is most often asked by people who have or who want to develop a personal CPD plan. IIMS (and other similar organisations) set the criteria for a CPD plan, but you may prefer to have your own running too.

Before setting out to improve your plan, you first need to understand what you want to achieve. If your goal is simply to obtain as many points as fast as you can, sitting in online webinar after online webinar might be the way to go. But it should be much more measured and broader than this strategy.

Acceptance of a CPD plan is recognition that you have made a conscious effort and desire to keep your knowledge and skills current. This effectively means you plan to deliver a continuous high quality of service that safeguards the public, meets customer expectations and the professional requirements of your industry.

Understanding what is meant by the word "competence"

A simple dictionary definition of the much used and often misunderstood word "competence" will help to frame this article.

We are told that: *"A competency is the capability to apply or use a set of related knowledge, skills, and abilities required to successfully perform critical work functions or tasks in a defined work setting."*

The word competence is bandied around far too readily. But what does it actually mean to be competent and how can it be proven? IIMS is grateful to their friends at the International Marine Contractor's Association (IMCA) who have tackled this issue and in particular to their Competence and Training Committee and Andre Rose, Technical Adviser. *The article is reprinted here with IMCA's kind permission.*

Over the next few months, the International Marine Contractor's Association's Competence and Training Committee will publish a series of articles, podcasts and wire side chats looking at various aspect of Competence. This first instalment looks at what it is to be competent.

What is it to be competent?

We encounter terms related to "competence" every day in our work-related activities. "We use a competence-based system" or "Our workforce is fully competent" are common phrases used, but do we fully understand what competence means?

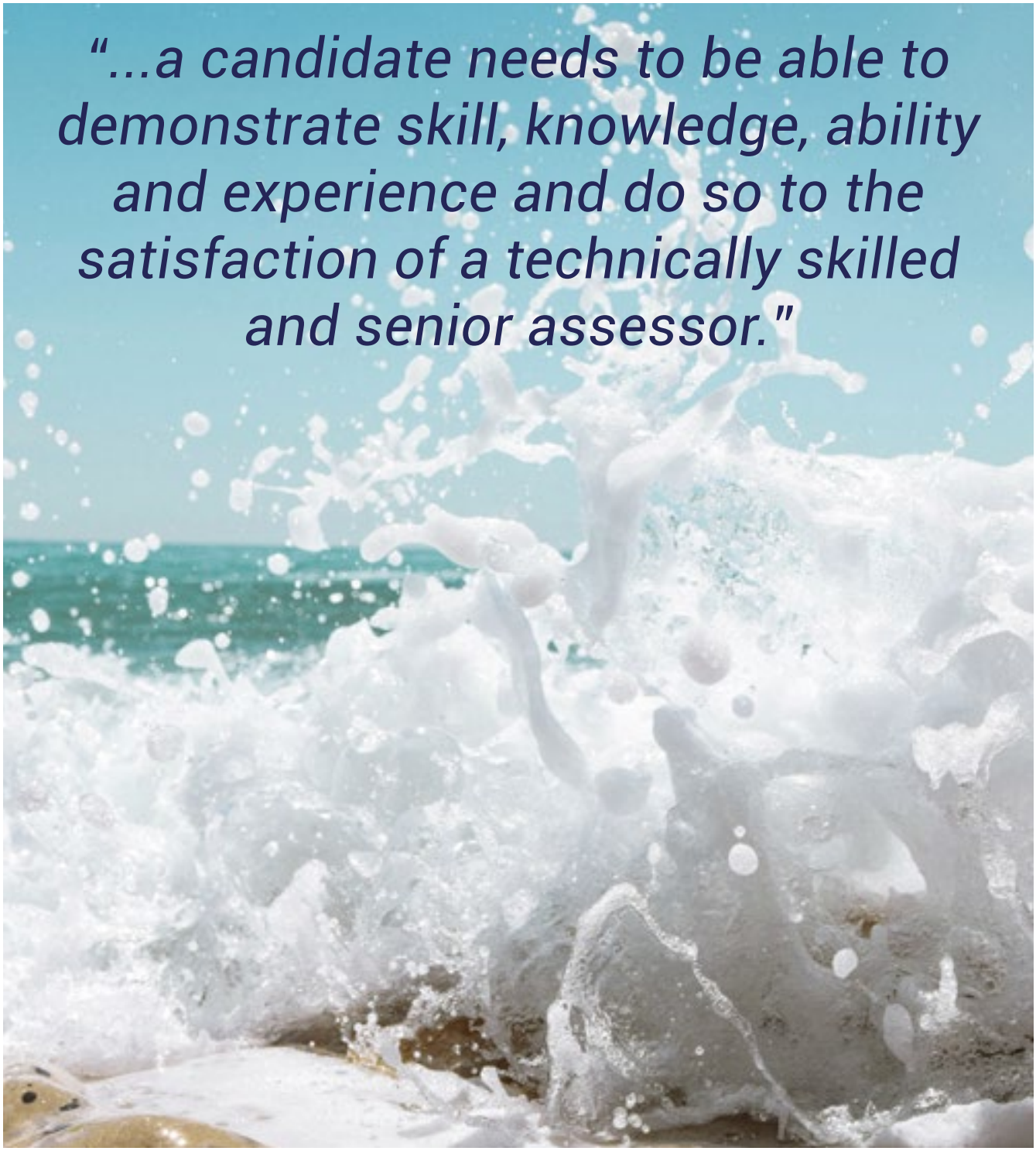
Most of us know that competence involves skill, experience, knowledge or ability and that it is closely related to safety in a working environment. These things are all true, and a competent person would certainly demonstrate these qualities. To be truly competent, an individual would need to be able to demonstrate all these qualities, consistently, while being assessed against measurable criteria. For instance, knowing how to drive a car does not mean you can drive one safely. To become a competent car driver, you need to be able to demonstrate, to a driving examiner, that you can carry out basic manoeuvres, safely and confidently under a variety of road conditions and, also be able to answer a series of questions based on the highway code correctly. Even then you are only starting out on a journey to becoming a competent driver. You would be expected to gain more experience and skill as you drive more. You are only qualified to drive a certain class of vehicle. There are other examinations and levels of competence required to be able to drive a heavy-goods vehicle or a public service vehicle carrying passengers. So, assessment against measurable and established criteria is therefore an important part of the competence process.

Competence is not a static process since tasks, equipment and processes can change and develop. If you are working regularly, repeating certain tasks and keeping up your knowledge of new developments then your competence is likely to remain intact and up to date, but what happens if your circumstances have changed? For example, you have worked as an offshore ROV supervisor, with all the appropriate competencies, for a 5-year period but then the industry suffers a downturn and you do not work offshore for 3 years. The industry bounces back and there are suddenly a lot of jobs around but are you still competent as a supervisor? You may need to be reassessed to establish your competence level and this may involve dropping in grade to allow time for you to be properly assessed before being reinstated to your former grade. A competence assessment process is provided to ensure that all the participants, in a competence scheme, are assessed against common core and task specific criteria at the appropriate

level for the grade being assessed and that the same assessment conditions are applied to all candidates equally by an assessor who is senior and technically competent in the subject matter area.

It is not always possible, or practical, for the assessor to be present at the workplace during the assessment. In this case, a proxy witness also senior and technically skilled, may observe the candidate's work and provide a written statement of their observations as evidence to support the candidate's competence assessment. This process can be supported with written and/or verbal questioning, to establish the candidate's knowledge of the subject matter. The final element, in any robust competence scheme, is the verification process. This is an independent check to ensure that the correct assessment procedures have been applied and adhered to correctly and fairly throughout the assessment process and that the correct recording procedures have been adopted. This represents a quality assurance check.

To briefly recap. To be considered competent in a task a candidate needs to be able to demonstrate skill, knowledge, ability and experience and do so to the satisfaction of a technically skilled and senior assessor. The whole process must then be verified to ensure the assessment process has been followed accurately and completed correctly.



Review of 2021

by Mike Schwarz, Chief Executive Officer

"Without reflection, we go blindly on our way, creating more unintended consequences and failing to learn from our past experiences."

I find it rewarding and look forward to settling down to write my review of the year annually. It is never a chore and is a chance to step back from the daily hubbub of the business to assess exactly what has been achieved over the previous 12 months, good and bad. One thing that surprised me (when I stopped to think about it) is that next month, I will have been in my role at IIMS for 8 years, longer than I have spent in any other job during my career. It is usually about this time that I start to flag and run out of steam! However, in the case of IIMS, this is not the situation. I am far more passionate now than I was in the early years and look forward to the coming period with relish. This year has been another progressive and successful one in the history of IIMS as we celebrated the Institute's milestone 30th anniversary in June, set against the backdrop of the continuing pandemic. Let me transport you back to January.

Things began badly in the UK as we continued to work from home in another lockdown with the pandemic omnipresent. This way of working was to last for the three months or so. I personally found it tough, far harder than I realised I would, as we ground on through the cold UK winter months. It was far harder than the earlier lockdowns to deal with. I know my colleagues felt the same - and no doubt millions of others around the world too shared that sense of misery! But as before, the IIMS team stepped up to the mark as they always do when things get challenging. We continued our regular online team meetings using Zoom to stay in touch with the odd quiz thrown in for fun. This is the right time for me to acknowledge the combined efforts of the team and to thank them on your behalf for all they have done this year, despite the continuing uncertainty we have faced.

The team managed to escape to the solitude of the New Forest in June for a well-earned overnight adventure and a chance to reconnect with each other in person. This has been a regular event but has been interrupted for obvious reasons. It was the first time the whole team had been together as one unit for two years. As expected with a close-knit team, it proved to be an emotionally charged event, mixed with some practical challenges that included high wire climbing and kayaking. It was a much looked forward to motivational event and did not disappoint.

Reaching the birthday milestone of 30 years was a highlight for the Institute. We marked the event with an online AGM and some light entertainment. This came in the form of an online magician who spooked us all with his extraordinary magical powers. He was ably supported by the musical contribution from the enchanting Portsmouth Shantymen, which evoked a fair degree of nostalgia for those ex-seafarers in the audience!

I must say a few words about this very publication you are reading, *The Report Magazine*. In the four issues we have published in 2021, we have output around 500 pages and millions of words. The magazine goes from strength to strength and I would like to thank all the authors and contributors who have helped make it an essential read each quarter; and, of course, to our in-house graphic designer, Craig Williams too, who brings the pages to life.

Settling into our new headquarters

Following the purchase of Murrills House last year, we have invested heavily in starting to restore the 500-year-old structure to its former glory. It is a long process which will take years to complete. But the key items and findings, identified at survey, have been undertaken. Many sash windows have been replaced and the exterior painted. The board room has had a makeover too and the result is the building looks splendid. I hope we can entertain visitors soon.

The loss of IIMS stalwarts

April was an awful month that rocked the IIMS team following the passing of Past President, Peter Morgan, and Director of Large Yacht & Small Craft, John Excell within days of each other. Both men had held high office with the Institute and served the organisation with distinction. I regarded both as friends and the emotional impact on me (and my colleagues) left us immobilised for some days. The full obituaries for both men can be found in the June 2021 Report Magazine if you missed them. I had the honour to present John's professional eulogy at his funeral, one of the most challenging things I have ever done. The memories of Peter and John will live long in IIMS history. Indeed, we launched the *John Excell Award for Outstanding Achievement* in his memory. The award is to be given on an as and when basis to Diploma students, not just those who perform to an exceptional level in their studies, but also demonstrating excellent interpersonal skills. Pleasingly we have been able to make the first two awards and more details about the recipients, Chris and Matt, can be found elsewhere in this publication.

I was also notified during the year of other long-standing members who had passed away during the year, most notably, Monday Ogadina, our West Africa Regional Director.

Strong membership growth

Institute membership has again proved to be strong this year, as it was the year before. In fact, over the two years we have had around 300 new applications - an annual increase of 10% in each of the past two years. Now that is remarkable and bucks the trend for membership organisations in general, but it has not happened by luck. We have developed and honed a sophisticated digital marketing strategy to attract new membership applications and it works! And for anyone who might question the ability and standard of these new applicants, I would remind you that the *Professional Assessment Committee*, under the chairmanship and watchful eye of Capt Chris Kelly, has meticulously assessed each application to check for suitability and credentials before granting membership - and to be blunt, some do not pass muster.

In recent times, we added an extra question to the online membership application form, and the responses are insightful and revealing. Here are just a few comments I would like to share, extracted from the many forms submitted by new applicants in response to the question *'Please tell us how you heard about IIMS and what made you want to join'*:

- My mentor is an IIMS member, and I simply want to follow his example.
- I found the IIMS when the BC Association of Marine Surveyors became the Canadian Branch of the IIMS and to my delight, you have distance learning available, which I have taken great advantage of.
- I've been following IIMS activity throughout my career. I greatly appreciate its work and effort to give surveyors good, strong support and recognition.
- IIMS is getting more widely recognized and known in the marine industry worldwide.
- I operate in a region where vessels are registered in multiple registries. I find that IIMS is the sole professional body of its discipline, which is readily recognized across a wide spectrum of flags, underwriters, even to private end users. Thus, becoming a full member in the long term is a necessity for me, not a choice.
- My peers, mentees and, my own careful consideration after looking through other organisations.
- From the internet and I want to join to increase my reputation and education.

Education and Professional Qualifications

2021 has been a particularly strong year for student intake with well over 100 new entrants joining the programme. It is also pleasing to report that several previous students, who enrolled but did little studying, have decided to reactivate their course. Lorna Robinson passed the baton to Vicki Loizides when she left early in the year, and she has more than taken up the challenge.

Some of the modules have been refreshed and we continue to review the content at regular intervals on a rolling basis. The heavy lift module, for example, has been offline for a long time, but the updated version is currently being peer reviewed prior to being relaunched to students.

One of the successes mid pandemic was the delivery of the first practical course, which was held at the *Boatbuilding Academy* at Lyme Regis. Those attending this course may use it as one of their optional units. This week long residential course gave delegates the chance to get their hands dirty as they played with wood and GRP in the bespoke workshops. I joined the class mid-week for a day along with David Pestridge, Jon Sharland (Tritex Ltd) and Paul Homer (Chairman of Standards) to provide an intensive session that included reviewing the surveyor's toolbox, tapping and inspecting hulls and using ultrasonic thickness gauges, before settling down to talk about the nuances of report writing and PI insurance. This practical course is running again in the next couple of weeks and is well supported again.

Much of the behind the scenes work for the education department has centred around the ongoing development of a new, state of the art education portal which has been ongoing all year. It is set for launch in January 2022. IIMS has invested heavily to develop this valuable new platform which will transform and enhance the way a student studies with the Institute. We are now moving into the final testing phase. Consequently, we have taken this opportunity to rebrand and spruce up the education units, which have not been refreshed for 10 years and they look first class and ultra-modern.

Certifying Authority update

The IIMS Certifying Authority (CA) had had a positive year. This area of the business was badly impacted at the start of the pandemic with the immediate loss of tonnage revenues and a general slowdown in licensed charterers who could not operate due to Covid-19. But we are now back to pre-pandemic revenue levels.

The health of the IIMS CA is checked annually by way of a thorough Maritime & Coastguard Agency (MCA) external audit. It is the MCA who we contract with to provide coding examinations and our procedures for providing this service are well documented. After a recent

audit lasting a day and a half, they declared themselves very happy with our operational performance. There were no significant findings. This is testament to the meticulous work that CA Administrator, David Parsons does, backed by Fraser Noble, CA Chairman and the dedicated and loyal committee.

On a low note for me personally, I found it necessary to resign my position as Chair of the MCAs *Certifying Authority Professional Standards Working Group* in June at the annual meeting of CAs. Clearly this came as a shock to some, but I had held the post for five years and failed to broker an agreement between the six UK CAs to develop a meaningful certification scheme for code examiners, despite it being agreed in principle pre Covid-19. I felt I could take things no further. I am, however, proud of my efforts to get CAs sitting around the same table having adult and meaningful discussions, something that was almost unthinkable several years ago. The mistrust and antagonism that existed between the various organisations has softened and the failure to get the deal finally over the line was ultimately due to a change of management with another CA. But rest assured, that is not the end of the story and now that I am no longer Chair, I can devote time to encourage this process to develop by other means!

Overseas branches

The past year has probably been the quietest in memory. Annual conferences where IIMS members would gather at events around the world have just not been possible. There have been a few online events, most notably the IIMS Canada Branch AGM and half day seminar, which was well attended. Let's hope it is not long until members can once again meet face-to-face again.

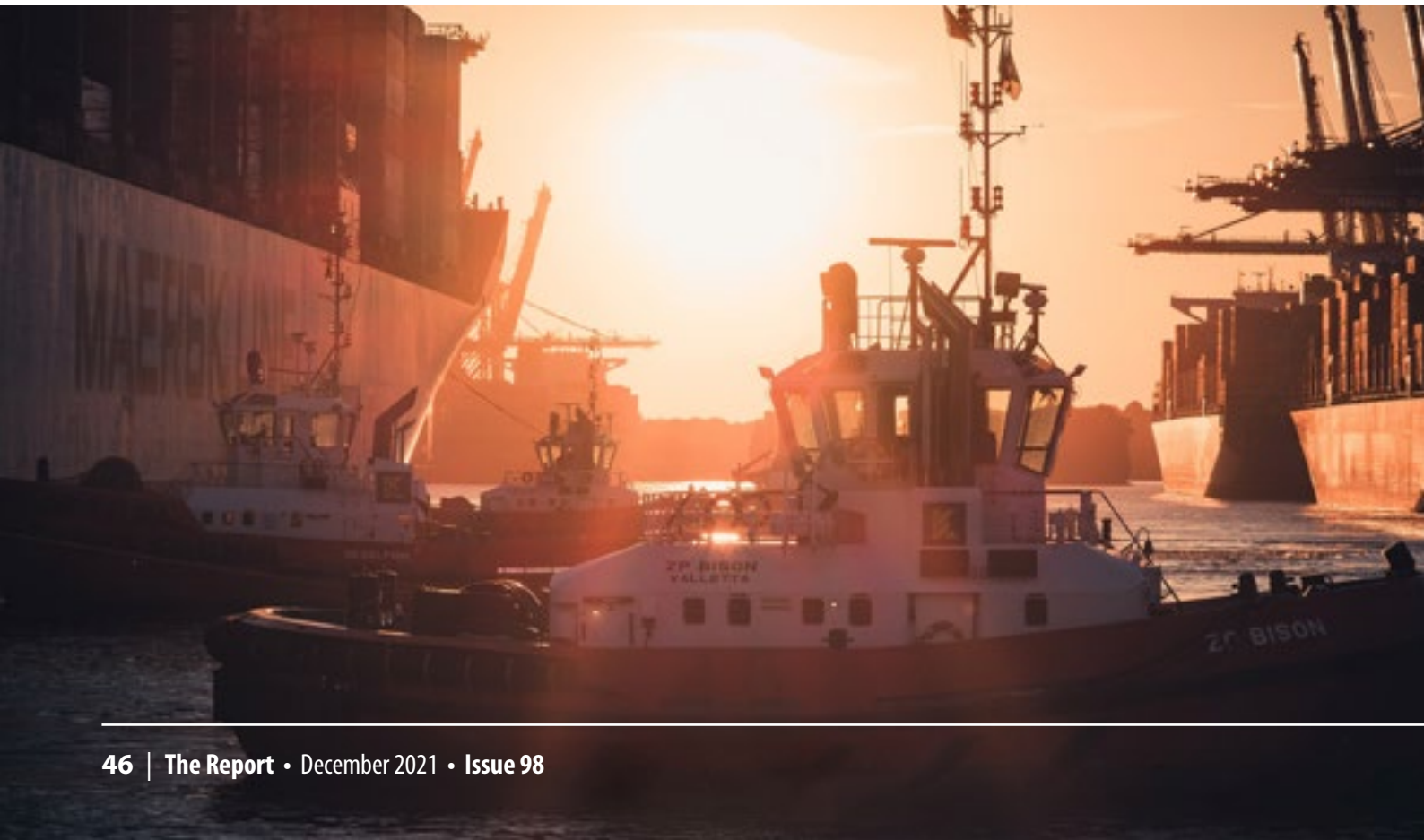
Marine Surveying Academy (MSA) update

MSA is a wholly owned subsidiary of IIMS. Despite two of the three MSA revenues streams being badly curtailed by the pandemic, it has had a good year. The eCMID Accredited Vessel Inspector scheme for those auditing and inspecting offshore assets has gone from strength to strength. Our relationship with IMCA (International Marine Contractors Association), for whom we run the scheme, has deepened. We have processed over 750 applications for accreditation, with 600+ reaching the required standard. Now six years old, it has proved to be a valuable scheme that is enshrined in the offshore vessel inspection sector.

These days, due to our work through MSA, we are now active in the offshore oil, gas and renewables sector from construction vessels to high-speed crew transfer, supply vessels and workboats. Our other interests include the superyacht coatings inspection arena and pipeline protective coatings and filed jointing sector. And we have moved into the area of marine corrosion training with our new professional qualification and our latest offering, the *Shipbuilding Acquaint Course*, starts early in 2022. It is an impressive and ever-growing list!

Innovation breeds vitality and underpins success

I want to touch on innovation for a moment, for its importance is often overlooked. Innovation is the lifeblood of all organisations. Of course, it comes in many different forms - some are eye catching, big statements of intent and plain for all to see, others less so; for example powering a new online platform solution with innovative software that improves efficiency. There are several innovations that have taken place or are in advanced planning to highlight. Successfully transferring training to meaningful online delivery and launching a new professional qualification, are both examples



of innovation this past year. These things do not happen by chance, and they eat up a huge amount of time.

My colleagues and I have spent much of 2021 analysing and researching new projects in our 'ideas factory' as I like to call it. You are likely to see the outcome soon, although not all concepts make the final cut. Innovation at IIMS is, on the one hand, about assessing the way we deliver membership benefits and opportunities for surveyors to grow their knowledge base and, on the other hand, coming up with new ideas and concepts to keep members engaged and broadening the appeal of the Institute. One such example of simple, but effective innovation I would like to mention is the launch of WhatsApp groups, which seem to have gone slightly unnoticed. We now have around 20 WhatsApp channels, some of them quiet, but others lively as surveyors bounce ideas off each other. We plan to roll out more WhatsApp channels in the coming months. It is free to use and is a brilliant networking tool, especially for those who are operating largely on their own in a big industry.

One seemingly odd fact I would like to share relates to the implementation of a pdf download tracker on the website late last year. It counts the number of pdfs that are downloaded via the IIMS site and, importantly, reveals which ones, providing valuable management information. Remarkably, over the last 12 months there have been well over 30,000 downloads. You may well say, 'so what'. But this interest and latent demand for the material we have available shocked me. It made me realise what a valuable resource the website has become for many people, not just members - indeed not just surveyors - and how good our search engine optimisation has become to get us highly visible in search engine rankings.

One of the particular challenges the pandemic threw up was how we could repurpose our popular face-to-face tonnage training in the light of Covid-19. The concept of delivering a remote tonnage training package took some thinking about. Eventually a two-part solution was conceived and developed, but this required acceptance by the MCA who authorise IIMS to deliver this training. A plan emerged. Part I would be the delivery of a three-hour tonnage training theory presentation. Part II, the practical part, would require the delegate to create a series of short videos to demonstrate themselves at work conducting a tonnage to demonstrate their learning for subsequent scrutineering. I pitched the concept to the MCA and was pleasantly surprised at their willingness to accept my proposal. The result was that we delivered our first course in September, attracting 50 delegates from around the world. There will be further tonnage training next year.

This is probably a good time to mention another innovation that we have been beavering away on. In early January 2022, we will be releasing a new publication extending to around 100 pages. The publication, entitled *IIMS 2021 Safety & Loss Prevention Briefings Compendium*, will be available to read electronically by all. The broad aim of this compendium is to showcase incident and accident reports and loss prevention measures that happened in 2021, all easily accessible in one place. Make sure you look out for it and download a copy for your online library.

Let me turn to the subject of ISO 9001. This topic has been the subject of much internal debate for a couple of years and finally we have taken the plunge and begun the pathway to achieving accreditation. In my view, the organisation is at the stage of its development where this is a sensible investment to make.

'The ISO 9000 family of quality management systems (QMS) is a set of standards that helps organisations ensure they meet customer and other stakeholder needs within statutory and regulatory requirements related to a product or service. ISO 9000 deals with the fundamentals of QMS, including the seven quality management principles that underlie the family of standards, ISO 9001 being one of them, which deals specifically with the requirements that organisations wishing to meet the standard must fulfil. Third-party certification bodies provide independent confirmation that organizations meet the requirements of ISO 9001. Over one million organisations worldwide are independently certified, making ISO 9001 one of the most widely used management tools in the world today'.

Source: Wikipedia

Let me wrap up my final thoughts on innovation and its importance by showcasing two new education programmes. I scoped out a new *Professional Qualification in Marine Corrosion* with experienced and knowledgeable metallurgist, Mike Lewus, at the start of the year. The result is that over 30 delegates have already joined the first two 10-module courses and will qualify soon. Feedback on the depth of Mike's content has been excellent. We plan to deliver two more live courses in 2022.

Peter Broad, Vice President, has been working on a concept for a *Shipbuilding Acquaint Course* for several years. Originally, this was planned to be an in-person event taking place in a shipyard in Busan, South Korea. World events changed that! The result is that Peter, in conjunction with IIMS, has developed a comprehensive 11 module course for online delivery in February 2022. OK enough of innovation for now!

External engagement

The launch of the *Maritime Professional Council of the UK (MPC)* earlier this year was a significant and symbolic event for the Institute and for me personally. IIMS joined forces with four other leading membership organisations to create a unique group that aims to consult with and hold maritime lawmakers and regulators to account. The official launch, held onboard HQS Wellington, was attended by 50 people, including some influential and well-known figures from the maritime world and a sprinkling of interested Lords. Recently, the MPC has made its first submission as part of the MCAs consultation into the proposed new regulations for personal watercraft.

Big thanks to all

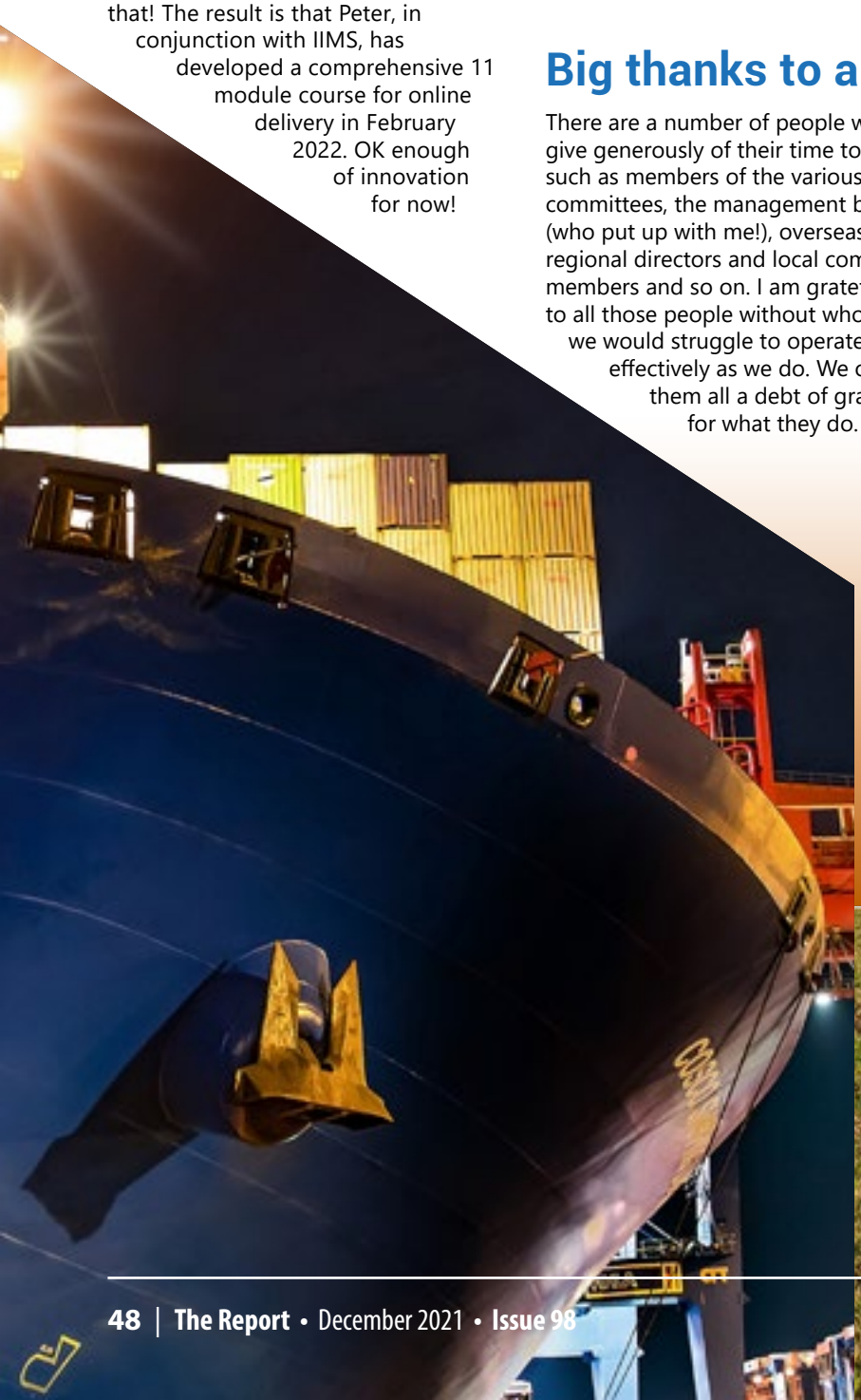
There are a number of people who give generously of their time to IIMS, such as members of the various committees, the management board (who put up with me!), overseas regional directors and local committee members and so on. I am grateful to all those people without whom we would struggle to operate as effectively as we do. We owe them all a debt of gratitude for what they do.

I also owe special thanks to Jen, Camella and Hilary (my head office management colleagues) and to the rest of the IIMS team, who I will name check - Vicki, Holly, Elly, Pui Si, Sharon, Craig and David.

To close my review of 2021, I wanted to make a special mention about the considerable contribution your President, Geoff Waddington, has made this year. He has gone way beyond what one would expect from someone in this position normally. Admittedly, Geoff's time as President has coincided with some high-profile events affecting the maritime and marine surveying industry, chief amongst them perhaps being Brexit. Barely a week goes by that Geoff and I do not speak two or three times on the telephone. Much of his work has gone on under the radar and I want to publicly acknowledge and recognise his efforts.

Our plans and strategy are scoped out and well advanced for 2022. I look forward to giving you a progress update this time next year.

Mike Schwarz
Chief Executive Officer



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Beware the challenges of surveying steel hull inland waterways craft – and other considerations

By **Geoff Waddington**, President, FIIMS

Geoff Waddington, IIMS President, speaks out passionately in light of a number of issues that are causing him (and colleagues) concern relating to the survey of inland waterways craft, steel narrowboats and barges in the UK. His advice, however, is good practice for surveyors working around the world.

I admit that I have only limited experience of inland waterways craft. My career in the marine industry started over fifty years ago on ships. Over the last forty years of surveying both large and small craft, I have been involved with the new construction of a wide beam barge, fitting out of a narrowboat, insurance investigations involving narrowboats and small, steel inland waterways craft, and of course many GRP motor cruisers designed for both use on inland waterways and RCD CE CAT B vessels, which were in use on inland waterways.

During the last few insurance investigations into claims against surveyors of inland waterways craft it has become apparent that there is a wide range of standards being applied by surveyors during their assessments of surveyed vessels. This has resulted in claims against IIMS members, meaning it has become necessary to readvise surveyors, insurers and lawyers in regard to 'what is the acceptable level of corrosion and resultant diminution of metal hull plate-work'. When asked, surveyors opinions varied wildly for the acceptable level of wastage due to the corrosion of steel plate as far as diminution and pitting are concerned. For example, in regard to 6mm plate, opinions vary between accepting a limit of 20%, (approximate 4.8mm) to 50%, (3mm), to the lowest limit of 70%, (2mm). In fact, both the MCA and Classification Societies have percentage rules, which in general are 20% dependent on longitudinal position and these rules apply to all craft whether sea going or inland waterways.

Talking to surveyors of inland waterways craft, as I have done, there appears to be a good deal of 'That's OK', and 'That's the way it's always been'. I have yet to see a survey report in dispute, as far as an inland waterways vessel was concerned, where the vessel surveyed was clean and presented in a condition where the hull plate work can be thoroughly inspected and almost never has there been any access to inspect the outer bottom. A hull fouled by freshwater mussels, weed and slime cannot in any circumstances be properly inspected, examined or even assessed. However, this seems to be routine practice for some. I was advised that the reasons are that owners and purchasers will not accept the cost of lifting and pressure washing the craft for survey - and due to the extensive use of cheap environmentally unfriendly

bituminous paint, the potential cost of re-painting the hull prior to relaunch due to the "Blacking" being washed off by the pressure washer. I wonder if these owners would be happy to drive a vehicle without a current MOT or a house without survey and the mandatory certification.

Some of these issues also appear to be the result of the lack of suitable facilities for the removal of craft from the water. Some vessels involved in claims were removed on trollies, which were too low to allow access underneath. Another instance was that the vessel to be inspected was too heavy for the capacity of the hoist, so it was only lifted just an inch or two above the water (presumably because of concerns over gear failure). Conducting surveys in these conditions is an impossible challenge and a surveyor is setting themselves up to fail. Perhaps some surveyors should invest in diving equipment, or duck underneath and save the cost of lifting the vessel from the water altogether!

It occurred to me that a surveyor might just as well stay in their vehicle and conduct the survey through the window. Unsurprisingly, I subsequently found out that this phenomenon already exists and is known in the USA as a **drive by boat survey**.

Internally ballast is often paving slabs. One Dutch barge I was asked to repair had bilges full of gravel. On removal of the gravel, she was found to be corroded through from the inside. Fixed internal panelling and flooring also means that often the internal construction cannot be inspected with flat bilges precluding the removal of bilge water by bilge pumps and contained sub-division leading to trapped internal water. And here is the hub of the point I am making. If you cannot conduct a survey properly and, therefore, professionally, either don't do it at all, or at least ensure that the instructing client is aware that there were circumstances that made a thorough inspection impossible at time of survey and consequently the integrity of the hull structure could not be determined.

The question has also been raised as to whether the rules of construction applied to inland waterways craft and this was also unknown territory. I have determined that by analysing the existing rules and reading between the lines, so to speak, all vessels (sea going and inland waterways), should comply with the rules applied by the Classification Societies, CE Compliance (RCD ISO 12215) and the MCA. These are the standards to which the vessels should have been originally constructed to and this should be determined by the surveyor to enable assessment of suitability and of any subsequent deterioration.

The Canal Boat Builders' Association (CBA) Code of Practice for steel inland waterways craft and narrowboat construction includes vessels up to 20 feet constructed of 3mm steel plate. All vessels to be constructed to RCD Cat D (IAW ISO 12215).

Under RCD preferred Classification Society rules are those that are principally intended for use with pleasure craft, e.g.:

Germanisher Lloyd Pleasure Craft Rules (2004)
American Bureau of Shipping Guide for Offshore Racing Yacht (1994)
American Bureau of Shipping Guide for Motor Pleasure Yachts (2000)

As I have to increasingly deal with members of the IIMS who have fallen

foul of these issues, we should be careful in the instructions that we give to members and in particular to student members and those seeking to learn through the IIMS Professional Qualification modules.

The information required to make a safe judgment on the acceptable parameters for conducting a survey of a steel inland waterways craft is available to all, if you are willing to look for it. Below is what I consider a well written preconceived piece by a current IIMS student, Mr Mathew Willis, who readily admits that he is not a surveyor, but someone who would wish to become a surveyor.

Levels of diminution requiring replacement/repair are variously considered to be a loss of approximately 15-25% of the original plate thickness. Many insurance companies specify a minimum of 4mm plate thickness, but this is not particularly helpful as some vessels are initially built with thinner plate than 4mm. Additionally whilst reduction of 5mm plate to a mean of 4mm thickness is a loss of 20%, reduction of 8mm plate to 4mm is a loss of 50% thickness and therefore should be considered much more serious in respect of the scantling calculations that originally led to the specification of 8mm plate. The surveyor must use all the information gleaned from the vessel's original build specification concerning plate thicknesses as well as his visual observations and experience as a surveyor before making a final decision in his report. For the purposes of this survey a loss of 20% of original thickness will be deemed the point at which steel plate is replaced.

After hauling, the hull should be pressure washed and cleaned of any marine growth. The first part of the survey should involve a thorough visual inspection of the hull plating including welds and superstructure plating to assess general condition, evidence of buckling or distortion and identification of areas that might warrant more in-depth attention with the hammer and UTS gauge. If coating of the steel is not removed, then the surveyor should also make a detailed assessment of the condition of the coating and its adhesion to the steel plate and observe at what stage of its 'life cycle' it appears to be at.

A UTS survey is only as good as the coverage that is achieved and whilst it is inevitable that some areas will be beyond access, the surveyor should ask the owner/operator to enable access to as many internal areas as possible so that surveyor can check internal plate and frame condition. If necessary, the owner should be requested to remove pronounced rusting or flaking corrosion internally and externally in advance to improve the reliability of the survey results. Unfortunately, the worst corrosion is likely to occur on the internal areas that are least accessible and which will have suffered the most from lack of maintenance and painting hence the likelihood of corrosion.
To reflect this the surveyor's terms and conditions will need to include a disclaimer covering areas that cannot be inspected to the surveyor's satisfaction.

Whilst many meters (including the Cygnus 4) claim that coatings make no difference to the readings obtained, in practice grinding back to smooth metal will generally produce more reliable results. This needs to be explained to the commissioning client and the potential risks arising out of not having the coating removed should also be reflected in the disclaimers in the surveyor's terms and conditions.

For the purposes of the UTS survey the surveyor will also require a chipping hammer which can be used for chipping away small areas of coating if diminution is suspected. On sound steel this will cause no lasting damage to the steel, but it may well uncover rotten plate not detected by the UTS meter and in extremis it might actually make a hole in the hull if it is significantly corroded, which is better discovered out of the water than afloat.
Following a thorough visual inspection, the hull and superstructure on this vessel should be divided up into 1m x 1m squares which can be delineated using chalk line markings to enable the surveyor to follow a structured approach to the survey by testing one area at a time, ensuring that complete coverage is achieved. The number of tests per metre square is open to some interpretation but a minimum of 9 per m2 is recommended. These should be equally spaced within the square whilst ensuring that any pitting corrosion detected is measured at its deepest point. (This may also require the use of a pitting gauge.) Additional readings should be taken at areas of maximum stress concentration such as plates that have been fabricated into bends, bilges, chines and deck edges and especially in the area approximately on and extending 400mm below the waterline which is generally a focus area for corrosion on all vessel types.

In response to the question regarding 'Over-plating' or 'Doubling' I personally recall in the 1980's the MOD requiring that all welders on hull structure (myself included), had to be code B qualified to a hull insert inclined overhead procedure and that doubling plates were to be considered an emergency repair process only. In the 1990's as a ship repair manager Lloyd's surveyors would only allow doublers as temporary repairs, which were required to be replaced with inserts at the next scheduled docking. However, this was all in relation to sea going craft. For inland waterways wind and waterline over-plating appears to be quite common and if completed properly with window welding to ensure attachment to the underlying structure, should be considered a suitable repair, however future surveys should take into consideration that one never knows what is going on under the over-plating. Please also see a link below to an IIMS article from 2017 on this subject at **https://bit.ly/3tUTwWF**.

The exception would be floating **house boats** (definition: *a boat which is or can be moored for use as a dwelling*), often on drying berths, the principal concern here is keeping water out and staying afloat rather than structural strength. But again, this must be made perfectly clear in the report, because the danger is that the vessel could be sold to someone who intends to re-engine the craft and turn it back into a navigable vessel, it is not unknown for owners to take their vessels across channel to cruise the continental waterways.

I want to share and re-emphasise some extracts from my President's column, published in the December issue of the IIMS Report Magazine.

"Going back to inland waterways craft, I had reason to research the standards and rules which should be applied to the inspection and operation of these vessels. I was amazed to find that many surveyors of inland waterways craft had little knowledge of the rules and that they applied their own standards and formed their own opinions".

"I recently read an account of an incident involving the accidental deaths of two unfortunate small craft occupants due to Carbon Monoxide poisoning. This was not an isolated incident and there have been many more instances of this silent invisible killer on both commercial and pleasure vessels. The incident highlighted the need for surveyors to act in the absence of current mandatory requirements. Until legislation is passed, and manufacturers, Certifying Authorities and installation engineers are required by law to ensure that CO detectors are fitted to vessels it remains down to the individual vessel owners and operators to do so. This means that potentially the only professional and responsible people who attend on board a vessel are marine surveyors, who should assess the risk during their attendances for survey, be it pre-purchase, insurance, valuation, or indeed any other reason for them to be on board, whether it is a requirement of their attendance instructions or not".

"It is a wakeup call to all surveyors to remember that they have a duty of care and include some statement along the lines of *'Although not part of this particular level of survey or our instructions we must bring to your attention that'* and include any advice that the surveyor can offer to improve the safety of the vessel. In some of the accident reports although no blame is apportioned it was obvious that at least one of the vessels had been quite recently surveyed. The loss of life in the most recent cases had been the result of, in one instance, a diesel heater, another a butane-fuelled gas cooker, two instances with petrol inboard engines, and one a petrol generator. Diesel inboard engines are also a source of Carbon Monoxide as are solid fuel heaters.

My conclusion is that unless a vessel is an open sailing boat or rowing dinghy there will most probably be a requirement to assess whether CO detectors should be installed and if they are installed do they work? I found a vessel recently which had two CO detectors, one in each cabin area, one of which had the wires cut presumably to silence the alarm! When was the last time you checked the batteries in your home smoke alarm?

Over half of these incidents involved inland waterways craft. In 2014 the MCA and the Association of Inland Navigation Authorities produced the Inland Waters Small Passenger Boat Code, which is a Code of Practice for small commercial vessels operating in category A, B, C and D waters, and other inland waters, which specified Hydrocarbon detectors on vessels with gas consuming devices. Unfortunately, not all gas detectors detect Carbon Monoxide. Since then, as recently as 1st April 2019, there has become a BSS requirement for CO detectors on inland waterways craft, but at the time of writing no such mandatory requirements exist for other vessels".

SEA GOING PLEASURE VESSELS	INLAND WATERWAYS COMMERCIAL VESSELS	SEA GOING COMMERCIAL VESSELS
RCD CAT A		**MCA CAT 1 CAT 0**
OCEAN		MCA CAT 0 UNRESTRICTED SERVICE
WINDS EXCEEDING FORCE 8 SEAS ECEEDING 4 METERS		**MCA CAT 1** UP TO 150 MILES FROM A SAFE HAVEN
RCD CAT B OFFSHORE		**MCA CAT 2** UP TO 60 MILES FROM A SAFE HAVEN
WINDS UP TO AND INCLUDING FORCE 8 SEAS UP TO AND INCLUDING 4 METERS		
RCD CAT C INSHORE		**MCA CAT 3** UP TO 20 MILES FROM A SAFE HAVEN
WINDS UP TO AND INCLUDING FORCE 6	**MCA Navigation Safety Branch (NSB)**	**MCA CAT 4** UP TO 20 MILES FROM A SAFE HAVEN IN FAVOURABLE WEATHER AND DAYLIGHT
SEAS UP TO AND INCLUDING 2 METERS	**UK MCA MSN 1837 / MSN 1776** defines UK inland water Categories as follows: These categorisations apply specifically to the operation of Class IV, V and VI Passenger Ships and also determine which waters are not regarded as "sea" for the purposes of regulations made, or treated as made, under Section 85 of the Merchant Shipping Act.	**MCA CAT 5** TO SEA WITHIN 20MILES FROM A NOMINATED DEPARTURE POINT IN FAVOURABLE WEATHER AND DAYLIGHT
RCD CAT D SHELTERED WATERS	**CAT D** TIDAL RIVERS AND ESTUARIES	**MCA CAT 6** TO SEA WITHIN 3 MILES FROM A NOMINATED DEPARTURE POINT AND NEVER MORE THAN 3 MILES FROM LAND
WINDS UP TO AND INCLUDING FORCE 4 SEAS UP TO AND INCLUDING **0.5M**	WHERE THE SIGNIFICANT WAVE HEIGHT COULD NOT BE EXPECTED TO EXCEED **2.0 METERS** AT ANY TIME.	IN FAVOURABLE WEATHER AND DAYLIGHT
	CAT C TIDAL RIVERS AND ESTUARIES AND LARGE DEEP LAKES AND LOCHS WHERE THE SIGNIFICANT WAVE HEIGHT COULD NOT BE EXPECTED TO EXCEED 1.2 METERS AT ANY TIME.	
	CAT B WIDER RIVERS AND CANALS WHERE THE DEPTH OF WATER IS GENERALLY 1.5 METERS OR MORE	
	CAT A NARROW RIVERS AND CANALS	
	WHERE THE DEPTH OF WATER IS GENERALLY LESS THAN 1.5 METERS	

My Comment
The cross-over between RCD Cat D waters and MCA Cat D waters is inconsistent. There is a significant difference between 0.5 metre waves and 2.0 metre waves. There is consistency between Sea Going Pleasure Vessels and Sea Going Commercial Vessels; therefore, why do Inland Waterways Pleasure Vessels not have the same restrictions of areas of use as Inland Waterways Commercial Vessels?

Internet extract from Rugby Boats - see **https://bit.ly/39mzM4Y**:
The RCD is a grey area for quite a few people, and a complete mystery to the rest of us. It is effectively a CE mark for a boat. It is poorly policed in the UK and many boats sold on the market, both new and used, fail to comply with the regulations, particularly as in the case of boats classed as Category D (which includes all narrow boats) the builder self-declares without any requirement for an independent inspection.

For reference see the RYA website at **https://bit.ly/3Ct6m1p**.
"The Inland Waters Small Passenger Boat Code was produced jointly by the MCA and the Association of Inland Navigation Authorities (AINA) to provide a national framework, which local authorities could apply in full or in part as they see fit. The Inland Waters Small Passenger Boat Code covers equipment, build and manning and which elements of it are applied (if any) is up to the Local Authority; they can of course set totally different regulations if they feel that way inclined. However, the manning aspects of the Code have now been superseded by the relevant Boat Master's Licence (BML) regulations" - (see MSN 1853 at **https://bit.ly/3zqnC5x**.

My Comment
Contrary to popular belief the MCA continues to be setting the standards for Construction and Maintenance of inland waterways craft. As mentioned earlier a Code of Practice for Inland Waters Small Passenger Boats in cooperation with The Association of Inland Navigation Authorities and British Marine has been produced for inland boatbuilding. Unfortunately, all this means is that there are a number of rules and standards and also a number of associations involved - in fact over 60 different inland waterways authorities at my last count.

My Comment
I also note that the British Marine Inland Boatbuilding 'Code of Practice 2017-2' which incorporates and expands upon the Canal Boat Builders' Association (CBA) Code of Practice regarding steel inland waterways craft and narrowboat construction was, and still is, available only in DRAFT format. My question is 'Has this been finalised and ratified, and how is this to be enforced?'

Overall, the UK's approach to implementation of the Inland Waterway Directive has been to make use of the derogation in the Directive which allowed Member States with inland waterways unlinked by inland waterway to those of another Member State to which the Directive applies, to derogate from some, or all, of the technical requirements of the Directive, or to implement more stringent requirements in certain cases, such as additional provisions for passenger vessels. Reference see - **https://bit.ly/3hR8Izn**.

The UK MCA comments that considers that the NRMM Regulation (Non-Road Mobile Machinery) does apply irrespective of the requirements set out in the derogation to inland waterway vessels operating on Category A, B, C and D waterways.

Yet, inland waterway vessels only operating on tidal Category C and D with an installed engine rating power of 130 kW, or above, are subject to the requirements of the Merchant Shipping (Prevention of Air Pollution from Ships) Regulations 2008. As the NRMM (Non-Road Mobile Machinery) Regulation applies to engines fitted to inland waterway vessels with a net power of 19 kW and above, it will therefore apply to such vessels operating on tidal Category C and D waters which are below the threshold for compliance with the 2008 Regulations.

The MCA states, "The UK has over 4,000 miles of inland waterways. Construction requirements and levels of safety equipment that must be carried on vessels in the UK depend on the nature of the waters in which the vessel operates. *Reference (Hire Boat Code. Issue 1: Technical and Operational Standards'*). There are no national construction requirements for private pleasure vessels." References - (RCD & British Marine Inland Boatbuilding Code of Practice 2017 – 2). (MGN 489 Pleasure vessels are vessels used for sport or recreational purposes and do not operate for financial gain. A more extensive legal definition is provided by the Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) 1998 (SI 1998/2771), as amended).

My Comment
To conclude, I am sure that there is no simple answer to all of this, and I personally find some of it quite confusing. But I hope this has helped you to make a more informed judgment when undertaking these types of surveys.

The reason for producing this article is that we would like to advise our members of the correct rules to apply in an attempt to level the playing field and ultimately to keep the surveyor safe from litigation.

Geoff Waddington
IIMS President

Jeffrey Casciani-Wood HonFIIMS **responds to Geoff Waddington's** original article as follows:

Thank you for your screed, Geoff, I agree with everything you have written. The problem lies in the widespread ignorance of boat owners, boatyard staff and some marine surveyors about corrosion in general and that on canal boats in particular. Many seem to think that even a pre-purchase survey of the hull of such a boat consists only in taking UTS measurements of the side shell. That is not so.

Hull corrosion on such boats can be divided into two main types:

1. General corrosion resulting in plate thinning caused, *inter alia*, by the usual electro-chemical process using oxygen and moisture, mill scale, microbially induced corrosion (MIC), and physical damage.

2. Pitting corrosion caused by galvanism (common) or electrolysis (rare).

I will discuss them in order.

Mill scale corrosion is nowhere near as common as one would think. Its existence on a boat over five years of age is unlikely and steel for new constructions can be purchased, shot blasted and primed from the mill in which case it is non-existent. That is not to say that it can be ignored but, to put it into perspective, I have only seen this once in the fifty odd years I was a practising marine surveyor. MIC is very common. About 45% of the boats I have inspected had various forms of attack ranging from minor to almost total coverage. It has been known about in the marine industry from the days of the first iron-clad warships and the *gallionella ferruginea* species was identified and named as long ago as 1830. It is also named (but not discussed) in Barnaby's *Basic Naval Architecture*. I once attended a boat where there was another, well known marine surveyor present. The boat was covered in MIC which the other man put down to *"the quality of the steel"*. General electro-chemical corrosion is not common on the shell except in two main places:

1. The side shell in way of the fresh-water tank,

2. The bottom shell plate.

The interior of the fresh-water tank is a prime place for haematite corrosion. The tank is rarely, if ever, opened after the boat is built. I have never seen one open on a pre-purchase survey. The tank is regularly filled and emptied with water interspersed with fresh air. It is hardly surprising, therefore, that the interior structure corrodes rapidly affecting both the side and bottom shell in way, the tank top and the heel of the bulkhead forming the forward end of the accommodation. How many marine surveyors take UTS readings on the tank top I wonder? The heel of the bulkhead – often only 3 mm thick – is usually hidden behind linings and in accessible. How often is that plate measured for thickness? I know of two boats where the heel of the bulkhead was holed, and quite badly.

For totally specious and scientifically incorrect reasons, boat yards and owners often refuse to paint the bottom plate or to fit it with anodes - a situation which is aggravated by cradles, painting docks and slipways making it inaccessible in many cases. If it is possible to inspect the exterior of the plate it will almost without fail be covered with galvanic pitting, general corrosion and MIC. The outfitter of such boats rarely, if ever, fits access hatches in the cabin sole with the result that the floors and inside of the bottom plate ***cannot*** be inspected. Why do they not fit hatches? It is not difficult to do when the boat is being fitted out.

Your comments Geoff on not removing the coating to examine the shell are valid. I could quote cases to support my comments on the above paragraphs.

Photograph 1. Galvanic pitting on the unpainted bottom of a Dutch Barge

Marine surveyors should also have it banged into their heads that UTS measurements are an addendum to a hammer test and NOT the other way round. Whacking the side of a boat with a 2 lb shipwright's hammer (I still have mine from the days when I was servin' me time) will tell you far more than even closely spaced UTS measurements, which tell you ONLY the spot thickness and nothing else.

They should also know, and understand the implications, of the six caveats that apply to UTS measurements.

As far as minimum shell thicknesses are concerned, it is sometimes suggested that for pleasure vessels under 24 metres in the European Economic Area, ISO 12215-5 would be a suitable standard, even though it is hard to work with unless the marine survyor uses the Hullscant software. Alternatively, Dave Gerr's *Elements of Boat Strength* which uses the scantling number method and is very easy to dip into quickly could be used as an accepted standard as the book is widely recognised and acknowledged. Both of those authorities, however, only apply to new builds, not to boats with a long number of years in service. The scantling number approach suggested above is relatively straightforward for vessels prior to 1998 and for commercial vessels post 1998, but the marine surveyor must realise that minimum allowable thicknesses are dependent on many other factors such as speed, panel size and so on. The author considers anything more than 15% wastage to be the limit before repair work is required and, where possible, quotes the original plate thickness and the percentage loss. The real problem is when the vessel was poorly built and was too thin to start with. The vessel may then be a liability despite no corrosion. In practice, the decision whether or not to repair and to what extent is dependent entirely upon the marine surveyor's experience and that extremely rare and misnamed quality, common sense.

Perhaps the last word on this subject should be left to the Classification Societies. For classed ships built with scantlings in accordance with the IACS Common Structural Rules, *substantial* corrosion is an extent of corrosion such that the overall corrosion pattern indicates a gauged or measured thickness between t_{net} mm and t_{net} + 0.5 mm as indicated in the red section in Figure 1 below. The value of t_{net} is generally 80% of the original thickness. The given formula replaces the original definition where the metal was allowed to lose up to 75% of the allowable diminution before the corrosion was declared to be substantial. Although the new formula, in the class rules, is strictly only applicable to oil tankers and bulk carriers built after April 2006, the small craft marine surveyor may, and, in the author's opinion, should, use the rule as a guideline. It is certainly technically more realistic than the insurance industry's arbitrary and unreliable 4 mm minimum thickness.

Excessive diminution is defined as wastage of individual plates or items of structure more than that permissible. At that point, the item must be renewed.

Except in areas in way of ballast tanks, neither of these conditions is likely to be found on the majority of small craft but the possibility should not be discounted as doubling is not allowed. The problem with both these definitions for the small craft marine surveyor is that they do not specify the area over which the individual measurements are presumed to apply, and it would appear that they make the unspoken assumption that an individual reading or set of readings represents the average remaining thickness of the plate. That assumption cannot be justified. Furthermore, neither do the definitions take any notice of any pitting bearing in mind that individual pit depths may often exceed the allowable diminution figure. Table 1 gives thicknesses that represent substantial corrosion according to the above rule. The readings are in mm.

Corrosion is often hidden by paint or it may lie in obscure or difficult to access areas. A pricker or screwdriver should be used to probe suspect areas where the paint coat shows discolouration, moisture, or bubbles.

Table 1
Thickness readings indicating substantial corrosion

Original Thickness	4	6	8	10	12
Corroded Thickness	3.7	5.3	6.9	8.5	10.1

In calculating corrosion allowances, the small craft marine surveyor should adopt the following points in his/her philosophy. The allowances are to be:

- no provision or reductions based on so-called superior coatings or extraordinary maintenance of existing coating systems, or the presence of any type of corrosion protection scheme.
- based on a minimum twenty-five-year service life with provision for out of water inspection and re-assessment at the very least every five years.
- based on absolute numbers not percentages, i.e., 1.00 mm not 15%.

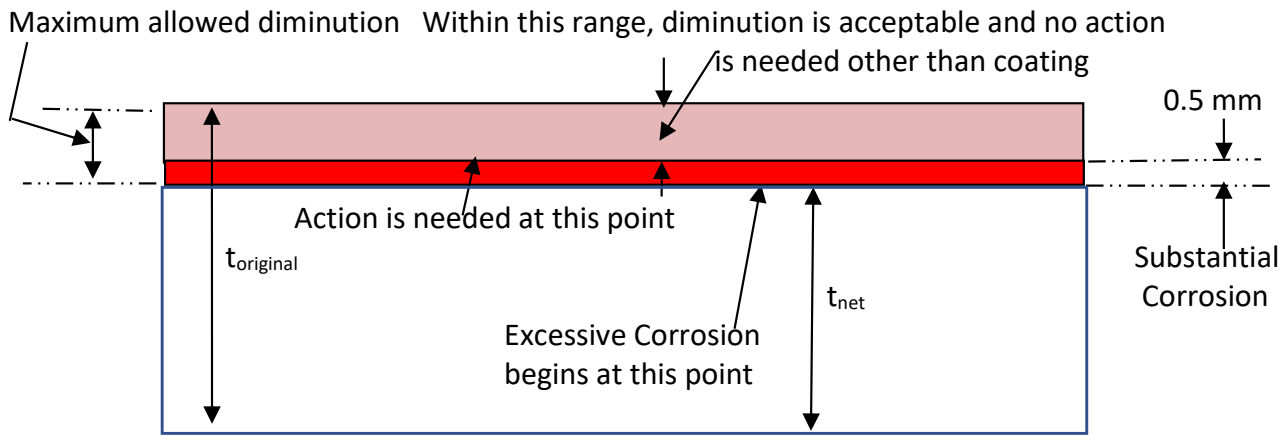


Figure 1. The Classification Society definition of substantial corrosion

- independent of local failure mode assessment, i.e., yielding, buckling or fatigue etc.
- based, wherever possible, on published or otherwise established verifiable data.
- with respect to stiffeners or webs, allowances should be based on loss of thickness not loss of section modulus.
- dependence on vessel size should be considered on a ship-by-ship basis.
- structural items within the same space and subject to the same or similar environmental factors and orientation, as far as possible, should have the same corrosion allowance.
- safety margins should not be included in any corrosion allowance.

The deckhead area of tanks must be dealt with separately from other areas of the tank structure and, for small craft, should be taken as the area above a horizontal line one metre below the top of the tank. Bilge plating should be regarded as the same as the bottom plating basically because there tends to be a collection of rubbish and crud in the bilge area making the plating similar more to the bottom shell than the hull side plating.

The assessment of the amount of pitting is a matter of judgement. In an ideal world every pit would be measured and recorded, but that, obviously, is impractical, time consuming and costly. However, a reasonable assessment should be made and used as the basis for any conclusions regarding the condition of the hull. Two significant figures can offer an assessment of the effect of pitting. They are the maximum and average pit depths. For the purposes of a normal hull survey, the collection of sample area pit depths can be used to determine those two figures to two significant figures. What determines a sample area depends upon survey constraints.

When faced with hull with extensive pitting, the marine surveyor may have to make an on-the-spot judgement as to its seriousness.

He can use the following formula as a guide:

$$A_P \times D_P \geq 0.10$$

where

A_P = fraction of area of the hull's wetted surface with pitting.
D_P = average depth of pits as a fraction of the plate thickness.

The problem of the pitting on shell plating is gauging its effect on the overall remaining thickness of the plate when taking UTS measurements. That can be resolved as follows:

The volume of metal lost by a pit is its plate surface entry area multiplied by its depth times a constant to allow for the fact that the pit is roughly conical in shape rather than cylindrical. Thus:

$$V_P = \tfrac{2}{3} \times \pi/4 \times d_s^2 \times d_e \quad mm^3$$

If, on a given plate, there are no pits covering an area a x b mm2, then the mean loss of metal over that area is

$$M_L = (n \times \pi/6 \times d_s^2 \times d_e)/(a \times b) \quad mm$$

where

M_L	=	mean metal loss	mm
V_P	=	volume of pit	mm^3
a, b	=	dimensions of area examined	mm^2
d_e	=	depth of pit	mm
d_s	=	diameter of pit's entry mm	
n	=	the number of pits in area a x b	-
π	=	22/7	-

If the metal loss is less than the difference between the original plate thickness and the net thickness plus 0.5 mm, then no action need be taken but the converse is also true. I recommend that, where possible, the affected area of plating should be cropped out and the metal renewed. Fitting a doubling plate, though commonly practised, can only be described as a bodge and poorly executed job.

Pitting is usually due to a poorly designed or incorrectly fitted cathodic protection scheme *i.e.*, badly placed anodes.

Many individual pits will be found deep enough to penetrate the net thickness of the metal. Where such are scattered, or isolated, they should be pooled or filled with welding. If numerous, then, regardless of the mean metal loss value, the affected area should be cropped, and the metal renewed. If it is decided to double plate an area, then the marine surveyor MUST keep in mind the **Law of Unintended Consequences**.

On a final comment before I move on, how many marine surveyors take and record the weardown on the tail end shaft or ask to see the shaft drawn for close up examination?

Items covered by a general condition survey

These actually, and rather surprisingly, since there are at least two published Codes of Practice covering the point

– one by the IIMS and one by the YDSA – vary wildly from person to person but for the author the following is the minimum and is based on the IIMS and YDSA Codes and the known requirements of two leading marine insurance companies. A good survey report for either pre-purchase or insurance purposes on small craft should cover at least the following main parts of the boat and her machinery, rig and outfit as appropriate:

- *Measurement* of the boat's principal dimensions including the depth and freeboard.
- Hull structure, keel, planking, shell plating or skin including ultrasonic thickness measurements or gelcoat wetness measurements as appropriate, cement cover or skin as appropriate, all primary and secondary supporting structure, frames, beams, stringers, bulkheads, stiffeners *etc., etc.,* as far as is accessible.
- Stem and keel bolts.
- Ballast whether loose or fixed.
- Bilge keels and bilge keel bolts.
- Bottom coating.
- Topside coating.
- Anodes including their bonding if appropriate.
- Deck(s) and their supporting structures.
- Superstructure(s) and deck houses.
- Hatches, companionways, weather, or watertight doors.
- Harpins and rubbing strakes.
- Davits, fastenings, and falls.
- Boarding ladder(s).
- Swim platform.
- Deck equipment and fittings.
- Guard and grab rails.
- Ventilators.
- Windows, port lights and scuttles.
- Internal hull examination – compartment by compartment.
- Skin fittings and sea valves.
- Steering gear.
- Rudder(s) and hangings.
- Ground tackle and windlass including the ranging and measurement of the cables.
- Non-invasive or superficial inspection of the main engine(s) and transmission(s) and all other machinery including the stern gear including weardown, shafts, propellers, stern bushes, A, P or V brackets, rope cutters and trim tabs.
- Fuel tanks and fuel system.
- Mast(s), rigging and sails.
- Electrical system including batteries, fuses, circuit breakers, master switches, wiring, navigation lights, internal lighting, sockets etc.
- Nautical equipment.
- Gas system including a soundness test, lock off test and smoke test.
- Fresh water system.
- Sewage system.
- Firefighting equipment.
- Life-saving apparatus and safety equipment including bilge pump(s) and first aid kit.

The reader should be particularly aware that a non-invasive or superficial inspection of the machinery does not include opening up the crank case, removing and testing spark plugs or injectors, removing heads, pistons etc. taking crankshaft deflection readings and similar mechanical investigations as they are classed as a full engine survey. Nor does it include a running test of the machinery or checking of the boat's speed and/or fuel consumption as those items come under a sea trial. Some marine surveyors are able to offer a full engine survey service if they are suitably qualified both academically and practically by experience but will usually charge extra for carrying out such work. The marine surveyor should make the point clear when negotiating the survey contract. As far as the author knows, only two similar lists exist, both published by an insurance company.

None, as far as the author knows, have been published by an organisation representing underwriters. Ignoring the above list is the direct cause of many survey reports, in the author's view, not really being fit for the purpose intended, but a moot point that has never, to the author's knowledge, been tested in the Courts.

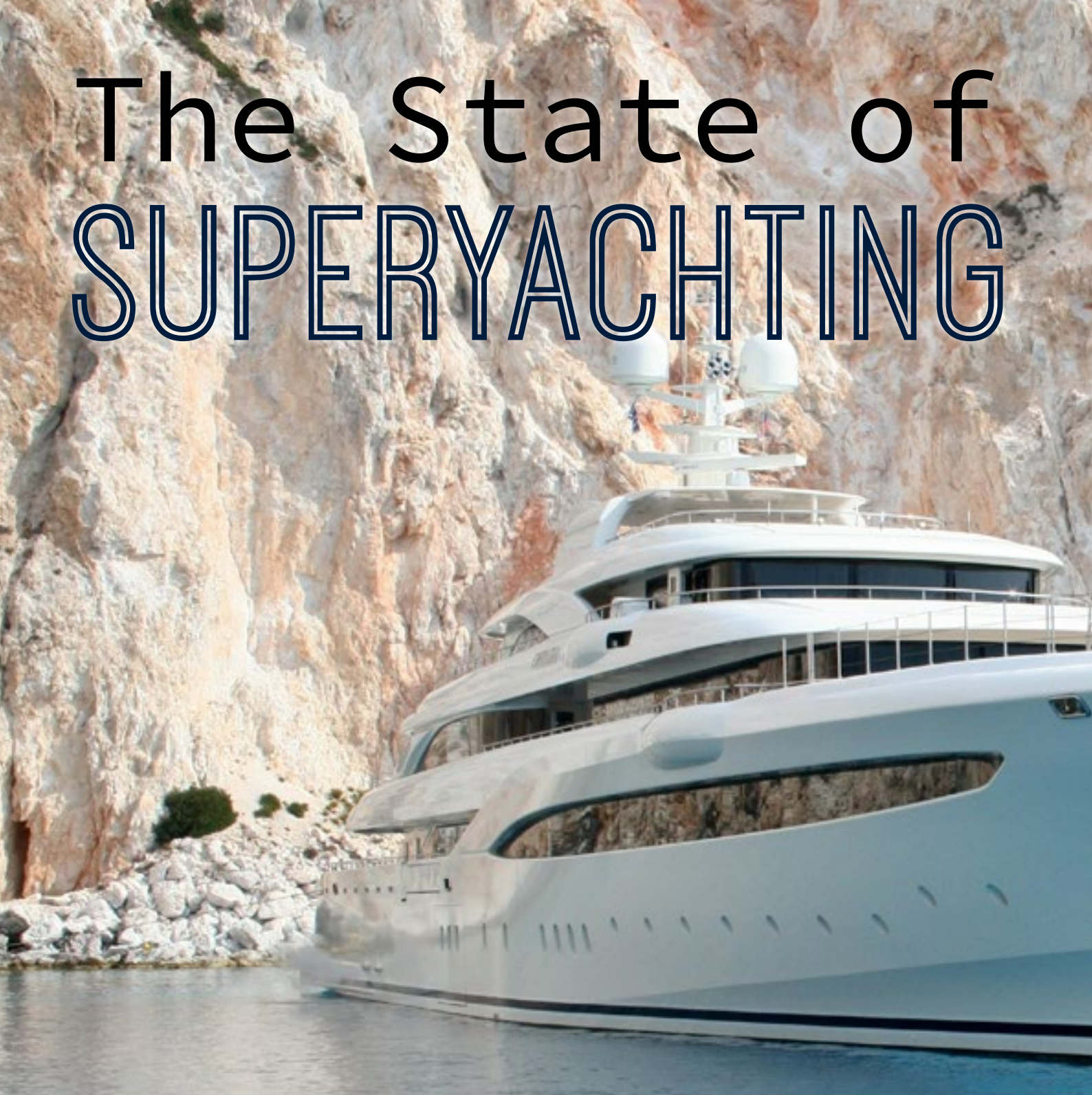
Items not generally covered by a general condition survey

Here, again, the items not covered vary considerably but an exclusion clause should be written into the report to cover at least the following items:

- Design.
- Scantlings.

Jeffrey Casciani-Wood

The State of SUPERYACHTING



This article has been extracted from the detailed *State of Yachting 2021* report that was compiled and published earlier this year by Superyacht Times. The full report containing facts, figures, graphs and images can be downloaded by following the link provided at the end of the article.

Trends & Observations

Superyacht builders rode out the Covid-19 storm. In the end, most superyacht builders made it through the pandemic. In Italy, some builders took out loans to help safeguard their all-important supplier networks. Several builders had to suspend operations and let some of their highly specialised staff go.

Only two major builders seem to have got into real trouble, one of them going bankrupt (Perini Navi) and the other (Nobiskrug) filing for insolvency.

First time buyers taking the plunge

As with other forms of yachting, which have experienced a spike in interest and sales during the pandemic, so it was with superyachts too. Brokers have said that there were many clients who were completely new to the market. The travel limitations imposed worldwide in 2020 to stop the pandemic wreaked havoc on the charter market. Some clients who were completely new to superyachts saw the attraction of being able to get away from it all, self-isolate and wanted to buy a yacht quickly.

Scarcity of young used larger motor yacht

Many of the brokers say that they perceive a shortage of "good", recent, larger motor yachts in the brokerage market. In the over 40 metres sector, the researchers analysed two important statistical measures regarding used yachts for sale. They looked at the availability of used yachts for sale and looked and had a look at the amount of days that had passed since the yacht was listed for sale. The result was that the availability of 'young' used yachts up to 15 years old for sale went down for all but the very largest used yachts (those over 80 metres), while the availability of Northern European-built used yachts over 50 metres also went down. Meanwhile the average days on market for almost all used motor yacht categories over 40 metres went up significantly, suggesting that the yachts remaining for sale are in some way or another less sought after by buyers.

Popular yacht models building up a backlog

Buyers have been flocking to the latest models from the major shipyards, buying copies of these yachts before their construction is started. Manufacturers like Azimut Benetti and Sanlorenzo have been able to sell multiple hulls of their latest models like the Benetti Oasis 40M and B.Now 50m, the Azimut Grande Trideck, the Sanlorenzo SD118 and the Sanlorenzo X-Space, without having to start building them on speculation first. In fact, during 2020, over half of the new yachts that Benetti sold were not yet under construction at the time of sale, a marked difference to 2019, when we saw the reverse.

The new superyacht market in 2020 as a whole saw slightly more yachts sold before construction than sold after beginning as a speculation project, while in 2019, sales of speculation projects were in the majority.

Multihulls: a niche with growth potential

Sales of larger catamarans seem to be growing, however their share in the total superyacht fleet remains small at this time at just over 1%. Nevertheless, 2020 saw more good sales results between 24 and 30 metres for catamaran builders like Sunreef and Silent Yachts, while well-known catamaran builders in the slightly smaller sizes, like Lagoon and Fountaine-Pajot, were also introducing larger models towards 24 metres.

The development in power catamarans is gaining momentum due to their suitability for hybrid or full electric propulsion. Silent Yachts is selling a lot of these 'eco' catamarans, while the German builder Alva Yachts has also entered this market. Meanwhile, the large Polish builder Sunreef introduced its own Eco range. The larger models of these builders are gradually growing towards 30 metres, and we think it is only a matter of time before we see these builders and like-minded shipyards introduce catamaran models over 30 metres.

Selling sailing yachts: choppy waters

2020 was an extremely slow year for new sailing yacht sales, with only five new yachts sold against 10 in 2019. However, the decrease in sales may be ascribed to the highly specific, 'tailor-made' nature of building new sailing superyachts. This process requires very active involvement from the client, something which may have been difficult during the Covid-19 pandemic. Sailing yacht projects are usually started for a client, and speculation projects are still quite rare.

However, the projects which are started for a client are not all tailor-made designs. Over a quarter of the new sailing yacht sales during the past decade concerned yachts which were built to a model, with Southern Wind, Nautor's Swan and Perini Navi accounting for the lion's share of these sales.

Engines: the road towards zero emissions

The main engine of a superyacht is a major contributor to the environmental footprint of a superyacht over its lifetime.

While we see more superyachts with a hybrid propulsion system each year, this usually involves a combination of diesel engines and battery banks. These setups allow yachts to switch off main engines and generators while at anchor or allow for electric cruising at slow speeds. Fully electric propulsion is still far away for most larger yachts, although it is being popularised on electric catamarans below 30 metres.

Another interesting alternative to diesel fuel for superyachts which is seriously being pursued is hydrogen. In fact, Lürssen Yachts announced in April 2021 that it had sold its first superyacht powered by fuel cells which convert methanol into hydrogen.

Big data and predictive maintenance

Big data has been a buzzword in many industries in recent years and commercial shipping was no exception. The superyacht industry is also increasingly incorporating the use of data solutions on its products. These days, lots of equipment on board can be monitored remotely. Based on analysis of the data extracted from onboard systems, predictive maintenance can be applied in order to prevent breakdowns or malfunctions from happening instead of waiting until the problem occurs. This should also help to reduce the 'ad hoc' nature of maintenance and repair and will allow for better planning of maintenance and refit periods of superyachts.

Effect of IMO Tier III emission regulations

As from 1 January 2021, IMO Tier III emission regulations applied to all yachts over 24 metres with a combined propulsion power of more than 750 kW (approximately 1,006 hp) and a keel laying on or after that date. The Tier III regulations set limitations on nitrogen dioxide (NOx) emissions in the Nitrogen Emission Control Areas (NECA's) in North America, US Caribbean, Baltic Sea and the North Sea. For yachts over 500 GT, these rules were already in force before 1 January 2021.
A rush to lay keels of yachts below 500 GT before 1 January 2021 was expected, and indeed, this seems to have happened.

The Fleet

In 2020, the number of superyachts in operation passed the 5,200 mark as another 150 new superyachts were added to the fleet. The growth of the world's superyacht fleet over 30 metres has been staggering over the past decades. Since 1985, the fleet has grown over six times in size, from just over 800 yachts to 5,245 yachts by the end of 2020. This is despite the fleet growth having slowed down noticeably after 2012, with the annual growth rate of the fleet over the last five years (2016-2020) standing at 2.9%.

Growth in the fleet comes not only from the completion of new yachts. Each year a number of commercial vessels are also converted into superyachts and added to the fleet. Meanwhile, a limited number of yachts per year are severely damaged, destroyed or scrapped and thus removed from the operating fleet. Since World War II, it is estimated that 195 yachts have been classed as complete losses.

Completions

Over the past few years, the number of new deliveries has averaged around 150 yachts per year. While the Covid-19 pandemic initially brought work to a virtual standstill in several main yacht building countries, the affected shipyards were quick to ramp up work again once able to and many still managed to complete a considerable amount of yachts. However, the 150 planned completions are far lower than the initially planned amount for 2020, which was estimated at 260. As a result of the delays, combined with the healthy revival of new yacht sales, an estimated 276 yachts are lined up for 2021 completion.

Construction Book

Ageing of the fleet

Close to half of the superyacht fleet over 30 metres is now older than 15 years (2,529 out of 5,245). Over the next few years, the huge group of yachts built in the late 00s will become older than 15 years as well, while completions of new yachts are not likely to increase significantly from the level seen in the past decade. This means that in five years, we could be looking at a fleet which is on average much older than today, with potentially a share of 15+ year old yachts of around 60%. All of these ageing yachts will require more and more maintenance and refit work.

The fleet by hull material

Today new superyacht hulls over 30 metres are primarily made of three different materials: GRP, steel and aluminium. A small but growing group of yachts are made of carbon fibre and wood is also still being used, though for a small percentage of new-builds only.

Since the turn of the century, GRP has become the dominant construction material for superyachts. It is particularly popular for yachts up to 40 metres as it lends itself well to production of a series of yachts to the same model, as the mould for the hull can be used again and again. Also, the material is relatively easy to maintain. Meanwhile steel has remained the material of choice for large yachts as it can withstand heavy forces, is easy to weld together and the extra weight of the steel is less of an issue on a large displacement hull (although a steel hull is usually coupled to an aluminium superstructure to save weight).

Aluminium has had its ups and downs, but holds a firm position within its own niche, particularly where speed and low weight are required. Meanwhile, wood remains more popular than one might think, especially for classic sailing yachts, while the use of carbon as a hull material is gradually increasing, owing to its low weight and high tensile strength. However, its steep cost means that the use of carbon as a hull material is still mostly restricted to racing yachts.

Construction Book Development

Over the past four years, the construction book has moved within a bandwidth between 440 and 510 projects over 30 metres. At the beginning of this year, the construction book consisted of 502 projects, which represents a slight decrease compared to early 2020 when there were 510 projects under construction. 502 projects still represent a quite high number of projects. But we need to dig deeper into the construction book to see if it is a healthy market and ask the right questions. For example, how many of these yachts have been sold? How long have the projects been in the construction book? What stages are the different projects in?

Construction Status

Within the construction book, it is important to keep track of the build status of all the projects because the total construction book number can easily be inflated by projects that have been on hold for many years, which in turn can paint an inaccurate picture. A continuing watch is placed on the on-hold projects closely as several on-hold projects are resuming construction each year. Having said that, the overwhelming majority of the on-hold projects are not at a stage where they could quickly resume construction so as to warrant inclusion in the construction book. Many of the on-hold projects will probably never be finished, with whatever part of the yacht that was built likely to be scrapped or simply become untraceable.

Construction by Country

The 502 superyachts currently in the construction book are being built in 26 countries. There are three ways to look at the ranking of top building countries: 1) by the number of projects in-build, 2) by the total volume (GT) of the yachts under construction, and 3) by the total length of yachts being built. In terms of the number of projects, Italy has already been the market leader for a long time and remains so. During 2020, the Italians also reclaimed the first place In terms of total GT in build, after losing that to the Germans in 2019. Turkey overtook the Netherlands in the total number of projects in build during 2020. The Dutch however are closing in on the Germans in terms of total amount of GT in build, signalling that Dutch yards are securing orders for ever larger custom yachts. The average Dutch newbuild project is however still significantly smaller than the average German project, at 1,525 GT per yacht against 6,342 GT for the Germans.

Italy, Turkey, The Netherlands and Germany dominate the superyacht construction industry, as they account for 80% of the number of superyachts in-build over 30 metres and have an 86% share in terms of the total tonnage in-build. The other countries all saw their share of the construction book decline in 2020. Nevertheless, Taiwan and China managed to rise one place each in the ranking and now rank fifth and sixth respectively, while the United States dropped from fifth to seventh place. The UK and the UAE traded places, with the UAE now in eighth place and the UK in ninth place. Of the countries grouped under Rest of World, only Finland, Poland and Spain have significant amounts of superyachts in build, with between four and six yachts each in their construction books.

The Market

Covid-19s impact on yacht sales

While the Covid-19 pandemic definitely had an impact on both new and used yacht sales, the used yacht market has recovered far better from the pandemic than the new yacht market. Sales of new superyachts over 30 metres in 2020 started with a strong first quarter, which was in fact better than the same period of 2019. However, in the second quarter, Covid-19 kicked in. A mere 18 new superyachts over 30 metres were sold in the second quarter of 2020 against 37 in the same quarter of 2019. The third quarter of 2020 also still showed lower sales than the corresponding period of 2019. However, 2020 ended on a positive note with 67 new superyacht sales recorded in the last quarter against 55 in the last quarter of 2019. The strong start and the strong end of the year could not, however, prevent a decline in the total number of new yacht sales in 2020, which ended up at 148 yachts, compared to 178 in 2019.

Used yacht sales performed very well in 2020, with the first quarter of 2020, matching that of 2019, followed by a bad second quarter, but very strong third and fourth quarters, which both saw more than 50% higher used yacht sales compared to the same quarters of 2019. The year 2020 ended on 301 used yacht sales over 30 metres, compared to 280 in 2019.

So why did used yacht sales recover so much better than new yacht sales? The research team believe this has to do with the fact that in 2020, clients wanted to take to the seas more quickly than ever, rather than wait a long time for a new-build. The same development was seen in the recreational boating industry where sales went through the roof in 2020 in the United States and several other countries, including the Netherlands. New-builds also often require heavy involvement from the owner's side during construction, which was difficult (although not impossible) during the pandemic.

2020 ended on a very positive note for the sale of both new and used yachts, and the first quarter of 2021 also showed sales numbers which were higher than the first quarter of 2020. It therefore looks like the superyacht industry is indeed recovering very well from Covid-19, particularly since the key market of the United States was well on its way to complete recovery from Covid-19 by early May 2021.

The Builders

Shipyards by country

The 287 shipyards that have completed one or more superyachts in the past 10 years are based in 36 different countries, however, 56% are based in Turkey, Italy, and the Netherlands. Turkey alone has 74 different shipyards that have built one or more superyachts in the past 10 years. However, the average number of completions per Turkish yard is the lowest of all countries, with an average of 2.1 yachts completed per shipyard in the past 10 years. The highest number of completions per yard is the United Kingdom, with an average of 19.6 superyachts completed per shipyard in the past 10 years. This can be explained by the fact that there are not many shipyards in the U.K. 92% of the British-built yachts have been built by two high-volume yards - Sunseeker and Princess Yachts.

Number of shipyards by length categories

Over the last 10 years, there were 23 shipyards that completed yachts over 80 metres in length. Today, there are 20 shipyards building yachts over 80 metres. While the total number of yards in the 80 metre-plus segment is slowly declining, yards are constantly entering and exiting this segment. The overall market, however, does not appear to be large enough to sustain any growth in the number(s) of builders here, although high entry barriers to this segment may also play a role.

Overall, the segment of yachts over 50 metres shows a gradual decline in the number of active builders, while the number of shipyards building yachts up to 50 metres is rising again. Between 40 and 50 metres, the number of builders has increased slightly. Several top Italian builders, such as Benetti, Sanlorenzo and Overmarine, have introduced new models in this category and they have been selling well, which has no doubt lured a few more new entrants into this segment.

Compared to one year ago, the number of yards building yachts between 30 and 40 metres has grown by a further five yards, after a growth by seven yards in the preceding year. The well-known builder Cheoy Lee from Hong Kong re-entered the segment and the Ferretti Group introduced its first yacht model over 30 metres under its own Ferretti brand name. Also, the Dutch yard Vanquish Yachts sold its first ever yacht over 30 metres.

The Refit Market

What is tracked

The data is logged following refit yard visits and then classified. If it is a short stay and the yacht remains alongside rather than out of the water, that stay is classified as 'maintenance' rather than 'refit'. Similarly, a short drydocking is regarded as 'maintenance'. If a yacht stays at the yard for a period of 90 days or more, or there is evidence of modifications, large-scale maintenance work (a paint job perhaps) or the yacht is out of the water for a long time, that is regarded as a 'refit'. If a yacht is very heavily modified during its refit period, that is categorised as a 'rebuild'.

Many recently built yachts return to the yards that built them for some checks and small repairs. If the yacht is not more than a year old and confirmation is gathered that it is indeed warranty work, these yard visits will be classed by as 'warranty'.

Refit yards by country

When we look at the total number of refit yard visits of yachts over 30 metres, and then group them by the country of refit, the United States comes out as the most frequented country. This is perhaps not surprising, given the extreme concentration of superyachts in the south of Florida, where most of the US refit yards are also based. Italian yards get almost as many visits to refit yards as the USA, as the country is home to several of the world's largest refit players. In addition, many recently built yachts return to their building yards for warranty work. Due to the significant number of yachts built in Italy every year, that number quickly adds up. The countries in third and fourth place, France and Spain, both host some of the largest refit yards in the world, such as MB92 in Barcelona, and Monaco Marine, with many of these companies also operating across multiple facilities. Spain also scores highly due to the presence of a refit hub in Palma de Mallorca, with both STP and Astilleros de Mallorca operating there.

The yards

The growth in popularity of refit and maintenance in Northern Europe is also reflected in the strong increase in the number of facilities which performed refit work on superyachts in 2020 in the Netherlands. The new entrants included a number of companies which have set their sights firmly on expanding their refit business, such as Talsma Shipyard, Zwijnenburg and Maaskant (the latter being part of the Damen Shipyards Group). A newcomer in this list is Croatia, with the Adria Docks yard in Trogir in particular ramping up its refit activities. Meanwhile, most other countries remained stable in terms of the number of facilities actively refitting yachts over 30 metres.

The Outlook

The general outlook is positive in regard to the next 12 months, not least because with Covid-19 still rife the refit season is likely to be extended. Much will depend on the rate of vaccinations in different countries, and how quickly international travel can be resumed. Several key refit yards in the Med were expecting refits to last well into late 2021 as the charter market will take longer to recover from the pandemic. There is a lot of pent-up demand for maintenance and refit in the superyacht market and therefore, the investment in the refit industry is likely to continue.

Australia's Gold Coast area has seen a frenzy of refit investment, with the AUD 100 million expansion of The Boat Works yard completed in 2020, while a AUD 200 million upgrade of the Rivergate Marina and Shipyard was also announced in the same year, with more investments planned by Rivergate and the Gold Coast City Marina & Shipyard.

Further information

The State of Yachting 2021 report is published by:

SuperYacht Times | Singel 260 | 1016 AB Amsterdam
The Netherlands - Telephone: +31 20 773 2864

The report was written and edited by Merijn de Waard, Ralph Dazert and Francesca Webster.

The data and research for the report was carried out by Merijn de Waard, Ralph Dazert, Aurélien Herman, Justus Papenkordt and Léandre Loyseau.

The report in full can be download at **https://bit.ly/39dTJL4**.

IIMS would like to thank SuperYacht Times for publishing such an invaluable and in-depth report.

Shifting gears:

Achieving climate smart fisheries

This is the text of the Executive Summary from a report written about decarbonising the UK fishing vessel fleet, written by MarFishEco Fisheries Consultants Ltd. in cooperation with WWF, the Royal Society for the Protection of Birds and the Marine Conservation Society. It tackles the issues and challenges surrounding decarbonising the UK fishing fleet. The full report can be downloaded and read at **https://bit.ly/2WkcskQ**.

We are amidst a nature and climate emergency and evidence shows that ocean health is vital if we are to successfully address both. Industries operating in and around our oceans have a vital role to play in tackling climate change and contributing to the goal of net zero carbon emissions. Fisheries are no exception and present a complex problem. They are both vulnerable to the impacts of climate change whilst also contributing to anthropogenic driven climate change. Fisheries contribute to greenhouse gas (GHG) emissions through the disturbance of blue carbon habitats in marine systems, the extraction of fish, disruptions to ecosystem function and industry-wide fossil fuel use.

Blue carbon refers to the carbon captured and stored in coastal and marine ecosystems. This includes vegetated habitats such as seagrass meadows, saltmarshes, and seaweeds, as well as carbon stored in seabed sediment and the carbon sequestered by living organisms, including fish. If left undisturbed, significant volumes of blue carbon can remain stored in the marine environment for millennia, decreasing the volume of carbon in the atmosphere that contributes to climate change.

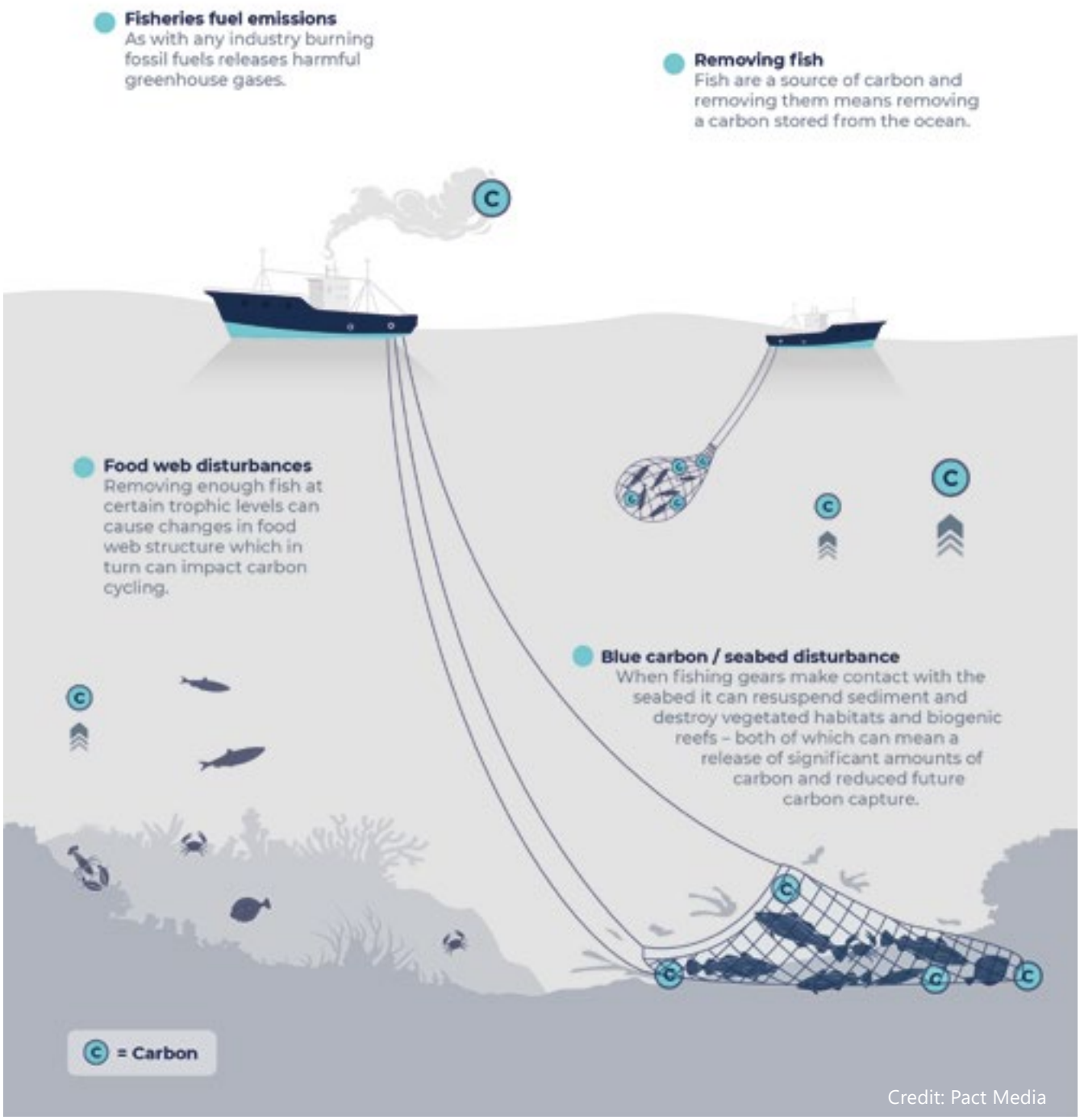
Fisheries primarily impact blue carbon through the contact made between towed bottom fishing gears and the seabed. Heavy trawls and dredges towed across the ocean floor disturb, and in extreme cases, destroy blue carbon ecosystems. Disturbed carbon re-mineralizes into the water column and can eventually re-enter the atmosphere where is adds to global greenhouse gas levels. Experts estimate that as much as 1.02 billion tons of carbon dioxide (CO_2) are released into the water column annually from degraded coastal ecosystems of which fisheries contribute a significant part.

The fishing industry's extraction of fish above sustainable levels is also an extraction of blue carbon, further contributing to GHG emissions. Fisheries have significantly depleted some fish and shellfish stocks relative to pre-industrial levels, thereby removing large volumes of carbon in the form of marine organisms.

These fish would otherwise eventually sink as carcasses and their carbon would become stored in deep ocean sediments. Overfishing practices further impact blue carbon by contributing to biodiversity loss and changes in ecosystem function. Fishing above sustainable levels can lead to the removal of enough fish biomass within certain trophic levels to unbalance food webs.

Powering fisheries requires significant fossil fuel use that results in a significant industrial carbon footprint by contributing to GHG emissions. In 2016, the equivalent CO_2 from 51 coal-fired power plants in one year was released into the atmosphere by global marine fishing vessels alone. Inefficient fleet structures, government fuel subsidies and

Fisheries impacts on blue carbon



Credit: Pact Media

lack of incentives to decarbonise continues to stagnate the transition to low carbon capture methods, and instead contributes to significant GHG emissions across the industry.

The fishing industry's carbon footprint combined with its significant impacts on long-term carbon capture and storage in blue carbon habitats makes the industry an important consideration when designating GHG reduction and climate mitigation strategies. However, governments have generally been slow to acknowledge the fishing industry's impact on GHG emissions and blue carbon stores. Fisheries are commonly missed from assessments of GHGs, not considered in climate change mitigation strategies and are largely ignored during climate negotiations.

This report undertakes a comprehensive review of the existing knowledge around fisheries, climate change and blue carbon with a UK-focus, and clearly identifies the specific impacts of UK fisheries on blue carbon within UK waters. Practical recommendations highlight the essential elements that are needed to form a climate-smart strategy for UK fisheries management to help tackle the current climate crisis.

Climate-smart fisheries management will help futureproof fisheries and allow them to play their role in combatting climate change and help in the achievement of net zero. Such management means that fisheries must clearly acknowledge and mitigate their contribution to GHG emissions, whilst building resilience to climate change threats. At present, climate-smart fisheries approaches are evolving largely across developing countries and small island nations. This is likely because of the heightened awareness around early onset climate change threats in developing and island nations, bringing greater need for climate-smart action. Developed economies, however, appear to be slower to adopt climate-smart approaches to fisheries management, regardless of having more funds and capacity available for new technology development to support climate-smart fishery plans.

The UK is recognised as a leader in the drive for climate change adaptation through net-zero policy and legislation. Following the UK's departure from the European Union on January 1st, 2021, Prime Minister Boris Johnson declared the government's intention for the UK to become a leading, responsible, independent coastal state. However, to realistically achieve this, all governments of the UK must consider the fishing industry's role in combatting climate change.

In November 2020, the UK Fisheries Act (2020) was passed, which for the first-time acknowledged climate change in UK fisheries policy, a world leading first. The Act presents the opportunity to steer fisheries policy reform in a climate-smart direction and means that the management of UK fisheries and the marine environment address fisheries impacts on national GHG emissions and blue carbon. Strategies should focus on the reduction of blue carbon disturbance and unsustainable extraction, whilst also taking steps to move the industry towards net-zero emissions. If successful, implementation of the Act could make the UK a major leader of climate-resilience that prioritises long-term sustainability, balanced with economic productivity of the fishing sector. It also has the potential to feed into international agreements that would influence people and the marine environment on a much larger, global scale.

In short UK fishing needs to rethink current practices and modernise to meet the challenge of climate change and net-zero.

The report concludes that a climate-smart strategy should focus on six key actions that act as an intertwined system where stakeholders should actively seek to:

- Limit bottom towed fishing gear to protect and support recovery of blue carbon within current MPAs and in key areas outside of MPAs.
- Work to decarbonise the UK fleet including removing fuel subsidies and eliminate inefficient fleet structures.
- Mandate Remote Electronic Monitoring (REM) with cameras that incorporate Vessel Monitoring Systems (VMS) across vessels fishing in UK waters to deliver increased transparency and traceability across the UK fishing industry to improve stock health and increase biomass.
- Reduce pressure from heavy, towed bottom fisheries gear and review the impact of passive gear use and whether incentives for gear changes are appropriate.
- Strengthen overall marine policy frameworks with a climate change lens such as the UK Marine Strategy, to make them fit for purpose in a bid to combat the climate crisis.
- Increase research and knowledge on blue carbon habitats, stocks, and the fishing sectors GHG emissions and blue carbon impact.

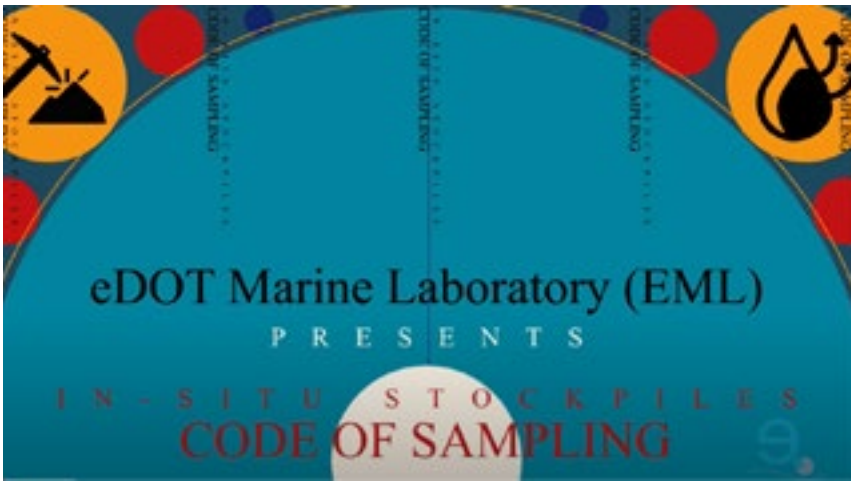
If such a strategy is adopted it should futureproof UK fisheries by bringing about the recovery of the oceans health and help meet the triple challenge of sustainably feeding a growing population, while staying on track to keep global warming below 1.5°C and reversing biodiversity loss.

The Indian Standard procedure of sampling Stationary Stockpiles

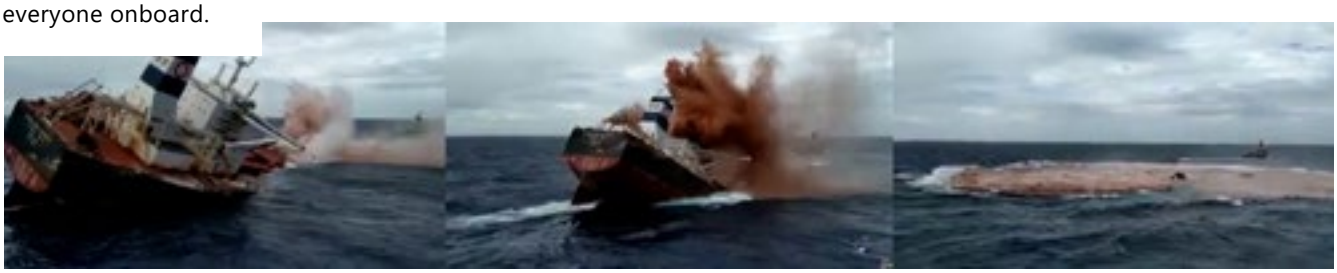
To support this article and his company's work in this critical area, Capt Ruchin Dayal's and his team at eDot Marine Laboratory have produced a short video running less than 8 minutes that offers advice on the subject, entitled the 'Procedure for sampling stationary stockpiles'.

The video can be viewed at YouTube at **https://www.youtube.com/watch?v=kV0_FrrLXIo**.

The iron ore export industry is largely unorganised in the Indian subcontinent, as well as in many other places in the world, like Indonesia and Malaysia. The high price of the commodity makes it a very valuable business proposition. While this is great for the industry at large, is it great for the seafarer? The extremely high market returns of the trade make the industry extremely target oriented. And when there are targets to be met, there are short-cuts for the taking!



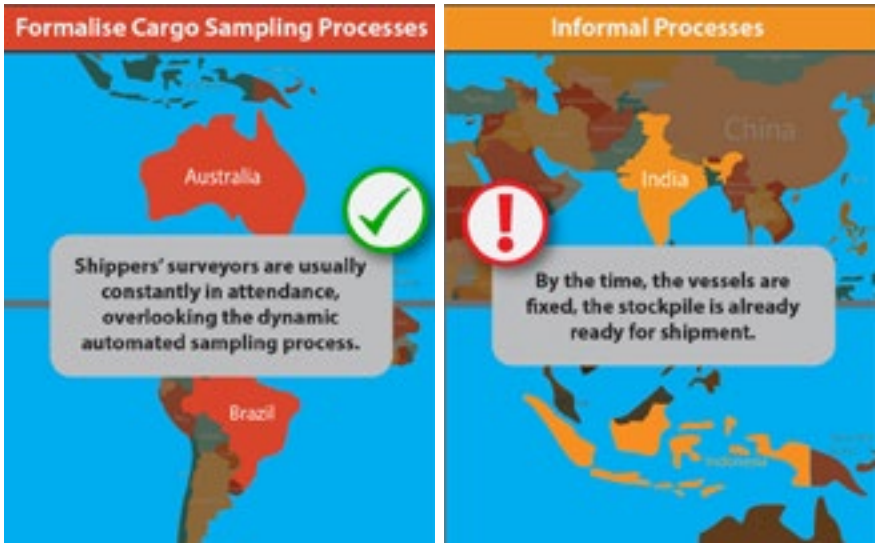
The last decade has seen many a vessel succumbing to liquefaction related casualties, many times losing everyone onboard.

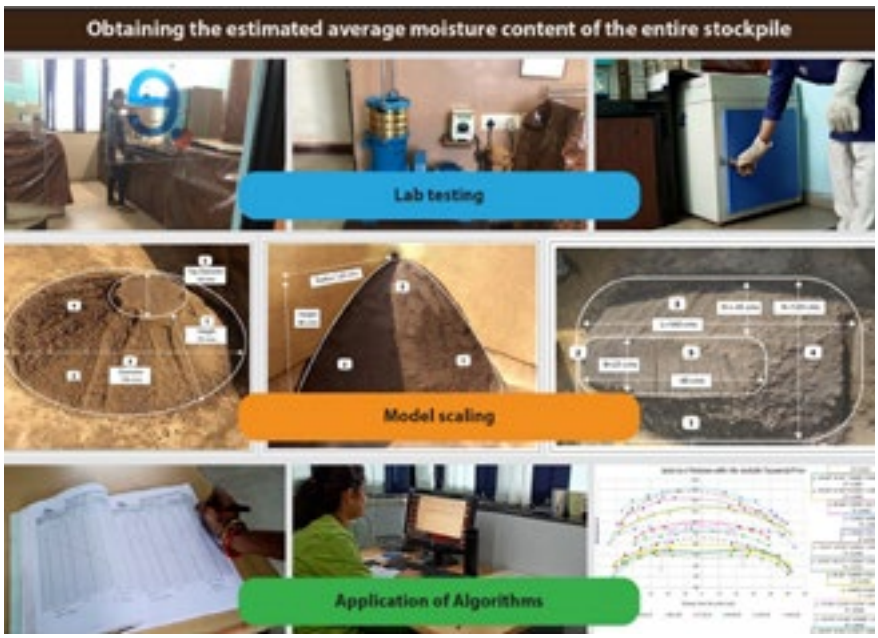


This has not been an India or Indonesia related problem area alone. Yes, while the checks and balances were still under making in these places, ships sailing from Brazil also had similar problems. Hence, how does one ensure that cargo being loaded is safe?

The simple answer is the IMSBC code, which mandates the process to be followed. While the code lays down the responsibilities/requirements to be followed by the shippers, where the prerogative of providing safe cargo is clearly theirs, it is the respective competent authorities of the maritime states to ensure compliance.

The code also explicitly states that the shipowners' representatives MUST be allowed access to the stockpiles of shippers when the cargo is susceptible to liquefaction. Here is where Brazil and Australia have been able to formalise their processes, mainly because of such high volumes, where the shippers' surveyors are usually constantly in attendance, overlooking the dynamic automated sampling process, while in India and Indonesia, by the time, the vessels are fixed, the stockpile is already ready for shipment.





So how does a surveyor decide that the cargo is safe or unsafe, if the access within the stockpile is limited to a fraction of its actual size? While it may seem reasonable to sample the cargo during the loading process, local customs, charter-party clauses and practical existing design flaws (such as cranes are designed for only loading cargo from barges onto a ship and not vice-versa – specially the bigger ships, (Panamax and Capes), do not allow loading to be delayed or suspended. Hence, it is imperative for a surveyor to determine the initial TML and MC, prior to advising the Master to commence loading. While the TML of homogeneous ores may be accurately determined by sampling the accessible parts of the stockpile, the moisture content will not be consistent in the entire body of the stockpile. This is critical for determining the suitability of cargo for sea carriage.

Stockpiles come in various sizes; from small stockpiles of 5,000 metric tonnes which are less than 3 metres in height to huge ones, sometimes 200,000 metric tonnes or even more, having heights of more than 25 metres, and dimensions ranging from 50 to 100 metres. International standards like ISO 3082, do not permit in situ sampling of stockpiles, while the Indian standard 1405 allows in situ sampling when the height of the stockpile is not more than 3 meters.

Most times, all that the ship owner's surveyor sees is a huge mountain of a stockpile and his daunting task is to determine its suitability for loading! While laboratories usually have an organised system of approval, test certificates for consignments, are only as good as the integrity of the sample, which needs to be truly representative of the consignment. This is seldom the case with samples drawn from stationary stockpiles. With no established standard method of sampling, surveyors often use "common sense" as a substitute, which is extraordinarily subjective. How to make the export of iron ore standardised and safe?

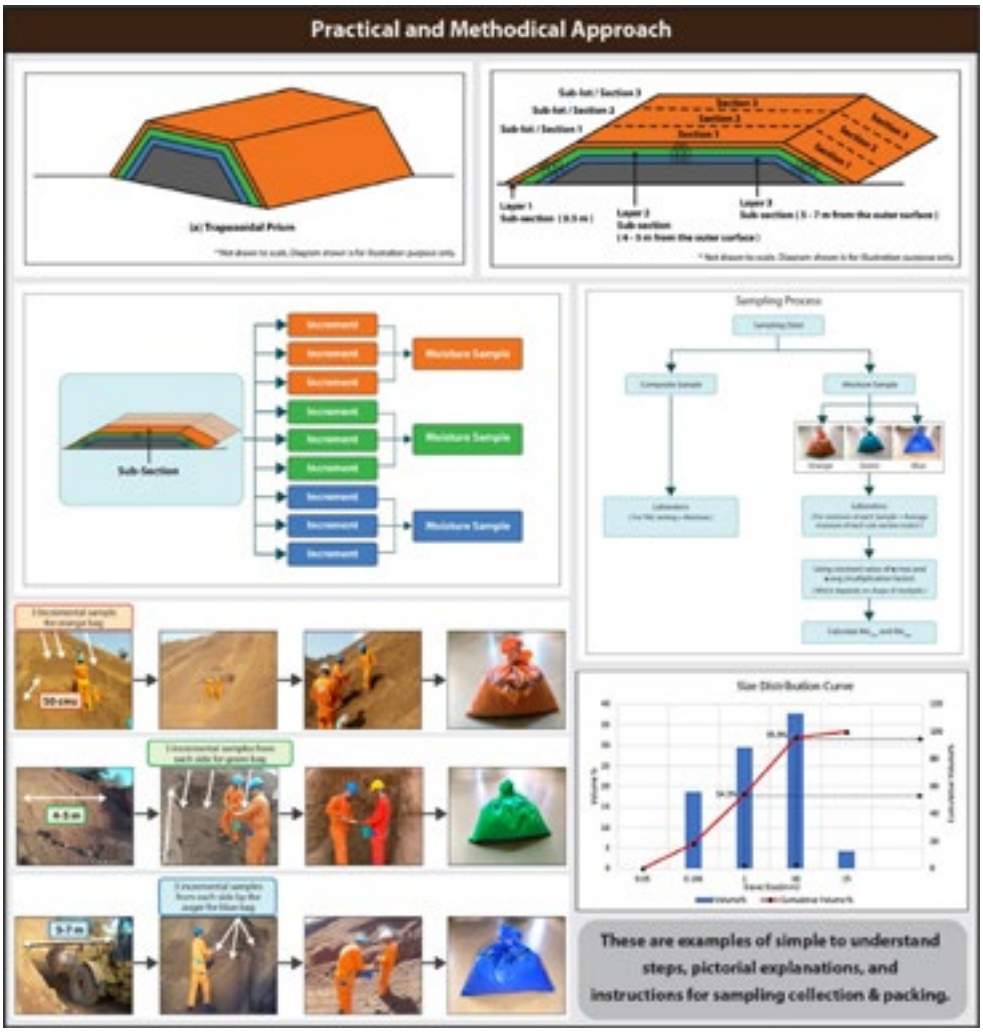
The Proposal

An Indian standard for sampling stationary stockpiles has been developed after many years of lab tests, model scaling, field samplings, together with an algorithm for correcting moisture content obtained

by sampling the accessible portions of the stockpile, to obtain the estimated average moisture content of the entire stockpile.

The standard provides a practical and methodical approach to sampling of stationary stockpiles, with simple to understand steps, pictorial explanations, and instructions for sampling collection and packing.

With a section and layer sampling approach, it is possible to determine the change in the moisture content with increasing lateral depth. Juxtaposing accurate test results of samples from the accessible part of the stockpile, with the mass and dimensions of the inaccessible sections, provides an opportunity for mathematically arriving at an algorithm, to logically derive a simple factor which can be applied to the moisture content of the accessible parts of the stockpile, for estimating the average moisture content of the complete stockpile.



The standard method of sampling will eliminate the inconsistency in sample collection and preparation. Individual & subjective tendencies will be replaced by an objective and an unambiguous style of sample collection, sample preparation and moisture estimation. Together with a certified method of testing, this combination of standard sampling and testing will mean greater accuracy in the test results - meaning safer ships!

Code of Sampling

About eDOT Marine Laboratory

The eDOT Marine Laboratory (EML) is a premier institution in India, focused on contextual research and development of the IMSBC Code with special reference to concentrate and Iron ore cargoes.

With a decade of relevant experience, eDOT Marine Laboratory pioneered the certification process for marine laboratories in India. It is the first Laboratory to be approved by the competent authority i.e., Directorate General of Shipping in India and is the only marine laboratory to be certified under ISO 9001:2015, ISO 17025:2017 & ISO 27001:2013.

GREEN SHIPPING: THE NOT SO DISTANT FUTURE?

*Co-authored by **Gayle Kimberley**, **Nina Fauser** and **Aleandro Mifsud** of GVZH Associates*

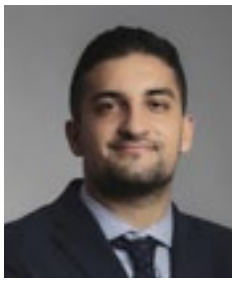
Gayle Kimberley

Gayle has worked in various fields of economic law, both in the private and public sector as well as in international organisations. Her main areas of focus are EU institutional and economic law, Competition / Antitrust Regulation, Corporate & Mergers and Acquisitions, iGaming Law, Intellectual Property and Technology, Media & Telecommunications. She is experienced in litigation before the EU Courts and international arbitrations.

Nina Fauser

Nina Fauser joined GVZH Advocates as a legal trainee and is focusing on Intellectual Property and Copyright matters, Competition law, Data Protection and Employment law. Nina also has a particular interest in the fields of Real Estate and Environmental law, with a focus on Renewable Energy matters.

Aleandro Mifsud



Aleandro's main areas of focus are Maritime and Aviation Law. He currently forms part of the Transport team within the firm assisting clients on matters concerning ship registration, AOC & AOL applications, ownership structures, VAT and importation.

With green hydrogen stocks flying through the roof in 2020, it is no secret that this zero-carbon phenomenon is enjoying a worldwide unprecedented political and economical momentum. As a testament to its new-fangled global interest, the universal demand for hydrogen has grown threefold since 1975, with many countries now jumping on the bandwagon, aiming for net-zero carbon emissions by 2050.

In the most perspicuous way possible, English science author Brian Clegg attempts to disentangle the misconception surrounding "the King of the Elements", H, most commonly referred to as Hydrogen. He argues that in science, simplicity and beauty are often equated – and that makes hydrogen as beautiful as they come; a single proton and a lone electron making the most compact element in existence.[1]

Types of Hydrogen

When compared to conventional fossil fuels which produce greenhouse gas (GHG) emissions upon consumption, hydrogen not only has the capability of carrying around three times more energy per mass, but rather, simply produces water when consumed. The main issue with this, however, is that notwithstanding its potential to one day replace fossil fuels in their entirety, as things stand, hydrogen's production cost is significantly greater than any other fuel currently available on the market. This cost differs in accordance with the selected method of hydrogen production. "Grey hydrogen", which is hydrogen produced using fossil fuels such as natural gas, is the most common form of hydrogen with lifecycle emissions which are still lower than those of fossil fuels. When grey hydrogen is combined with carbon capture and storage technologies, this forms what is known as "blue hydrogen", a type of hydrogen with much less lifecycle carbon emissions, but which is much more expensive. On the other hand, the cleanest form of hydrogen is the so-called "green hydrogen" which is produced through a process called electrolysis whereby it is created directly from water as electric currents split the water molecule into oxygen and hydrogen. When the source of these electric currents comes from a renewable source such as solar, wind, and biomass amongst others, the process in its entirety would be completely emission-free. Unfortunately, however, the downside of this phenomenon known as "green hydrogen", is that it is the most expensive of all three.

The Shipping Industry

Undoubtedly, emitting over 950 million tonnes of CO2 yearly, as well as contributing to 2.5% of all global greenhouse gas emissions, does not exactly depict the shipping industry in the greatest of lights and so, the International Maritime Organisation (IMO) has recently stepped up its efforts to have the busiest transportation sector in the world reduce its emissions by at least 50% by 2050. Whilst liquid natural gas is considered a potential alternative to conventional heavy fuel oil and marine gas oil, at best, it only delivers up to a 10% reduction of GHG emissions when compared to the aforementioned conventional fossil fuels.[2] A number of recently published studies[3] and strategies[4] alike have recently revealed how hydrogen may potentially be the long-sought game-changer the shipping industry has been yearning for.

However, a number of detractors have labelled the IMO as being "too bureaucratic" and showing "a lack of urgency" on cleaning up shipping.[5] Consequently, it is not surprising that countries have begun pushing their own agendas – drafting white papers as well as entering into consultations, with the aim of grabbing the universal hydrogen driving seat.

Canada for example is clearly at the forefront of the hydrogen game laying out an ambitious framework which aims to cement hydrogen as being responsible for more than 25% of their energy demand by 2050. Policies in favour of clean energy, funding incentives, political pressure and the penalisation of fossil fuels are all incentives which Canada is striving to introduce, namely through its upcoming Hydrogen Strategy[6]. This Hydrogen Strategy embodies the Government of British Columbia's plan to achieve net zero emissions and one of the means foreseen to achieve this is to have hydrogen contribute up to 31% of this target.[7] Hydrogen has the potential of decarbonising the transportation sector through its application in fuel cell vehicles which use hydrogen gas to power electric motors without generating emissions. Moreover, as most emissions come from larger vehicles such as ships, aircraft, commercial trucks, and buses amongst others, all of which have the potential to be powered by said fuel cell energy, British Columbia has set out the Zero-Emissions Vehicles Act, pressuring automakers to have 100% of their sales to be zero-emission vehicles until 2040.

The United Kingdom, through the Minister of State for Business, Energy and Clean Growth Anne-Marie Trevelyan, has recently also followed up on its 10 Point Plan for a Green Industrial Revolution by a cash injection of £166.5 million to accelerate the delivery of game-changing technologies needed to further Britain's climate change ambitions by investing in carbon capture, greenhouse gas removal and hydrogen. Such an investment shall assist the UK in reaching its goal of removing 10 megatonnes of carbon dioxide, generating 5GW of hydrogen by 2030, and creating 250,000 green jobs.[8]

Cyprus is another jurisdiction which has announced a number of green incentive schemes within the past

few months. An annual tonnage tax reduction of 30% has been offered to all vessels making use of approved alternative fuels such as methanol, electric power, hydrogen, and biofuels, clearly demonstrating a clear stance taken by a major ship registry in rewarding and supporting sustainable shipping practices. This tax reduction will be available to those vessels which demonstrate a 30% decrease in carbon dioxide emissions, with a 15% rebate also available to vessels which demonstrate a 20% decrease. Interestingly, vessels running on liquified natural gas have been expressly excluded from benefitting from this incentive but may benefit under a separate incentive. Other tax rebates have also been implemented, such as rebates for vessels with lower than required Energy Efficiency Design Indexes.[9]

Unquestionably, some jurisdictions like Japan, South Korea, California, and Europe, have certain competitive advantages in the global hydrogen race not only due to an abundance of every major hydrogen feedstock such as water, natural gas, and biomass, but also due to their leading intellectual property position, dominant energy sector, established pipeline and transportation infrastructure, well-positioned export channels, and proximity to hydrogen import markets.

Malta's renewable energy resources

Whilst Malta's only predominant viable renewable energy source is solar energy, it may nonetheless still take advantage of its strategic position in the Mediterranean Sea by potentially becoming an offshore refuelling station for passing marine traffic.[10] Having kicked off the year by losing out on approximately €400 million of EU funding for its Malta-Sicily gas pipeline project, the Maltese Government has now upped its efforts in developing a hydrogen-ready pipeline which would be connected to the European hydrogen supply grid via Gela, Sicily.

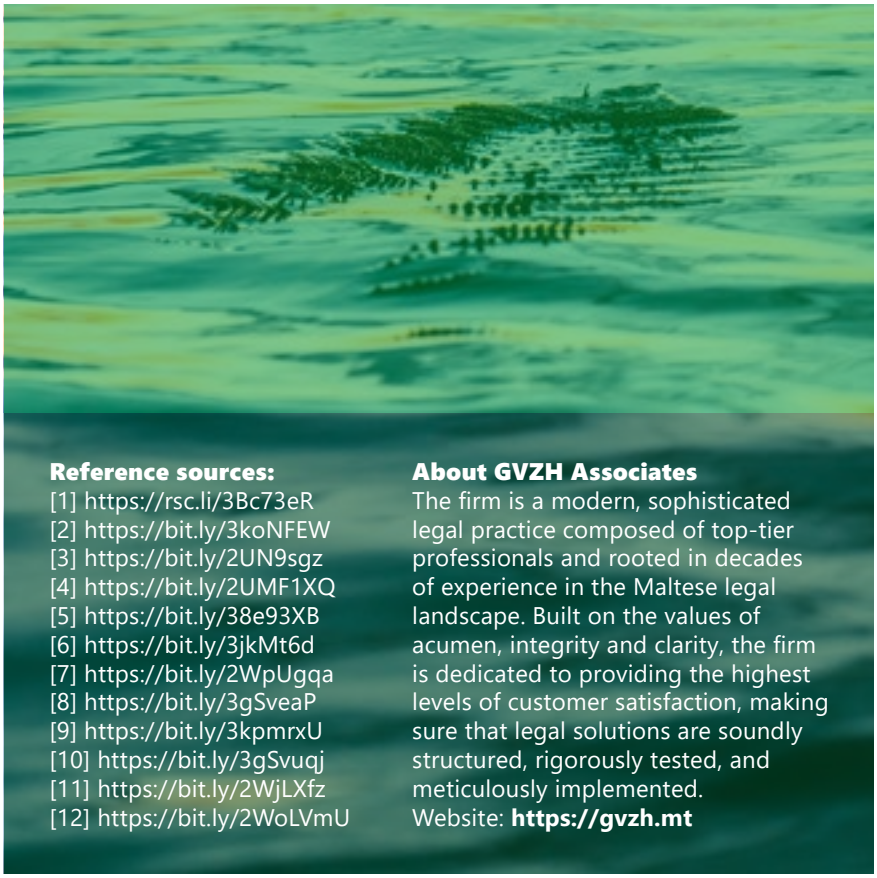
Without a shadow of a doubt, given the fact that Malta's maritime industry has continuously evolved throughout the years and that Maltese-flagged vessels rank sixth worldwide in their contribution towards 5% of all CO_2 emissions arising from the shipping industry every year[11], it is high time to tackle the problem at its roots. Indeed, the time is ripe as the industry is now starting to evaluate alternative possibilities as regards the investment of cleaner fuel, whilst properly preserving air quality.

Understandably, despite the industry's best efforts, one ought to consider that the production of both fuel cell and hydrogen are still in their nascent stages due to low adoption rates, lack of widespread hydrogen refuelling infrastructure and its biggest deterrent – high costs. Consequently, many continue to believe that liquid fossil fuels still seem to be ever present within the foreseeable future.

A Slow Transition

As with any other major change, the key is to slowly transition and evolve rather than blindly jumping into a "revolutionary" abyss. A perfect example of this is the CMA CGM Group with its 2020 launch of its first mega container ship – the CMA CGM Jacques Saade, to be powered by LNG. Prima facie, this delivers a 99% reduction in sulphur dioxide and an 85% reduction in nitrogen oxide emissions, both of which embody various healthcare concerns. Widely acknowledged as the best intermediary solution by major stakeholders in the industry, LNG attempts to bridge the gap between horrid emission percentages and the incredulously high costs of the green revolution. The Chief Executive Officer of the Malta Freeport Terminals, Alex Montebello believes that despite IMO's rather ambitious targets set for 2050, the CMA CGM Jacques Saade "is a window onto the future".[12]

Lastly remains a pertinent question which seems to constantly fly under the radar: What realistic green incentives may Malta implement taking into consideration its limited resources yet still successful maritime story? Whilst tax incentives, multi-million-euro green investments and forward-thinking policies are a much-needed first step, Malta ought to look beyond the latter, and channel our forefathers' wisdom in taking advantage of Malta's strategic position by venturing into the possibility of becoming a hydrogen hub for the Mediterranean. The hydrogen-ready pipeline shall bring with it enormous untapped potential for the Maltese maritime industry, and whilst many believe that this is still decades away, Malta should use this time wisely and start preparing for its very own green shipping evolution, one which we are already lagging so far behind on.



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Draft surveys - a critical tool to defend dry bulk cargo shortage claims

This is an advisory note first published for its members by P&I insurer, Gard, in 1991 and recently updated by Senior Claims Adviser, Alexandra Chatzimichailoglou in October 2021.

Image credit: Gard

Draft surveys of bulk cargoes are a means of checking that the shipper's figures inserted in the bill of lading are correct. The receiver has paid for the quantity stated in the bill and that figure is prima facie, or even conclusive evidence, that the amount stated was loaded aboard. A draft survey may be the best evidence to refute claims for shortage, so it is recommended that draft surveys are routinely ordered for dry bulk cargo.

It is generally accepted that performing a draft survey is not an exact science. Much depends on the weather conditions at the time, the swell, the accuracy of the draft marks and the care which is taken in carrying out the required calculations. Nevertheless, the accuracy of a draft survey which has been properly performed is generally regarded as being up to more or less 0.5 per cent of the final figure for dry bulk cargoes. Therefore, barring exceptional circumstances, such as a high swell during the survey, if the difference between the shore figure and the draft survey figure is greater than 0.5 per cent, it may well represent a physical gain or loss, rather than being simply a "paper" difference. The latter is of course just that – a difference on paper only. Such a difference is usually the result of the inaccuracies inherent in the different measurement methods which are used.

If the shore figure is less than the draft survey figure, any such difference is likely to be relatively unimportant. As we discuss below, the shipowner may be legally bound to deliver the weight or quantity stated in the bill of lading, regardless of the actual quantity received on board and available for discharge. If the vessel's figure for cargo actually received on board (such figure being ascertained by a draft survey after loading) is greater than the bill of lading figure, the shipowner can be reasonably confident that the vessel has received on board at least the same weight or quantity of cargo as the weight or quantity stated in the bill of lading. As mentioned, this is the weight or quantity which he may well be contractually obliged to deliver. Therefore, barring an accident during the voyage resulting in the physical loss of cargo, the shipowner should be able to deliver at the port of discharge a weight or quantity approximately the same as that stated in the bill of lading, taking into account inevitable measurement variations and any loss inherent in the nature of the cargo, for example, weight loss due to drying of cargo during transit.

However, if the figure which the shippers wish to have inserted into the bill of lading is greater than the draft survey figure by more than 0.5 per cent the alarm bells should ring, both on board and in the shipowner's office. The reason is that the quantity stated in the bill of lading will often be legally binding as against the shipowner, whether or not it is in itself accurate, and the shipowner may be prevented (the legal term is "estopped") from arguing that the bill of lading figure was wrong and that the "excess" cargo was in fact never loaded. According to the Hague-Visby Rules the carrier is obliged, upon the demand of the shipper, to issue a bill of lading stating, inter alia, the quantity or the weight of the goods. Once issued, the bill of lading is, subject to any valid qualifying statements on the bill of lading itself, prima facie evidence of the quantity or weight recorded on the bill, but once negotiated, i.e. endorsed, by the shipper in favour of some other third party, it will in most cases amount to conclusive evidence in the hands of a third party acting in good faith. It follows that the carrier must inspect the goods diligently upon receiving them for shipment by conducting draft measurements for bulk cargoes. Following such inspection, any discrepancies or deficiencies should be appropriately recorded in the mate's receipts and, subsequently, on the bills of lading. The proviso to Article III Rule 2 of the Hague and Hague-Visby Rules emphasises that neither the carrier nor his agent nor the Master is obliged to issue a bill of lading recording a quantity of the goods which they had reasonable grounds for suspecting not accurately to reflect the quantity actually received or which they had no reasonable means of checking.

Bulk cargoes are commonly shipped under bills of lading which include wording such as "said to weigh" or "said to be" or "weight, measure, marks, numbers, quality, contents and value unknown". In some jurisdictions such clauses, even if printed rather than typed on the face of the bill of lading, will mean that the bill of lading is not even prima facie evidence of the quantity stated to have been shipped. The burden of proof will therefore be on the cargo claimant to prove the quantity which he says was shipped. Such a clause will normally be upheld by the English courts. Unfortunately, the courts of many other countries will not recognise such a printed clause, on the ground that it merely forms part of the standard wording of that form of bill of lading and has not been added solely in connection with that particular shipment. It is therefore essential that such wording is typed or handwritten on the front of the bill of lading, whether or not the bill of lading form includes such printed words. However, it should be noted that some jurisdictions will not uphold such clauses at all, whether printed, typed or handwritten on the bill of lading. Therefore, clausing with "number, quantity and weight unknown" In circumstances where the difference is not normal or customary, it is insufficient to clause the bill of lading with the words "number, quantity and weight unknown". If the Master has been able to determine the number, quantity or weight loaded, such clausing is clearly not true. Such clausing should, however, still be used in circumstances where the difference is normal or customary.

This brings us back to the importance of a draft survey, which is the only means those on board have of checking the shipper's figure. The latter will usually be based on measurements carried out ashore. The Master will have had no means of checking these measurements. For various reasons, the shipper's figure may not be accurate and if the draft survey gives a figure which is more than 0.5 per cent below the shipper's figure, the Mate's receipt and bill of lading should be clausedto reflect the fact that there is probably a physical shortage of cargo. The clausing should clearly state the draft survey figures and should be as accurate as possible. In order to avoid the clausing charterers may offer a LOI holding the shipowner harmless if they agree not to do so. However, it is important to be aware that such LOI may be unenforceable if a court or tribunal comes to the conclusion that they were given in order to try to persuade the shipowner to help the charterer or shipper to mislead an innocent third party, such as the buyer of the cargo, acting in good faith.

There are of course a number of practical problems which can arise. It may have been agreed that the bills of lading will be issued and signed by the local agent, who will often be acting on behalf of the charterer. The charterer may also be the shipper himself or connected to the shipper in one way or another. The shipper will almost certainly be invoicing the consignee on the basis of the weight or quantity stated in the bill of lading. Nevertheless, the bill of lading is likely to be signed and worded in such a way that it evidences a contract of carriage with the shipowner, not the charterer. In these circumstances, it can be difficult for a Master to ensure that

the bill of lading is issued and signed in the form and wording he considers appropriate (i.e., in strict compliance with the Mate's receipts). What he can do is:

(1) to make sure that his Letter of Authority to the agents specifically states that the bills of lading are to be signed strictly in accordance with the Mate's receipts and

(2) to ensure that the Mate's receipts are properly worded and where appropriate, contain the ship's figures as calculated by draft survey.

It is important to stress that both steps outlined above should be taken. One by itself is not sufficient. These steps will not guarantee that the charterer or his agents do in fact issue bills of lading as authorised by the Master. Nor will they guarantee that the shipowner will have a defence to any claim for alleged cargo shortage which may be made by the consignee. However, they should mean that, if the shipowner incurs liability to the consignee because of the failure by the charterer or his agent to issue and/or sign a bill of lading on the authorised form, the shipowner has a good chance of succeeding with a claim for indemnity against the charterer under the charterparty.

A further point to be made is that, under the Association's Rules, no cover is available for "liabilities, costs and expenses arising out of the issue of a bill of lading, waybill or other document evidencing the contract of carriage, known by the club member or the master to contain an incorrect description of the cargo or its quantity or its condition" (Rule 34 (1)(ix)). Therefore, cover would be denied under this Rule if the club member or the Master knew that the quantity shown in the bill of lading was wrong but nevertheless failed to clause the bill and incurred "liabilities, costs and expenses" as a result of such failure.

It is sometimes the case that the bulk cargo is divided in a number of relatively small parcels – say five separate parcels, each of 1,500 MT. Assuming there is no separation on board between these parcels, the only time at which a draft survey can usefully be carried out is on completion of loading the entire cargo at the specific port. The charterers and shippers will almost certainly want the vessel to leave as quickly as possible but provided the relevant tables have been checked beforehand, a draft survey should not take more than a couple of hours at the most. In the Association's view, the investment in this short period of time, both after loading and before the start of discharge, is worthwhile.

The Association has handled a large number of claims for the alleged loss of agricultural products in particular. Typically, these claims will be for the alleged loss of anywhere between 0.5 per cent and five per cent of the bill of lading figure. There is little doubt that virtually all such claims are "paper losses" and that the vessel delivered all the cargo received on board. Sometimes, however, such an argument is not sufficient to defeat a claim. This is where the draft survey reports show their value, as they serve as an independent record by the vessel of the quantity received on board at the port(s) of loading and the quantity on board before the start of discharge. If the hatch covers have been sealed after loading and these seals are intact before the start of discharge (and the fact that they are intact is witnessed by the consignee), this is an additional indication that no loss of cargo could possibly have occurred during the voyage.

Hard, factual evidence is a vital factor in the defence of any claim and the shortage claims we have mentioned are no exception. The absence of draft survey reports will mean that there is no independent evidence which the shipowner can use to try to show that the weight or quantity stated in the bill of lading was wrong and that, by comparing the figures shown in the draft survey reports, the vessel delivered approximately the same weight or quantity as was received on board at the port(s) of loading. Without this evidence, the shipowner can sometimes do little more than argue that the weight or quantity stated in the bill of lading is not even prima facie evidence of the weight or quantity actually shipped on board, but as we have said, this argument depends heavily on the wording of the bill of lading and a complete rejection of the claim is often difficult to achieve.

As mentioned above, the carrier's obligation to state accurate figures on the face of the bill of lading derives from the provisions of the Hague and Hague-Visby Rules. Shipowners are therefore recommended to arrange for draft surveys, both after loading and before discharge, whenever a bulk cargo is being carried.

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The story of one stuck humble box of fertilizer highlights the global supply chain crisis

*By **Ann Koh** (Bloomberg)*

Somewhere in the world's busiest port of Shanghai, a container of fertilizer sits among tens of thousands of boxes, waiting for a ride to the U.S. It's been on the dock for months, trapped by typhoons and Covid outbreaks that have worsened major congestion in the global supply-chain network.

While the fertilizer has been stranded there since May, the port is just one stop on the long journey from central China to the U.S. Midwest. Delays have stretched a delivery that ordinarily would take weeks to more than half a year. And that time frame will keep expanding, as the goods have barely started the roughly 15,000 kilometer (9,300 mile) trek.

This is the tale of one humble shipment and its arduous journey across the world. While some of the barriers keeping it from its final destination may be specific to this particular case, the journey is emblematic of the inertia that has gripped global trade during the pandemic.

From the U.S. to Sudan to China, container boxes have been lying at ports, railyards and in warehouses as the pandemic rages on. In an industry with 25 million containers and some 6,000 ships hauling them, it's easy to see disruptions as one big headache confined to the shipping world. But each container that's delayed is economic activity that's restrained, heaping costs one box at a time on consumers and making it more challenging to put corn on consumers' tables or deliver presents for the holidays.

The factory

The journey for our particular box of sandy-looking ammonium phosphate began in February. That's when, deep in the agricultural heartland of the U.S. Midwest, a supplier for farmers in Illinois placed an order for eight container boxes filled with fertilizer from factories in central China.

Before the pandemic, a batch like this would typically arrive in Chicago in April, just in time for growers to use during planting season, said Steve Kranig, director of logistics at IM-EX Global Inc., which is in charge of coordinating transport for the fertilizer cargo.

But by May some of the fertilizer was still sitting in Chongqing, 2,400 kilometers west of Shanghai, where it was manufactured. The culprit: a shortage of empty containers for transport. The crucial return of these steel boxes from trips to the U.S. and Europe has been delayed by everything from understaffing to a lack of trucking equipment to move goods out of ports. The Chinese inland city surrounded by mountains is especially hard to reach by sea, reducing the chances of getting one.

It took Kranig months to secure boxes and spots on several ships that would leave from Shanghai. The fertilizer was loaded into the containers, and they were driven to barge vessels on the Yangtze River.

The river

The trip down China's busiest inland waterway took eight days. This container was lucky as it was shipped ahead of typhoon season. Others recently haven't been so fortunate.

Traffic on the Yangtze, which saw a record 2.93 billion tons of cargo pass through in 2019, has been battered as waves of extreme weather swept across China this summer. Authorities have had to close the river during storms, creating severe backlogs at Chinese ports as ships wait days for passage to resume.

While the shipment avoided any flooding disasters, it couldn't escape high transit costs, as freight rates have skyrocketed on international routes as well as along the Yangtze. In addition to high demand for goods as China's economy rebounds, the scarcity of vessels is pushing prices higher. Shipping lines are pulling smaller coastal vessels away to use on long-haul routes like the lucrative Trans-Pacific from China to the U.S.

"There is already a limited amount of containers that run the Yangtze River lane, and some companies are paying top dollar to take any available containers so they don't have to try to move their stuff to Shanghai via non-water routes," said Kranig.

The container finally arrived in Shanghai on May 27 and a truck delivered it to the world's busiest port.

The port

Kranig isn't sure why the container is still stuck in Shanghai while seven other boxes of the shipment found their way to Chicago, but he suspects the chaos that hit Chinese ports is a major factor. The pandemic has thrown shipping into upheaval over the past year and a half, with China becoming a major choke point.

Yantian port in Shenzhen was closed in May because of a Covid outbreak, creating congestion for the entire eastern coast, which in turn caused ripple effects across the global supply chain. Shipping also had to be redirected away from Ningbo, the world's third-busiest container port, after one employee tested positive for Covid.

Typhoons and extreme weather have made matters worse. In July, the stranded container withstood Typhoon In-Fa, shutting Shanghai and other nearby ports for about four days.

Delays could reach an all-time high in the weeks ahead if the trend persists, said Glenn Koepke, a senior vice president at FourKites Inc., a supply-chain information provider.

For now, the unlucky box of fertilizer remains stranded among the stacks at the port, buried like the crate in the final scene of "Raiders of the Lost Ark."

The Pacific and beyond

Once the fertilizer finally hitches a ride to the U.S., the risks aren't over. The Pacific can be a treacherous crossing for ship captains racing to meet deadlines. And when the cargo safely arrives on the North American coast, more headaches await.

The biggest U.S. trade gateway with Asia has been clogged with the most inbound container vessels in more than six months. At one point, 35 ships were anchored awaiting berth space outside the twin ports of Los Angeles and Long Beach, California. Because of the backup, many ships were being diverted to Vancouver.

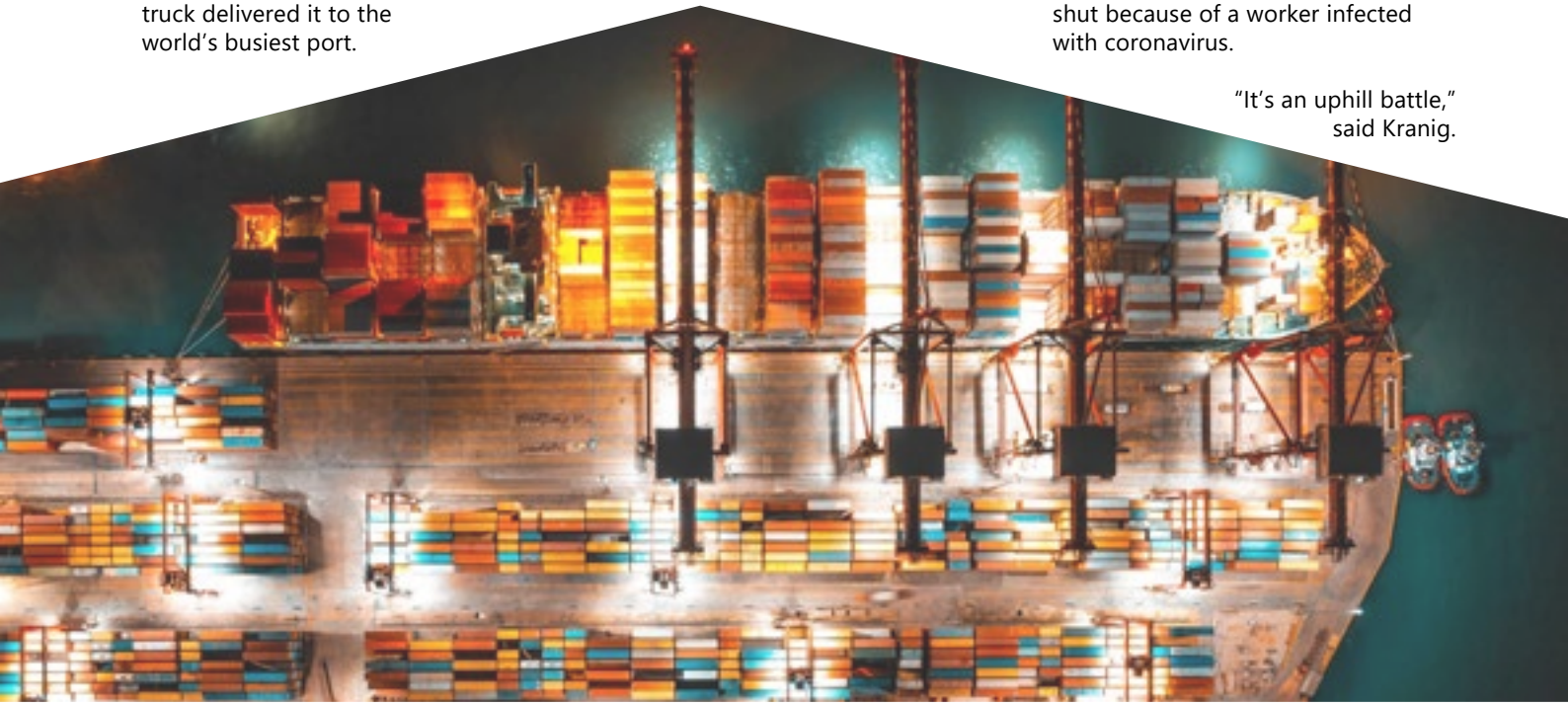
Next comes the inland journey. It could take another one to three months for the container to get from a West Coast port to Chicago by rail or truck.

Another trip

The case of the stranded container seems like the worst nightmare for anyone involved in global trade. But Kranig is back for another round of orders — eight more containers to get from China to the U.S.

The pattern of delays is repeating. Again, there were no empty boxes in Chongqing, so Kranig decided to skip the river route — he loaded the fertilizer in loose, sandy form in open trucks that were driven to a warehouse in Shanghai. Then came news that a part of Ningbo port was shut because of a worker infected with coronavirus.

"It's an uphill battle," said Kranig.



The assistance of Jin Wu and Brendan Murray in preparing this article is acknowledged.

The missing question from the NTSB Report on MV Golden Ray: WHY?

Photo Credit: Petty Officer 3rd Class Ryan Dickinson | U.S. Coast Guard District 7 PADET Jacksonville | Date Taken: 09/09/2019 | https://bit.ly/3qtn7a7

*By **Salvatore R. Mercogliano**, Ph.D.*

Two years after MV Golden Ray capsized while departing the port of Brunswick, Georgia early in the hours of September 8, 2019, the National Transportation Safety Board released their final report on the incident. The accident occurred as the ship, under the supervision of an embarked pilot, executed a 68-degree turn heading out to sea.

With the vessel increasing speed, and 20 degrees of rudder ordered, Golden Ray heeled past 8 degrees and never recovered. The ship maneuvered out of the main shipping channel, but with a list of 60 degrees to port, and an open hatch for the pilot, the vessel flooded and sank to the bottom of St. Simon's Sound. The Coast Guard and tugs responded and quickly removed the pilot and nineteen members of the crew. Rescue efforts cut out the remaining four crew trapped on board.

The 46-page report is filled with information and factual data about the event gathered from eyewitnesses, testimony, and research from NTSB experts. After their review of the facts and their analysis, they determined that:

- The probable cause of the capsizing of the Golden Ray was the chief officer's error entering ballast quantities into the stability calculation program, which led to his incorrect determination of the vessel's stability and resulted in the Golden Ray having an insufficient righting arm to counteract the forces developed during a turn while transiting outbound.

The NTSB ruled out weather, the transfer of ballast or fuel during the transit, malfunction of the propulsion and steering systems, the shifting of cargo, obstructions in the channel, or a fire in the hold. With none of those present, the bureau focused on the actions – or more appropriately, inactions – of the First Mate, who also served as the cargo officer, in failing to properly input the readings from the ship's 21 ballast tanks into the shipboard stability computer (LOADCOM). This error resulted in the incorrect determination of the vessel's stability. With that error, and the ship lacking the adequate metacentric height (GM) to properly right the

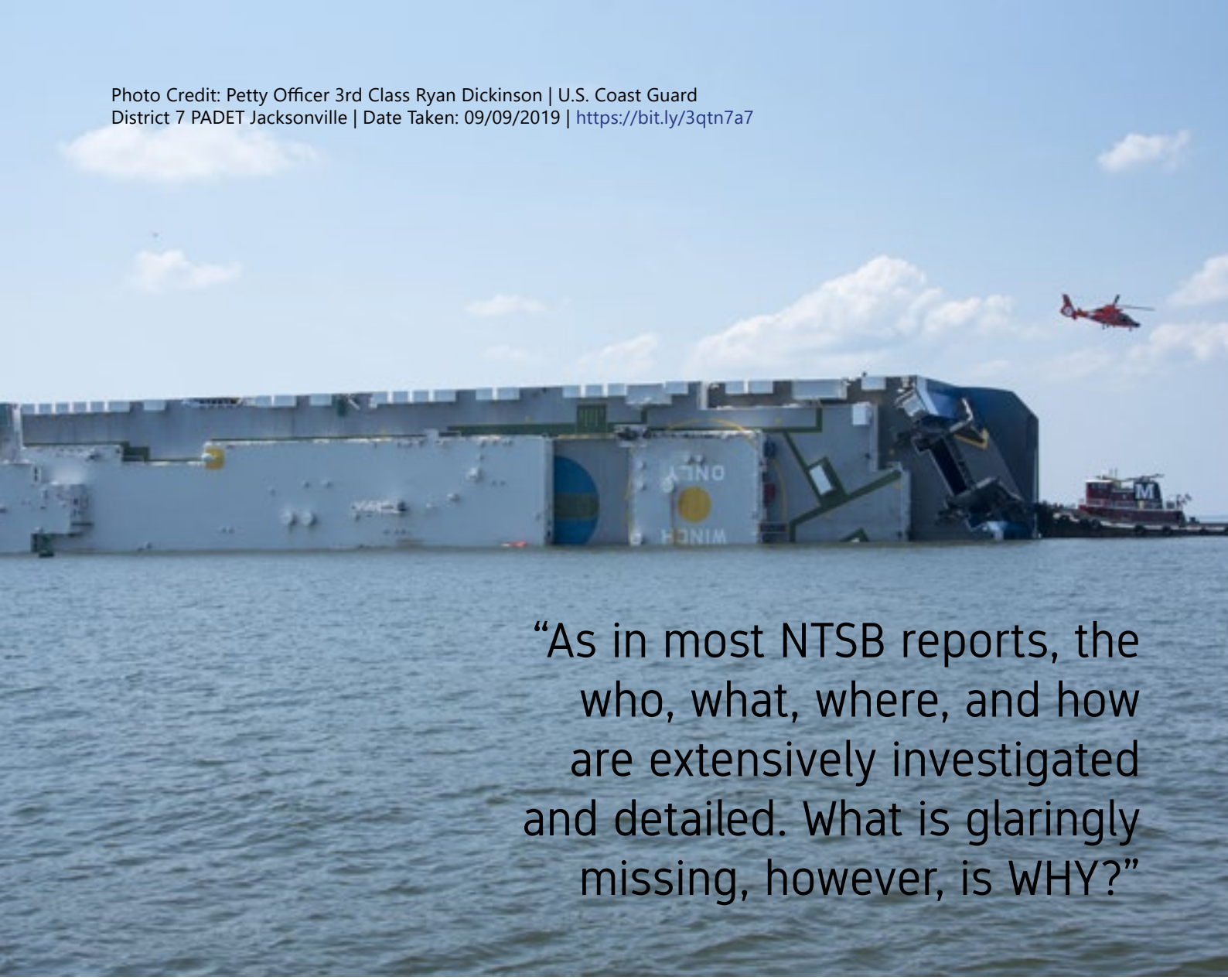


Photo Credit: Petty Officer 3rd Class Ryan Dickinson | U.S. Coast Guard
District 7 PADET Jacksonville | Date Taken: 09/09/2019 | https://bit.ly/3qtn7a7

"As in most NTSB reports, the who, what, where, and how are extensively investigated and detailed. What is glaringly missing, however, is WHY?"

vessel in the final turn toward the open sea as the vessel sped up, it resulted in the centers of gravity and buoyancy rolling the vessel when she heeled past 8 degrees.

As in most NTSB reports, the who, what, where, and how are extensively investigated and detailed. What is glaringly missing, however, is WHY? Why did the Chief Mate, who had been serving on the ship for over six months, with six years in car carriers and ten years as First Officer, fail to input the correct data from the ballast tanks into the LOADCOM. Why, after he ordered the quartermaster to sound the tanks to ensure that the computer soundings matched the actual readings, did he input the incorrect data. Why did he fail to use the automated feature on the system that automatically linked this data directly to the LOADCOM computer? Finally, why did the NTSB not ask these questions?

In the end, the NTSB made two recommendations to the operating company, G-Marine Service Company, Limited. First, to revise their safety management system to establish procedures for verifying stability calculations and implement audit procedures. According to the investigation, the Chief Mate had only 3 to 4 hours training on the LOADCOM, even though he used it to determine the stability of the vessel before and after every loading operation. He was also the only person on board who accessed this information. G-Marine used a firm to develop their load plans, but final information after loading was not received until the vessel sailed; in this case, two hours after the ship capsized.

The second recommendation had to deal with several watertight doors that had remained open during the transit and when the ship took its catastrophic list and led to the flooding of the vessel and the entrapment of the four engineers. Amazingly there were no recommendations or actions that would prevent this accident from happening again. There was no requirement that any car carrier leaving the port of Brunswick, or any US harbor for that matter, provide a statement or report on its stability. But perhaps the most glaring issue not addressed in the NTSB report is why was the data inputted incorrectly?

The Chief Mate gave a deposition following the accident, but he failed to appear or make himself available during the NTSB hearing. The fact that incorrect data was fed into the LOADCOM indicates the mate was grossly negligent in his duties, which is alleged by the fact that he was unfamiliar with the primary tool he would use to solely determine the

stability of the vessel he had served on for six months. Or he intentionally submitted false data and failed to use the automatic link from the ballast tanks to the LOADCOM for fear that it would show that instead of having 8.3 feet of GM, which was required, he was at 6 feet. We again come to the question, that is never asked in the NTSB report, why?

Not once discussed in report is the ship's ballast water treatment plant. It is represented in a graphic on page 46 that details the ship's water ballast system. When Golden Ray sailed into Jacksonville, Florida, the port before Brunswick, it had offloaded 1,500 MT of ballast to raise the vessel to make the required draft of 31 feet. After sailing, it did not take on any more ballast. When it arrived at Brunswick, it also failed to take on ballast as it navigated the 36-foot channel, with a maximum permissible draft of 33 feet. In Brunswick, the ship offloaded and loaded vehicles and increased its cargo weight by 373 MT, but failed to take on ballast; why?

The answer lies in the fact that when a ship loads ballast, the water runs through the ballast water treatment plant. It takes time to remove sediment, silt, and biological organisms from the water before it could be loaded in the tanks. There is less of this material in the open blue water of the Atlantic compared to the brown water of St. Simon's. Additionally, the material gathered in the ballast water treatment plant cannot be discharged in US waters but pumped ashore for further treatment, according to the US Coast Guard.

So, why would an experienced Chief Mate input false reading into the LOADCOM when he knew that the computer soundings had been verified? As the LOADCOM data was destroyed in the accident, we cannot know for sure, but it appears that the Chief Mate intended for the ship to show an acceptable GM, not thinking that the ship would suffer a catastrophic heeling motion. He probably intended to load ballast water once clear of the coast and in blue water. We do not know if the Chief Mate intended to ballast once clear of Brunswick, or even wait until final cargo operations were completed in Baltimore.

The failure of the NTSB to address this issue means that car carriers entering and leaving Brunswick, Georgia currently, and for the past two years, and every other port in the United States, may have officers on board the ship inputting false data to avoid fouling their ballast water treatment plant. Failure to have the LOADCOM computer directly linked to the ballast tank sensors, verified with soundings, and then uplinked to the company's engineering firm to determine the stability of the vessel, and waiting for the verification of the load and stability data were not addressed in this report. Yet, these factors contributed to the accident.

By focusing solely on the Chief Mate, and to a lesser extent on G-Marine Services failing to have an effective ship management system regarding ship's stability, the potential for another car carrier capsizing in US waters has not been eliminated or even substantially diminished.

The public docket for the investigation can be viewed at **https://bit.ly/2XLB1IB** and contains more than 1,700 pages of factual information, including interview transcripts, photographs and other investigative materials for your perusal.

The NTSB Marine Accident Report is available online at **https://bit.ly/3CosGcO**.

I cover this topic and more in my video, ***What's Going On With Shipping? Why Did MV Golden Ray Capsize?,*** over on my Youtube page at **https://www.youtube.com/watch?v=SwQSZa34V1E.**

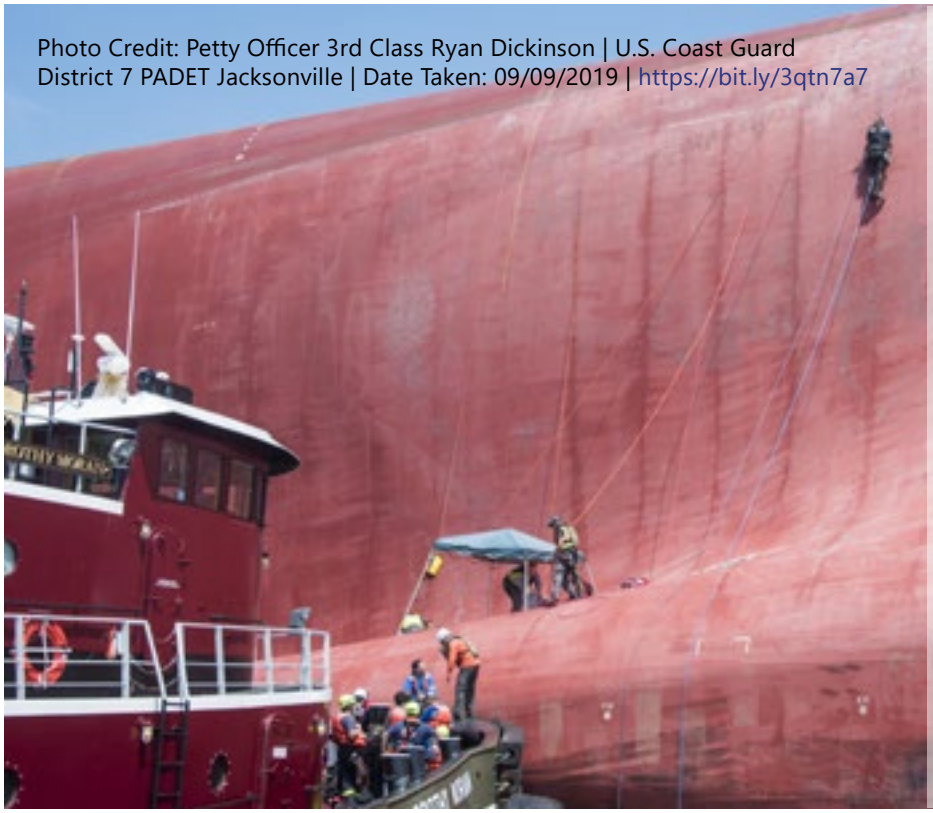


Photo Credit: Petty Officer 3rd Class Ryan Dickinson | U.S. Coast Guard District 7 PADET Jacksonville | Date Taken: 09/09/2019 | https://bit.ly/3qtn7a7

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BOTTOM FOULING:

Whose head does it fall on?

By **Dr. Arun Kasi**

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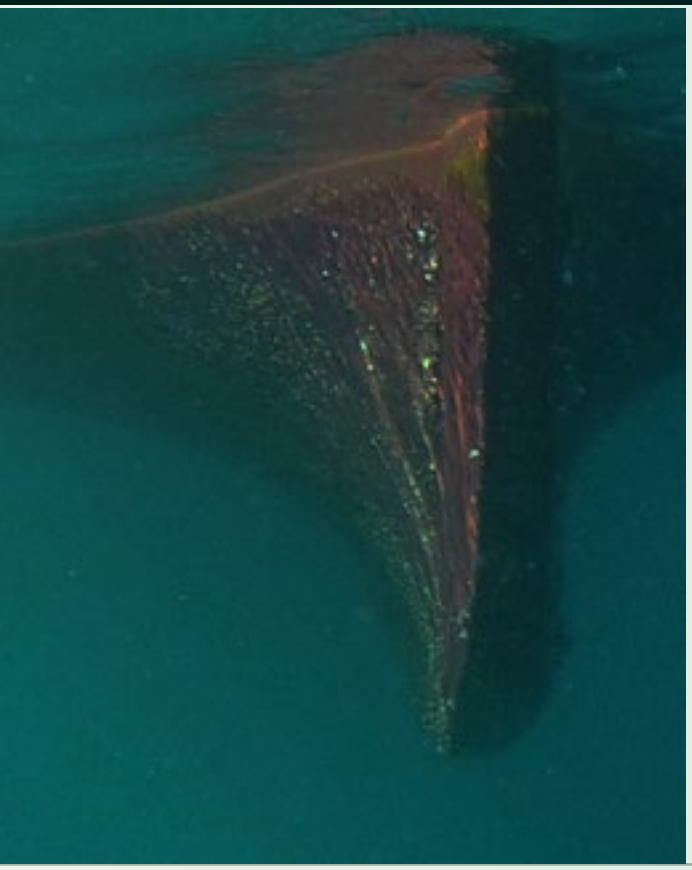

Bottom fouling by marine growth is a subject of frequent dispute in time charters. Bottom fouling increases the friction and thereby affects the performance of the vessel in terms both of speed and consumption. It also necessitates cleaning. The bottom may be in a fouled condition at the time the vessel is delivered or, as it happens more frequently, the bottom may get fouled during the charter service. When the bottom is fouled during the service, often that is due to the orders given by the charterer for a long idle stay on waters, such as at or outside port or at anchorage while awaiting berth or loading. Technically, bottom fouling may also result from slow steaming that a charterer might order.

Various factors influence bottom fouling. They include the idle or near-idle period, the speed that the vessel steams at if not idle, the vessel's distance from the shore, the depth of the water, the temperature of the water, the freshness of the water, sea current, duration and intensity of sunlight, etc. The chance of attracting marine growth is more in tropical waters or near the shore. The chance is less in freshwaters *(eg. Mississippi River)* and in places of high current *(eg. Chittagong)*.

It is not uncommon for vessels to perform 'paint runs' to break the idle period. 'Paint run' means steaming the vessel for a short period, usually a few hours. However, often, a paint run may not yield the desired result. The basic measure that shipowners take to mitigate the risk of bottom fouling and its intensity if that happens is suitably painting the bottom with an anti-fouling coat. Usually, the paint is unlikely to be effective if the vessel is idle or near idle for more than two weeks.

If the bottom is already fouled at the time of delivery, it is not doubted that the shipowner has to bear the loss caused by the consequent underperformance *(The Ioanna)*.[1] In such a case the cost of cleaning is also the shipowner and the loss of time in cleaning are also on the shipowner by off-hire *(The Ioanna)*. If it is necessary to ascertain when the bottom was fouled arises, a laboratory test of the marine growth sample to establish the age and the type of the growth might assist *(The Pamphilos)*.[2] The type of the growth can suggest the time frame during which the growth must have been attached where it is a type that is present only in certain ports that the vessel visited.

The question is more difficult if the bottom is fouled during the charter service as a result of the charterer's orders. The shipowner's standpoint will be that the charterer must bear the consequences because the bottom was fouled as a result of how the charterer employed the vessel. The charterer's standpoint will be that the shipowner must bear it, as the charterer's employment was within the scope of the charterparty and the underperformance was the result of the owner's failure to maintain by cleaning the bottom.

First, we will consider bottom fouling from the perspective of the standard NYPE form (referring to the oft-used 1946 version), the most popular form for dry cargo time charters. Second, we will look at the common modifications made to this form that affect the bottom fouling issue. Third, we will consider the subject from the perspective of SHELLTIME 4 form – the oft-used form for time charters of tankers.

NYPE form

The NYPE form, unlike the NYPE 2015 form, does not have a specific provision dealing with bottom fouling. But a few other clauses have an impact on this issue. Lines 9-10 warrant the speed-consumption capability of the vessel at the time of delivery. Clause 1 requires the shipowner to maintain the hull, machinery and equipment in a thoroughly efficient state throughout the charter service. Clause 8, in its second part, requires the shipowner to comply with the employment orders given by the charterer. It is well accepted that this comes with an implied indemnity by the charterer to compensate the shipowner for losses that the shipowner suffers as a result of the employment orders. Clause 4 requires the charterer to redeliver the vessel in the like good order and condition as delivered, ordinary wear and tear excepted. There may seem to be some conflict between one another of these clauses.

It has been held by the courts that the obligation to maintain includes the obligation to keep the bottom free from fouling throughout the charter service. Accordingly, if the bottom gets fouled during service resulting in underperformance, the shipowner will be liable for the underperformance by breach of the maintenance obligation *(The Al Bida)*[3] as well as for the cost of cleaning *(The Kitsa)*.[4] The impact of this interpretation on cl 4 is that the obligation of the charterer to redeliver in the like condition as delivered does not require the charterer to clean the fouled hull before delivery *(The Kitsa)*.

Some controversy has been seen on the question of whether the vessel will go off-hire for the time of cleaning during the service. Clause 15 reads "That in the event of the loss of time from deficiency of men or stores, fire, breakdown or damages to hull, machinery or equipment, grounding, detention by average accidents to ship or cargo, drydocking for the purpose of examination or painting bottom, or by any other cause preventing the full working of the vessel, the payment of hire shall cease for the time thereby lost ..." In one case, the court rejected an off-hire claim under cl 15 ('any other cause preventing the full working of the vessel') for the time used in cleaning the bottom that was fouled during service *(The Rijn)*.[5] In another, the court admitted off-hire claim for the cleaning-time, however, by reliance on a rider clause rather than cl 15 *(The Kitsa)*. Sometimes, parties add the word "whatsoever" to "any other cause preventing the full working of the vessel". This could give some scope to argue that a wider construction of the off-hire provision to include the time of cleaning the bottom is warranted.

A question that arises in this connection is about the indemnity by the charterer attached to cl 8. The courts have again held this not to favour the shipowner because long waiting in ports and consequent bottom fouling is something foreseeable at the time of the fixture, hence the shipowner is deemed to have taken the risk unless a clause otherwise provides *(The Kitsa)*.

In mitigation of the predicament, shipowners frequently add a rider clause to shift the losses caused by bottom fouling to the charterer. That may be in the form of the BIMCO Bottom Fouling Clause for Time Charter Parties 2013 (or less often the 2019 version) with desired modification or a custom-crafted clause. The scheme of the NYPE 2015 form is that the warranty is a continuing one, unlike the one in the NYPE form. It places on the charterer the responsibility for underperformance as well as the cost of and time involved in cleaning consequent upon bottom fouling where it happened as a result of charterer's order for idling exceeding 15 days or such other periods as parties may specify. There is an option for specifying different periods for idling in tropical/seasonal tropical waters and non-tropical waters.

1 *Ocean Glory Compania Naviera SA v A/S PV Christensen (The Ioanna)* [1985] 2 Lloyd's Rep 164 (HC).
2 *Bulfracht (Cyprus) Ltd v Boneset Shipping Co Ltd (The Pamphilos)* [2002] All ER (D) 94 (Nov) (HC).
3 *Arab Maritime Petroleum Transport Co v Luxor Trading Corp (The Al Bida)* [1986] 1 Lloyd's Rep 142, [1985] 10 WLUK 130 (HC).
4 *Action Navigation Inc v Bottiglieri di Navigation SpA (The Kitsa)* [2005] EWHC 177 (Comm), [2005] 1 Lloyd's Rep 432 (HC).
5 *Santa Martha Baay Scheepvaart and Handelsmaatschappij NV v Scanbulk A/S (The Rijn)* [1981] 2 Lloyd's Rep 267 (HC).

SHELLTIME 4 form

There is no clause to deal with bottom fouling in SHELLTIME 4 form. The performance warranty is a continuing one by cl 24. The shipowner's responsibility to maintain the vessel is stated in cll 1 and 3(a). The effect of these clauses is, among others, to park on the shipowner the liability for underperformance resulting from bottom fouling developed during service. Clause 8 provides the redelivery obligation but without any reference to the condition at the time of delivery. Following the maintenance obligation in cll 1 and 3(a), there will be no obligation on the charterer to clean the fouled bottom before redelivering.

Clause 13 obliges the shipowner to comply with the employment orders of the charterer and expressly provides for indemnity by the charterer to the owner for the consequences and liabilities suffered by the owner as a result of complying with the orders. For reasons stated in *The Kitsa*, the indemnity will not be of avail to the shipowner in connection with bottom fouling. It was so held in one case where the performance warranty on the NYPE form was modified to a continuing one *(The Coral Seas)*.[6]

Clause 21 is the principal off-hire clause. This clause is unlikely to render a vessel off-hire for reduced speed resulting from bottom fouling. However, cl 3(b) may render the vessel off-hire where speed is reduced by breach of the maintenance obligation in cl 1. Thus where speed is lost due to bottom fouling developed during service and not cleaned, cl 3(b) may render the vessel off-hire. The off-hire here is a 'net clause', meaning the hire is off only for the time actually lost by the reduced speed.

New Zealand Bio-Fouling Regulations

New Zealand has introduced, with effect from 15 May 2018, regulations[7] prohibiting entry into its waters of vessels with a bio-fouled bottom. This will raise an additional question as to the time lost in shifting the vessel to a place where the cleaning can be performed – will the additional time be off-hire? The question will yield arguable answers, which it appears has not been addressed and resolved in any award or judgment.

Conclusion

Bottom fouling triggers the issues of underperformance by lesser speed and higher fuel consumption and of the cost of cleaning. In the absence of a charterparty provision to the contrary, ordinarily, the shipowner will be liable for them. This is primarily because of the maintenance obligation of the shipowner. However, under the standard off-hire clauses, likely, the vessel will not go off-hire for the time of cleaning.

6 *Imperator I Maritime Company v Bunge SA; Bunge SA v C Transport Panamax Ltd (The Coral Seas)* [2016] All ER (D) 28 (Jul) (HC).
7 Craft Risk Management Standard (CRMS) implemented by the Ministry of Primary Industries (MPI) under the New Zealand Bio Security Act 1993.

About the article's author

Dr. Arun Kasi is a well-known expert in shipping law. He is a law practitioner specialising in maritime law. He undertakes arbitration work in London and Singapore. He also undertakes court work on a full range of shipping disputes in Malaysia and heads the maritime law firm Arun Kasi & Co based in Kuala Lumpur. He sits as an arbitrator in a few panels. He has authored 6 law books, the latest of which is *The Law of Carriage of Goods by Sea (Springer: 2021)*. His next book will be *Charter Disputes: LMAA Perspective*. He has given numerous talks almost on all branches of maritime law and has authored more than 50 articles on international trade, charter disputes, cargo claims and arbitration. He has been involved in this line for more than 25 years.

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Lead-Acid Battery technology modernizes for Maritime Operations

By ***Harry Valentine***

Lead-acid batteries have existed for over a century with little change. Advances have occurred in lead-acid battery technology to increase storage density, extend usable service life and improve cold weather performance at comparatively lower cost than modern battery technologies. As a result, derivatives of lead-acid battery technology still have multiple applications in modern boating.

The history of lead-acid batteries goes back prior to World War I, when battery-powered passenger vehicles travelled along the public roads. Designers of submarines that operated during both WWI and WWII installed banks of batteries to provide low-speed propulsion over short-distances when the vessel travelled submerged. During later years, a segment of the fishing industry that operated low-speed trolling vessels often used lead-acid batteries to provide vessel propulsion. The batteries also found application in mining locomotives, small industrial locomotives as well as in multi-stop post office and dairy delivery vehicles.

While built in a variety of sizes, the essential chemistry involving plates of lead and sulfuric acid remained unchanged for decades. Lead-acid batteries are temperature sensitive, providing optimal performance between 10-deg C (50-deg F) and 50-deg C (110-deg F). At minus 25-deg C (-15-deg F), the battery will typically deliver 20% of the power that it would deliver at 25-deg C (75-deg F). Repeated deep-discharge from 100% to below 10% of storage capacity greatly reduces service life expectancy. Sulphur build-up on lead plates reduces storage capacity while fully drained batteries often cannot be recharged.

IMPROVEMENTS

Several initiatives were undertaken during the latter part of the 20th century to improve the performance of lead-acid batteries. One approach involved adding small amounts of other chemicals into the sulfuric acid to improve performance at low temperatures. Another approach involved mixing a large proportion of silicon dioxide with the sulfuric acid, except that at the time it reduced battery voltage. The AGM or absorption glass mat approach led to the development of the spiral cell, where plates of lead and lead-oxide separated by the glass mat were rolled into a spiral to increase storage capacity.

Early researchers abandoned the silicon dioxide method, being unable to increase voltage. Many years later, chemists revived the concept and revised the battery chemistry with 5% sulfuric acid and up to 95% silicon dioxide. The revised electrolytic mixture proved capable of operation at minus 40-degrees on either scale, delivering 60% of the power that it delivered at plus 50-deg C (110-degF). The tiny amount of sulphur in the battery greatly increased usable service life by reducing build-up of sulphur on the lead plates, allowing over 2,500-recharges when drained from 100% to just above 50% of storage capacity.

THE ENGINE COMPANY

The United States EPA mandated that fumes from combustion engine crank cases be circulated to the engine intake, for combustion. However, positive crank case ventilation resulted in formation of carbon deposits on engine valves. Efforts at dealing with the problem of hardened carbon deposits led to the discovery that the carbon deposits mimic lead plates when exposed to sulfuric acid and an electrical charge. The discovery led to the development of the carbon foam battery where blocks of carbon replace the lead plates in what is essentially a modified lead-acid battery.

The carbon foam is porous and offers equivalent electric storage capacity of a much larger lead plate, while being resistant to build-up of sulphur deposits that is problematic with lead. It offers the combination of much higher storage capacity than a lead-acid battery of equivalent size and weight, with greatly extended usable service life when repeatedly operated between 100% and just over 50% of storage capacity. There are numerous applications where carbon foam batteries can replace lithium batteries that incur double to 3-times the capital cost while offering only slightly higher energy storage capacity.

BOAT OPERATION

While most operation of small boats occurs in warm weather, a small number of boats continue to operate during colder weather. When air temperature drops to the freezing point of water, salty seawater remains liquid and especially when waves, tidal currents and ocean currents are present. At such temperatures, flowing river water also remains liquid and allows for boat navigation. The lead plated battery that contains 5% sulfuric acid and 95% silicon dioxide is also dubbed the lead-crystal battery and easily sustains the operation of battery-powered, low-speed, short-distance boats during cold weather.

Lead-crystal batteries cost 1/3rd as much as lithium batteries and can deliver over 2,500-cycles of service when repeatedly operated at 50% depth of discharge. At 50% the cost of lithium batteries, the carbon foam battery is currently only available with sulfuric acid electrolyte and can deliver over 3,500-cycles at 50% depth of discharge and over 1,000-cycles at 80% depth of discharge. It can deliver over 65% of its rated power at sub-freezing temperatures as low as 0-degrees F. Other than propulsion, these batteries can fulfil a wide range of other applications on small boats powered by internal combustion engines.

STARTING COLD ENGINES

At sub-freezing temperatures, flowing water remains liquid while stagnant water solidifies. Flowing water and especially flowing seawater driven by ocean current and by changing tides allows ports such as New York City, Newark, Halifax, Quebec City and Montreal to remain operational during sub-freezing winter weather. Commercial truck size internal combustion (IC) engines are often installed into tug boats, fishing boats, ferry boats and port area vessels. Sub-freezing weather often causes difficulty in restarting cold IC engines. In such situations, deep-cycle batteries capable of operating at sub-freezing temperatures become especially useful.

Both lead-crystal and carbon foam batteries can sustain several hours of operation of engine heaters that require battery power to operate a water pump and combustion of a small amount of hydrocarbon fuel. Prior to engine starting, these batteries can also sustain operation of electric oil pumps that pre-lubricate the IC engine. It will then recharge an ultra-capacitor that will dump high starting current into the engine electric starter motor, before blending in to maintain engine cranking prior to ignition. Battery power can also recharge a new spring-loaded engine cranking technology to initially turn over the engine.

PORT SERVICE VEHICLES

Both the lead-crystal and carbon foam batteries have potential application in a variety of port service vehicles. Fork-lift trucks and container picker trucks require considerable counter-weight, enhancing the suitability of banks of heavy lead-based batteries for such service at smaller ports. Some smaller ports use industrial-type battery-electric locomotives for short-haul shunting service. Both lead-crystal and carbon foam battery technologies offer superior cold weather performance than traditional lead-acid batteries, allowing for shunting operations with air temperature at 0-deg F (-18-deg C), when either battery would offer over 65% of energy availability compared to 70-deg F.

There are northern ports such as Montreal that remain operational during the northern winter month and including when air temperatures drop to well below the freezing point of water. At such low temperatures, the performance of some lithium batteries becomes problematic, including incurring difficulty recharging. The lead-crystal battery and carbon foam battery both remain operational at 0-degrees F, with the possibility of a hybrid carbon foam and silicon dioxide battery technology having application during severe winter service.

Thanks to The Maritime Executive where this article was first published.

Safe loading and carriage of containers on vessels other than purpose-built container ships

The P&I Club, Steamship Mutual, has received a number of enquiries concerning the carriage of containers on vessels not primarily designed to carry containers on deck and/or inside cargo holds, such as bulk carriers and general cargo vessels. The Club is aware of at least one instance where carriage of containers in this manner on a bulk carrier has resulted in a container stack collapse within the hold, necessitating a return to port in order to restow the containers.

Steamship Mutual has issued this guidance concerning the risks presented by such operations and to draw attention to the need to ensure that a ship is suitable for the safe loading, carriage and discharge of the cargo and is equipped with the appropriate means of securing such cargo. The note identifies some of the primary information gathering and reporting necessary for considering such activities, along with other considerations of due diligence and risk assessment to mitigate and minimise the potential risks.

It should also be noted that the carriage of containerised cargoes on vessels that are not specifically designed for that purpose may well constitute a material change of risk within the meaning of Rule 6 v. It is therefore important that the Managers are notified in advance of such operations being undertaken in order to reduce the potential for Club cover to be prejudiced.

As highlighted in Risk Alert RA 74 – Containerised Cargo – Stowage and Securing, container stack collapse and the consequential collateral damages to people, environment and property are not uncommon, even in vessels specifically designed to carry containers. For vessels not designed, strengthened, and equipped for the safe carriage of containers, the challenges can be greater, with consideration in regard to retrofitting and/or modifications being required to meet the requirements for safe carriage of containerised cargo.

Guidance and Reporting requirements

Members should evaluate if the vessel and stowage locations intended for the carriage of containerised cargo have the required structural strength and can be adequately adapted for safe carriage of the cargo.

Following are some key aspects for consideration when conducting the primary and any subsequent assessments to ascertain vessel suitability for the carriage of proposed containerised cargo

PRIMARY INFORMATION

1. Class approved stowage and securing plan / Cargo Securing Manual (CSM) incorporating detailed guidance/plans for locations of stowage, types of approved securing equipment to be utilised and the manner of securing.
2. Flag verification of compliance with Navigation Bridge Visibility / SOLAS Ch. V Reg. 22, Vertical and Horizontal sectors of navigational lights (COLREG 72, Annex I/9 and Annex I/10)
3. Verify that carriage, stowage and securing of containers is in compliance with the appropriate sections of the "Code of Safe Practice for Cargo Stowage and Securing" (CSS code) such as Annex I (Safe stowage and securing of containers on deck of ships which are not specially designed and fitted for the purpose of carrying containers) Where ships are not specifically designed and fitted for the carriage of containers on deck, the bills of lading for such cargoes should be appropriately claused to reflect the requirements of proviso (x) to Rule 25 viii.
4. Details of cargo plan including location, types (Reefer, Dangerous goods, etc) and number of containers intended to load. Confirm stowage locations approved and suitable for the type of cargo container intended. For example:
    a. Verify stowage and segregation as per Document of Compliance for Carriage of Dangerous Goods certificate (SOLAS Ch. II 2 Reg. 19)
    b. Confirm Power supply arrangements for reefer containers.
5. Verify adequate inventory of certified and inspected cargo securing gear of appropriate MSL available in good condition
6. Lashing equipment and fittings appropriate to the intended use, with safe access for regular tensioning throughout intended voyage.
7. Where dunnage is utilised:
    a. Suitable to prevent sliding and movement of containers.
    b. Suitable for load distribution / spreading.
    c. Appropriate dimensions, to avoid susceptibility to compression with potential resultant slackening of lashings.
8. If temporary fittings are proposed to be installed/ welded, ascertain details of their strength in relation to stowage and securing arrangements.
9. Consideration for Class approved welders to undertake welding work
10. Is the Loading computer approved and suitable to undertake the stability and lashing (securing) calculations for the cargo intended? If no, are class approved arrangements in place to verify the stability and lashing (securing) calculations.
11. Consider engaging an independent Marine Warranty Surveyor (MWS) for verifying and advising on acceptability of the stowage and securing plan and implementation of actual cargo loading and sea fastening/ securing.

In addition to the above, consider the points below and have appropriate measures in place.

1. Actual implementation of the stowage and securing plan (not limited to the below aspects)
    a. weight distribution (avoid heavy over light)
    b. stack height and stack weight permissible
    c. use of stackers, twistlocks or similar devices, in addition to the lashings, for the intermediate tiers (prevent movement/sliding of boxes in intermediate and top tiers)
    d. use of base-locks or similar devices (to prevent movement/sliding of boxes of the bottom tier)
    e. use of bridge fittings or similar measures
    f. height of the stack and clearance from hatch cover/ tween deck pontoon to:
        i. Avoid contact damage when opening closing hatch covers/tween deck pontoons
        ii. Avoid contact damage due cargo movement in adverse environmental conditions
    g. correct number and application of lashings per lashing ring/pad eyes or similar to prevent overloading of lashing components
2. Weather and routeing to avoid adverse environmental conditions
3. Freeboard and exposure of deck cargo to seas on deck and other environmental conditions such as wind and ice accretion
4. Effects of vessels metacentric height (GM) and vessels motions on securing of the cargo and hatch covers/ tween deck pontoons,
5. Effects of ship's motions on containers themselves (such as lift-off, racking stresses)
6. Safe access to cargo:
    a. for monitoring and managing securing arrangements during loading and discharging, including fitting of twistlocks
    b. can the discharge port accommodate and handle container discharge from a nondedicated container carrying vessel
    c. during voyage to check and adjust lashings etc with consideration to route, weather etc
    d. for atmosphere check, illumination, ventilation of the under deck spaces.
7. Care of cargo and any specialised requirements such as for reefers, OOG (out of gauge) cargo, dangerous goods cargo among others
8. Structural strength – maximum load, maximum tier weight and point loads on the hatch cover, decks, tank-top etc
9. Provision for dovetail sockets or other similar cargo securing arrangements?

There should be compliance with applicable international and local regulations, laws, and industry best practices. Members may also need to carry out appropriate risk assessments, implement procedures, and conduct staff training where necessary.

Illustration photo: Sleipner A platform/Equinor

Measuring the impact of extreme waves on offshore structures

By **Sølvi Normannsen**

The force of waves slamming into offshore rigs, wind turbine pillars, ships or other offshore structures can do an enormous amount of damage.

One of the fundamental – and unresolved – problems with designing these kinds of large structures is being able to predict exactly how they will react to extreme stresses. What exactly is the load from the force of powerful waves slamming into structures?

Solving these challenges will be a major step towards safer and more cost-effective marine operations.

Interaction between load and load effect

"It's crucial to understand the mutual interaction between the impacting wave and the response of the structure," says Rene Kaufmann. Kaufmann is a postdoctoral fellow at the NTNU SIMLab (Structural Impact Laboratory) and one of the researchers in the SLADE KPN project. This is a Knowledge-building Project for Industry (KPN) funded by the Research Council of Norway, in which researchers from SINTEF Ocean and NTNU are collaborating on basic research.

The overall goal is to increase the safety at sea.

Building bridges and better design

It's important to expand what's known about these challenges, but that will require systematic experimental studies of wave-impact scenarios. The project will do exactly that, which should allow researchers to figure out how a structure's behaviour interacts with the loads that are applied to it.

The researchers are developing experimental methods to measure this interaction. Better calculation methods can help the industry when new offshore structures are designed.

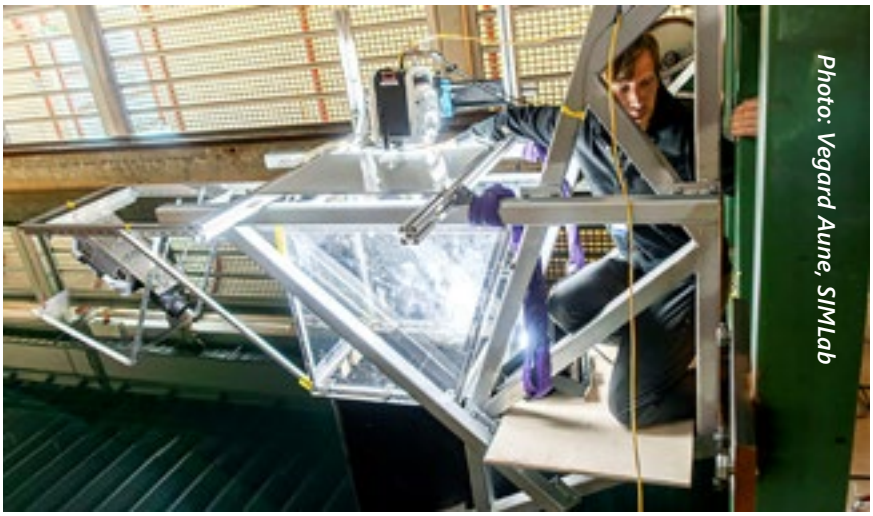

Photo: Vegard Aune, SIMLab

Kaufmann's focus is measuring the impact of local surface deformations from massive loads.

One important aspect of Kaufmann's research is to make sure the measuring equipment itself doesn't affect the structure's properties. Researchers at SIMLab have used their experience with camera-based techniques to measure the structural response to loads from impacts and explosions.

But more on that later. First we're heading out on a trip out into the Norwegian Sea.

"Huge wave on its way"

The monster horizontal waves that can slam violently against ships and other structures at sea originate from what are called 100-year storms.

In 1995, the offshore platform "Draugen" was put to a serious test at the Halten Bank area, on the Norwegian Continental Shelf. On 12 March, a hurricane swept through the Norwegian Sea, and platform manager Magne Gundersen received an unexpected phone call from the Aberdeen Weather Center.

The Center warned of a massive wave on its way to the platform. The crew had only 30 minutes to prepare. Production was immediately stopped. Gundersen gathered the crew of 134 people into the gymnasium in the interior of the platform. There he reassured everyone by expressing his unconditional trust in the engineers who had designed the Draugen platform.

Platform shook under crew

"Just after I said those words, the loudest, most shivery and violent 'BANG' I have ever heard rang out," Gundersen said in an interview after the incident.

"We started to feel an increasingly large amount of movement under our feet. (…) [T]he room kept pitching. I couldn't tell exactly how long it lasted but my guess would be more than a minute," he said.

First the huge wave had hit the shaft, before it lifted itself up under the deck with tremendous force. The distance between the still water level to cellar deck of the platform is 30 metres.

Into the physics of wave slamming

A key question for SLADE is: What is the effective stress of these kinds of loads?

"We have to understand the load before we can study the details of a structure's behaviour," says Vegard Aune, an associate professor at SIMLab.

Another incident that contributed to the motivation for SLADE occurred in the North Sea in December 2015, when a large, steep wave thundered into the COSL Innovator drilling rig. The platform was designed in accordance with regulations, but still failed to withstand the load.

The incident took one human life and four people were injured. The rig was also extensively damaged.

Understanding load to predict load response

"Accidents like the COSL Innovator event raise the question of whether we fully understand the underlying physics of loading during violent wave slamming. It's crucial to provide construction engineers with detailed knowledge about loads, the underlying physics and the materials. All this is key to understanding and predicting how structures respond during extreme stress," says Aune.

Controlled model tests

Kaufmann, along with fellow researchers Bjørn Christian Abrahamsen from SINTEF Ocean Transport & Energy and project engineers Trond Auestad (SIMLab) and Jens Åge Havmo (SINTEF Ocean), recently spent several days in the Ocean Basin Laboratory at Tyholt in Trondheim, where they conducted wave slamming tests on small-scale models.

The researchers tested the measurement technique they had worked out, which involves measuring the load as the wave strikes the structure.

Today, this is measured with point meters that rely on wires. The SLADE team has been exploring the use of lasers and camera techniques that not only provide measurements at a given point, but can potentially determine in time and space how the entire incoming wave field evolves as it approaches the structure.

This development is leading to another goal for SLADE, that of bridging the gap between physical tests and reliable computer simulations.

The researchers recreated breaking waves in the basin, causing them to slam into a flat steel plate. The plate was integrated into a steel pillar representing a scaled-down steel structure at sea.

Measurements at the micro level

Kaufmann has a background in flow mechanics. He is an expert in deflectometry, which he describes as a "full-field surface slope measurement technique." The technique has high sensitivity and enables deformations to be measured down to the micrometre level.

Kaufmann received his doctorate from the University of Southampton, UK in 2019. The technique he uses in SLADE is related to his dissertation.

Scientists who complement each other

SLADE's project manager, Dr. Øyvind Hellan, describes the project as an "inspiring collaboration between research environments that complement each other."

Hellan is Vice President for Research at SINTEF Ocean. He says that when SLADE was launched, they wanted to focus on gathering a top team of Norwegian researchers. SINTEF Ocean, a world leader in marine technology and marine bioresearch, teamed up with NTNU's Department of Marine Technology and SIMLab at the Department of Structural Engineering.

IMT is a world leader in education, research and innovation for technical systems in the marine environment. SIMLab carries the same status within the field of load-bearing structures subjected to extreme loads.

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https://norwegianscitechnews.com
and reproduced here with thanks.

Scuppered dreams and abandoned boats

- an environmental threat in pictures

As long ago as 1999, the US based naval architect, Eric Sponberg, raised the alarm within the recreational boating community with his outspoken article entitled 'Recycled Dead Boats.' To quote his actual words, he said: "The industry has 'shot itself in the foot' by building boats out of such a durable and almost indestructible material as fibreglass (GRP.)"

Almost a quarter of a century later, the Centre for Aquatic Environments at Brighton University in the UK has picked up the baton and recently produced a video which vividly emphasises the same ongoing challenge. The film features academic research information, and real-life contributions from various stakeholders around the world, clearly making the point; that not enough has been done to address the threats to the environment, or to the future sustainability of boating.

Of course, the root of the problem goes back even further than Sponberg's intervention. As mentioned in the video, this problem has been building up and hanging over us for a long, long time. Legend has it that the first 16ft fibreglass dayboat was built in 1953 in the USA, and the material was chosen as it had been successfully used for coffins which would never rot away under the ground. How sad it is that nearly 70 years later, there are still literally thousands of fiberglass boat hulls, either whole or cut into pieces, going into landfill, where they will still be in a thousand years' time!

This simply can't go on, and it's not even the worst case, although it's bad enough. Sadly, due to the lack of facilities and funding, some boats are being dumped in forests, sunk in rivers, lakes and oceans, or just left to deteriorate and turn green with mould in marinas and harbours. So, a leisure marine industry that sells dreams to its buyers, must now find a way to leave a happy, economical and environmentally sustainable ending to those dreams. Not for the want of trying!

Unfortunately, this situation still exists, despite thousands of words being written on the subject in just about every boating publication. And several dedicated forums being held specifically on the topic at boat shows such as Dusseldorf, IBEX in the USA, and at METSTRADE (supported by ICOMIA,) where it has been actively on the agenda every year since 2015.

During last year's End-of-Use Boats Panel Discussion, which was broadcast during the METSTRADE Connect virtual event, Dr. Corina Ciocan, principal lecturer in Marine Biology at Brighton University, shared some of the research information that has encouraged her team to compile this highly illustrative video production. Corina said that she had observed two clearly defined components to the problem of boat disposal.

The first, being the impact of abandoned boats, and their effect on pollution of the marine habitat in estuaries, coastal zones and even coral reefs, seagrasses and mangroves etc. The second and probably more damaging effect, is that of GRP as a dust which is emitted when the material is cut and sectioned during the disposal process. She commented on what she had discovered as the inevitable fate of this polluting dust, basically a fine micro-plastic, which quickly reaches the marine environment where it is likely to be ingested by marine creatures and various organisms.

Progress is being made, but far too slowly

In this short summary, it's only fair to say that there has been some progress in recent years. For sure we have seen more local actions, more ways to re-use waste glassfibre composites, a few successful boat breaking businesses, and more recently some funding becoming available, either from government sources, or from within our own industry.

The APER boat disposal network in France supported by the government, and partly funded from within the French recreational boating industry is one of the best examples, although it has taken about 8 years to fully establish since its inception. In the USA, Scandinavia, Italy and the Netherlands various methods of up-cycling fibreglass waste into reusable materials with a commercial value have been successfully trialled and tested. On the east coast of the US another progressive project has taken shape. The Rhode Island Marine Trades Association has successfully disposed of 18 tons of old broken-up boats via the cement kiln co-processing method. This basically puts the GRP waste back into another high-volume construction material rather than dumping it in landfill.

Please watch and share the video... go to **https://youtu.be/K3zbtSUqUdI**

Full marks to the Brighton University team for bringing this important topic so graphically alive for the sake of the boating industry, and for the environment. Let's get the video seen by everyone who can influence the decision-making process, so that we can move forward with developing solutions at a much faster pace. Future generations of boaters will thank us for it!

Article written by Peter Franklin, YachtMedia

Green building - the future of boatbuilding?

*By **Sam Jefferson**, Editor of Sailing Today*

Paying lip service to 'green' concepts is one thing but boatbuilder, Friedrich Deimann of Greenboats, is doing it in earnest, as Sam Jefferson discovers.

"A couple of years ago when I started out in this business people patted me on the back and said 'good luck with that'," Friedrich Deimann of Greenboats reflects: "Now, things have changed; people say 'why aren't more people doing this?' or 'how can we use these methods on mass produced yachts?" Deimann is talking about his innovative new approach to boatbuilding which involves taking the basic premise of fibreglass boatbuilding using laminates of fibre glued together and replacing the toxic glass matting and epoxy with sustainable alternatives.

Anyone who has been to a boatyard recently and seen the many small boats abandoned, decaying but stubbornly refusing to biodegrade will understand how important this concept is. At present, Friedrich Deimann and his company Greenboats is at the forefront of this new technology.

Friedrich Deimann of Greenboats in action

"I was always into sailing from a young age," Friedrich reflects: "As soon as I left school I went to started an apprenticeship in boatbuilding. It's something I enjoy, but, let's be honest, working in fibreglass is horrible – a really unpleasant materiel, not to mention unsustainable.

"My main motivation was therefore to find a replacement for glassfibre, which is why I started some research. Given my origin in wood constructions, I looked for other natural materials that can provide the same strengths as glass fibre. In my research I found that flax has been used for centuries, but not much in composite despite its incredible characteristics."

Starting with that basic premise, Friedrich moved forward working with the University of Bremen in the early research phases of the project. It was while Friedrich was casting about for ideas that he struck up a partnership with Alex Vrolijk, the motormouth entrepreneur behind Bente Yachts whose father was one half of the influential Judel/Vrolijk design house. "This was back in 2013 and, back then, Bente Yachts wasn't much more than an idea and some very shouty marketing.

"Alex was very open to new ideas, however, and we agreed to develop a 'green' version of their first yacht, the Bente 24. I therefore set to work in my garage to build the boat. As you can imagine, this was far from easy – it was a double garage but still…

The result was a very pleasing yacht; here you had a 24' boat constructed entirely out of hemp, with layers of flax bonded with Greeepoxidharz, a linseed based epoxy equivalent. The decks were constructed from cork and the sails were also fully biodegradable.

I actually first met Friedrich in 2016 when test sailing the Bente 24 Green on Lake Constance. I was impressed. There were, however, issues not with hull, but the price.

"Perhaps the main problem was that the Bente Green was actually up against a standard production Bente 24. The hulls of the standard 24 were built in Poland using tried and tested 'quick and dirty' production techniques.

"On the other hand, we were building by hand in a garage, learning on the job in some respects and factoring in German labour costs. It's a different game and it meant the price comparison was not good and, while many admired the Bente Green, they would end up going for a standard fibreglass model.

"In that respect, it was probably a mistake having a green option up against a standard version and that's not a mistake we were going to make when we launched Flax boats."

Sea change

A lot has changed since I first met Friedrich in 2016; environmental activists and a spate of natural disasters associated with climate change have pushed green issues much further up the agenda and the result is that, when Friedrich launched his all new Flax 27 day sailer at this year's Dusseldorf Boat Show, interest was high.

"A lot has changed in a handful of years," Friedrich reflects: "It's not just an idea, it's a movement. For me as a boatbuilder, that manifests itself in two different ways essentially; we are slowly experiencing a shift from cost focus to a focus on decreasing the environmental impact because of more environmentally conscious individuals (bottom up) and a top-down pressure due to changing legislations. So, as in any other industry, boats will have to be built more sustainably in the future."

If the environmental credentials weren't exciting enough, there is the boat itself; the Flax 27 is a really elegant day sailer that promises sparkling performance. "Next to sustainability and the performance, aesthetics represents the third pillar that our own products are based on." Friedrich enthuses: "Sailing on our boats not only feels exciting because of its high technology standard and performance but also offers a truly aesthetic experience. Flax fibre has a beautiful wooden look and the cork fillings come with a unique damping quality. That's why we always say that sailing on the Flax 27 is a very tangible experience of the sustainable high performance."

The follow up to hull number one also promises yet more performance, as Friedrich explains: "We want to push the boundaries of eco sailing and continue to work with the University of Bremen on new lightweight materials. As an example, we've been working on reinforcing linen fibre with Grafine to create an ultra lightweight laminate.

"So the idea for the next 27 is to produce an even lighter example that really showcases the performance potential of a sustainably built yacht."

The future

The key for the future in Friedrich's mind is to push production costs down so that it is easier to compete with more traditional methods of construction: "As I said before, modern fibreglass production is done on the 'quick and dirty' principle. If we are going to compete, we need to increase the efficiency of our production techniques in order to compete on a level playing field with those production techniques.

It's a challenge, but I am learning all the time The last 10 years have been an enormous learning process, learning from the industry, the materials, and the people that I worked with.

Flax – the facts

Greenboats are constructed using sandwich construction in much the same manner as a traditional fibreglass yacht. The big difference is that flax laminates are used instead of fibreglass and the core of the sandwich is cork instead of foam. Compared to other natural fibres available on the market, flax fibres are not only by far the most tear-resistant, but also comparable in, tension and buckling to conventional glass fibres. They also supply valuable linseed oil, with which a large part of the oil base in the epoxy resin can be replaced. Cork is used not only in the core but on the deck and this, again, is fully sustainable as it is taken from cork oaks harvested in Spain and Portugal. Cork oaks do not have to be cut during harvesting, so the use is very gentle for trees and forests. Instead, they are peeled every nine to twelve years, which does not suffer from the tree. As a material, cork is light and flexible, adapting to almost any shape. In the event of a leak, cork has additional advantages due to its water-repellent properties.

ABOUT GREENBOATS

The future is lightweight and the future is sustainable is Greenboat's slogan.

Greenboats is dedicated to developing innovative products which can create value for their customers in terms of their demand on the basis of costs, performance but sustainability.

Greenboats is doing this by creating an infrastructure centered around the creativity of highly skilled craftsmen that are able to act out of intuition and are supported by excellence in Engineering, R&D, and an environment that encourages unconventional thinking. Managing sustainability will become the most important competitive advantage.

Web site:
https://green-boats.de

THE MARINE SURVEYOR SEARCH APP

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Could disruptive technologies in container ports and terminals be a game-changer?

A market opinion provided by Drewry

The container ports and terminals sector is witnessing increased adoption of innovative technologies especially after the recent consolidation in the liner industry which has intensified competition among terminal operators. This has encouraged them to use disruptive technologies to lower their per unit handling costs.

Capacity expansion programmes (such as increasing berth length, installing additional quay cranes and extending yard facilities) and vertical integration strategies (such as offering end-to-end services) are aimed at supporting the topline. However, the introduction of game-changing technologies, such as automation and digitalisation, are focused on reducing operating costs below those associated with conventional operating modes.

There is no standardised technology solution in the real world. The level of automation varies from terminal to terminal as it depends on various factors including labour costs, market perception / desire to adopt the advanced technology, available resources (financial and technical) and the size of the terminal. Large terminal operators are more likely to adopt automation, but many smaller players with high labour costs are adopting it as well.

While a few fully automated terminals are in operation, the more common approach has been the targeted adoption of automated processes and/or equipment to solve specific problems. For many terminals the initial focus has been on automated gates, where the introduction of optical character recognition (OCR) and high-resolution digital imaging technology improves the speed of truck check-in / check-out processes, provides a robust damage inspection process (resulting in reduced claims), and results in material labour cost savings. Other smaller-scale technology interventions, which are focused on assisting rather than replacing equipment operators, are also moving the sector towards a more automated future, albeit in more manageable steps which can reduce operational disruption and help overcome resistance from labour unions.

We believe if more opensource code architecture is adopted, the industry will be able to combine these smaller automations into larger, more integrated systems, which can then result in seamless interaction across various terminal operations (vessel loading / unloading, ship-to-yard transfers, receipt, and delivery and gate operations).

To explore further, we will be looking at this from a cost perspective, highlighting recent examples and key future drivers.

1. Labour cost savings can result in improved and more stable EBITDA margins

Automating a brownfield project is potentially more expensive than a greenfield one. While both require significant initial capital outlay, the upgrading of existing systems is not only complex but could also require temporary halting of the current operations, adding to the overall cost of automation. Despite the initial outlay, the main driver for automation (for brownfield and greenfield projects) is to reduce the operating cost per container handled.

This leads to the question: To what extent should a terminal operator automate the existing equipment, systems and processes? This will depend on the long-term gains from automation, (reduction in operating cost / higher productivity vs the initial capex outlay). Our research indicates that larger terminals with higher volumes and high levels of utilisation have taken a more positive stance on automation compared to smaller terminals with limited volumes which have focused more on digitalisation of administrative processes.

To ascertain the financial impact of automation, we looked into APM Terminal's (APMT's) 2020 cost structure. Labour, at 48%, is the highest component of APMT's operating cost. Terminal automation has the potential to lower this cost significantly as automated terminals require less labour to operate. To quantify the impact, we ran three scenarios on APMT's labour cost, wherein we reduced the cost by 30%, 40% and 50%, respectively. Every 10 percentage point reduction in labour cost, added 320 bps to the EBITDA margin. Therefore for 30%, 40% and 50% reduction in labour cost, 2020 EBITDA margins increased to about 41%, 45% and 48%, respectively (vs reported EBITDA margin of ~32%).

Additionally, lowering labour cost (which is generally inelastic) will also make the cost structure more variable, adding to the resilience of the company's margins. In other words, a higher proportion of variable cost lowers the operating leverage, which in turn translates into higher stability of margins. However, lowering labour costs, via pay-cuts or job-cuts, unsurprisingly leads to friction between the company's management and labour unions as roles are re-defined. An automated terminal typically employs fewer manual grade workers, but creates additional higher skilled IT-focussed roles, which can result in job losses for workers that are unwilling or unable to upgrade their existing skills.

2. Port congestion is a driver for change

It has been a challenging year for the ports and terminals industry, with supply chain disruption resulting in an unprecedented level of port congestion around the globe. One of the issues that has been highlighted is the negative impact that congested storage yards have on overall terminal performance – contributing to reduced vessel productivity and increased gate turn times.

DP World (DPW) is committed to technological innovation across its portfolio of terminals and its joint venture BOXBAY System provides an innovative container stacking system which can scale-up the capacity and efficiency of its yard storage system, resulting in material improvement in terms of moves per hour of containers in and out of the storage stack.

BOXBAY – An innovative container stacking system

BOXBAY is a joint venture between DPW and German industrial engineering specialist SMS group. It was built on the High Bay Storage (HBS) system, which was originally developed by SMS group's subsidiary AMOVA for handling metal coils that can weigh up to 50 tonnes each in racks that can be as high as 50 metres. SMS group altered the technology according to the requirements of the container port industry before installing it at the new Terminal 4 facility in DPW's flagship port of Jebel Ali.

The key features of the BOXBAY system are:

- It is an HBS system where containers are stored in slots of a steel rack which can be constructed up to 11 tiers high, while in a conventional yard, containers are stacked between three and six boxes high.
- The higher stack height means that the BOXBAY operated yard would typically operate in an area of approximately one-third the size of a conventionally operated RTG/RMG terminal.
- A fully automated system improves the efficiency of terminal operations as the individual container can be accessed without moving others.
- The system is designed to be fully powered by solar panels on the roof, which also reduces the operators' carbon footprint

In August 2021, DPW announced the trial test results of the BOXBAY storage mechanism with capacity of 792 containers. The company confirmed that more than 63,000 container moves have been completed since the facility was commissioned in early 2021.

The six-month pilot indicated higher-than-expected performance levels across the terminal.

Average 19.3 moves per hour at the waterside (between BOXBAY cranes and automated straddle carriers).

Average 31.8 moves per hour for the landside truck cranes.

The pilot study also generated better-than-expected operating cost savings with energy cost savings of almost 30% and significantly reduced maintenance costs.

Despite the high upfront costs associated with the BOXBAY structure and system, capital cost savings can be realised with the high levels of productivity will likely reduce the number of automated straddle carriers needed and the reduced footprint will lead to material savings in land preparation. This will be key for DPW where future phases of expansion at Jebel Ali will require costly reclamation.

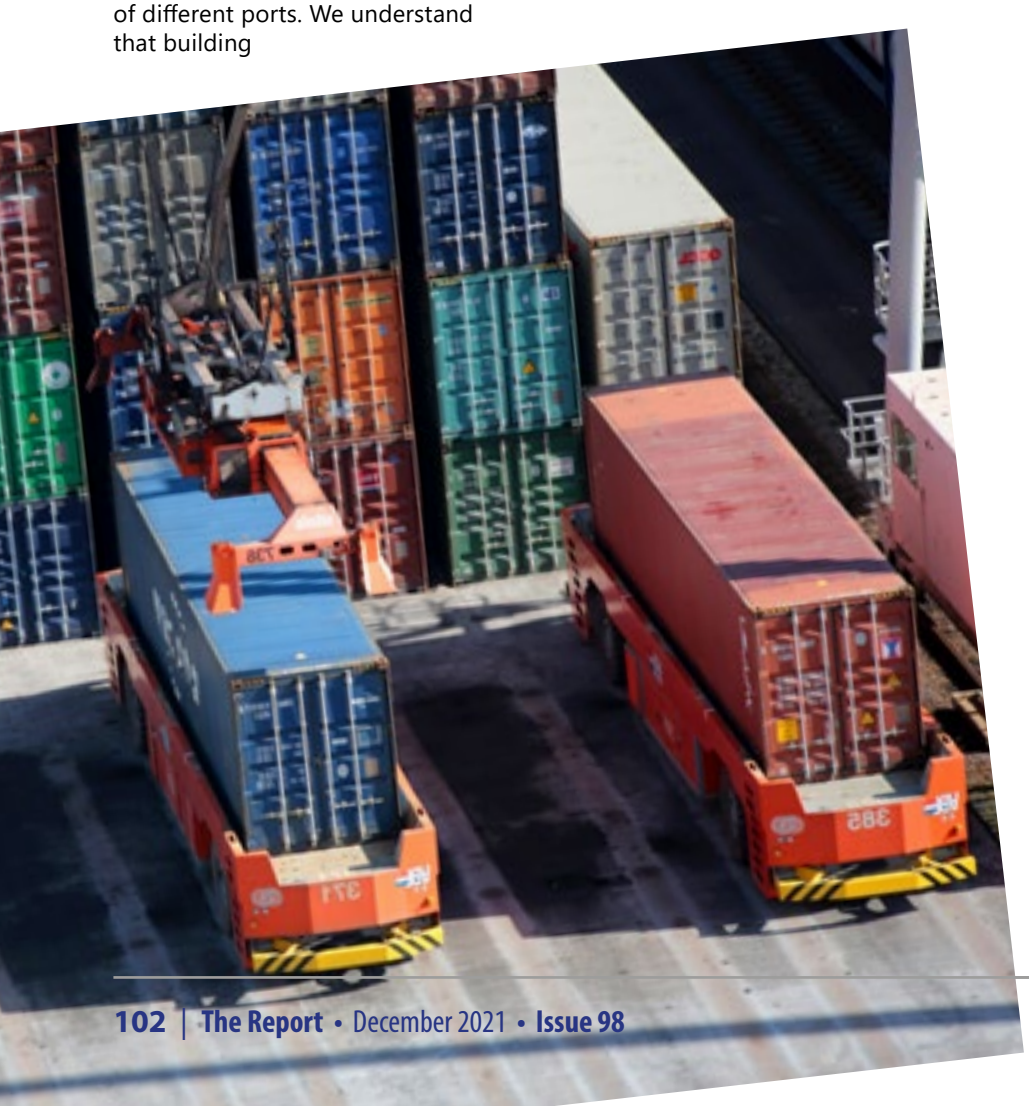
We believe BOXBAY technology can easily be replicated across ports and terminals. Moreover, the flexibility to increase / decrease the stack size makes the idea highly adaptable and a fit within the varied requirements of different ports. We understand that building such a system requires a high initial capital outlay but efficiency gains and associated cost savings (lower labour, energy and maintenance costs) should outpace the initial investment in the mid-to-long term.

3. Higher appetite for automation by terminal operators

BOXBAY is not the only example as many such automation projects are being tested / implemented by leading global terminal operators. In 2020, Cosco Shipping Ports Limited (CSP) announced the successful trial runs of its automated driverless container truck operating system at the port of Xiamen. The technology is being developed jointly by CSP, Dongfeng Commercial Vehicle Co and China Mobile (Shanghai) Information Communication Technology Co.

Similarly, China Merchants Ports (CMPorts) has deployed the digital perception radar in a fleet of autonomous trucks operating in its Mawan Smart Port in Shenzhen. The system ensures that an autonomous truck arrives in the correct position, within 5 cm, for automated container movement between the ship and storage or departure areas.

Large regional operators are also beginning to explore new technologies. Westports Holdings is expected to procure automated cranes and trucks for its planned expansion project – berths CT10 to CT17).



4. Tightening of port capacity should further support the automation drive

According to Drewry's estimates, the global container port capacity is projected to increase by 2.5% on average per year to reach 1.34 bteu in 2025, about half the projected average 5% increase in global demand over the same period. To accommodate higher global demand, average utilisation rates are forecast to increase from the current 67% to over 75%.

Under normal operating conditions, 75% utilisation at a port or terminal is not very high. However, in the present stressed situation where the sector is still struggling with congestion, tightening of port capacity is expected to support the drive towards automation and digitalisation which could be key for enhancing productivity and capacity of existing terminal assets.

Rising equipment orders is indicative of a strong automation drive

In the current scenario of lower interest rate and booming international trade, terminal operators are considering automation as an option to strengthen their operating profit. Cargotech, a leading port equipment provider, recently announced that its Kalmar business segment received record orders worth EUR 600mn (USD 507mn) which is up 105% YoY in 2Q21, translating to an orderbook of EUR 1.3bn (USD 1.1bn) at end 2Q21 (+42% YoY). Kalmar offers cargo handling equipment and automated terminal solutions, software and services used in ports, terminals, distribution centres and other related industries. The record orderbook is a further indicator

of the current favourable market conditions for port equipment and automated solutions. Overall, the company estimates that the current size of the global terminal equipment market is EUR 1bn (USD 845mn), which is expected to double in the next decade.

Emerging trend of port operators acquiring companies that facilitate automation and digitalisation

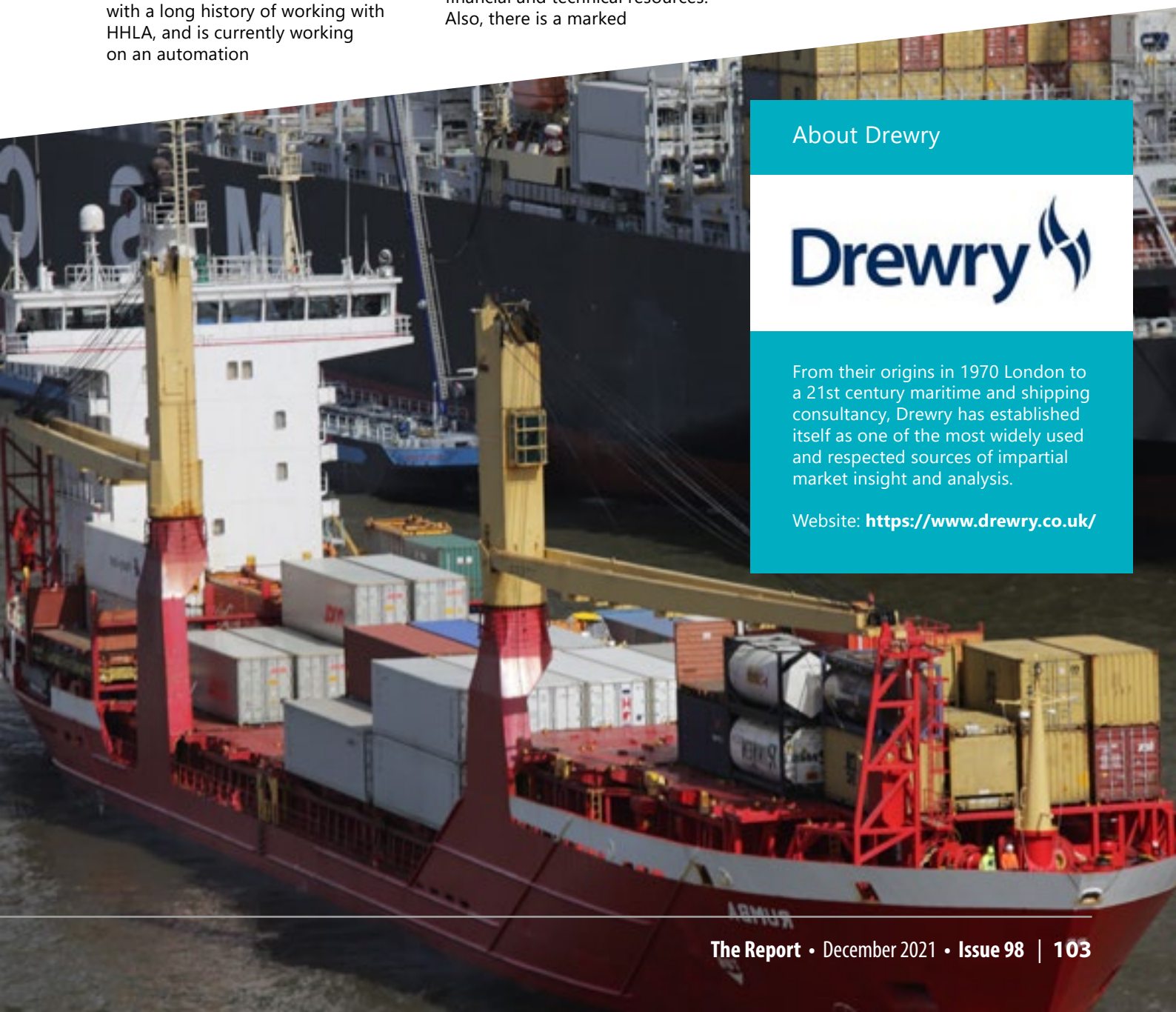
While some terminal operators are directly investing in innovative automation projects, others are using inorganic means to move ahead, acquiring specialist firms to take a leap in the automation space.

Earlier in 2021, HHLA announced the acquisition of a majority share (80%) of automation specialist Industrial Software Application Manufacturing AG (iSAM AG), a German company founded in 1983. iSAM AG is a specialist in automation technology with a long history of working with HHLA, and is currently working on an automation prototype for the rail operation at Container Terminal Altenwerder. With this acquisition, HHLA will get direct access to technological developments in the automation of industrial processes.

Conclusion

Automation is a broadly defined concept which may start with simple digitalisation of the paperwork of the port and extend to a fully automated operating terminal with very little human intervention. Higher automation reduces labour costs, which in turn lowers operating leverage and can make the operating profit more resilient. However, this may lead to strained relations with the trade union.

Currently, terminal operators are opting for varying degrees of automation, depending on their financial and technical resources. Also, there is a marked difference between the automation strategy adopted by various terminal operators. While some are building on their internal capabilities, others are acquiring companies with some level of automation to quickly gain the lead. The automation drive has got the required push from the favourable lower interest-rate environment and increasing risk appetite of terminal operators (backed by the robust increase in the international trade). Analysing the associated risks and potential benefits, we are of the view that in the long run, the efficiencies generated by a properly installed automation system will outweigh the potential associated risks. We are optimistic about the current automation drive and believe that even though little automation adds to financial and operational resilience, a more integrated solution, could prove to be a game changer for the port industry, which is presently facing post-Covid operational bottlenecks.



About Drewry

Drewry

From their origins in 1970 London to a 21st century maritime and shipping consultancy, Drewry has established itself as one of the most widely used and respected sources of impartial market insight and analysis.

Website: **https://www.drewry.co.uk/**

It's time for the maritime industry to deliver decarbonisation says new LR report

Lloyd's Register issued a report, highlighting that global trade is at risk of disruption without urgent action on zero-carbon shipping. Leaders from across the global supply chain are calling for immediate action on maritime decarbonisation if a successful energy transition to zero-carbon supply chains is to be achieved.

The current position in that around 80% of goods transported worldwide rely on shipping and the maritime sector accounts for almost 3% of global greenhouse gas emissions. However, despite widespread commitment to address decarbonisation of the sector, a lack of regulatory certainty and support from policymakers could see a rushed and uncoordinated transition, potentially leading to significant supply chain disruption, the report reveals.

As the report explains, developing, launching and scaling sustainable fuel alternatives and the necessary landside infrastructure is one of shipping's leading barriers to decarbonisation.

Nick Brown, Chief Executive, Lloyd's Register, said, "It's time for the maritime industry to deliver decarbonisation. Not only that, but the pace of change needs to accelerate. The industry is no longer asking 'if' or 'when' decarbonisation should take place, the question that remains is 'how' will the maritime industry deliver meaningful change during this crucial decade of action."

Nick Brown, Chief Executive, Lloyd's Register

According to the report a successful Decade of Action relies on the entire maritime ecosystem aligning in pursuit of the five critically urgent pathways mapped out:

1. Global regulation to support industry-wide action

There is consensus that global regulation and market-based measures (MBMs) are vital to drive forward change. But the current rate of progress may not dissuade national and regional regulators from taking their own initiatives.

The risk of fragmentation in terms of policy objectives and regulation is already expected to be realised in the EU from 2023. It is critical for the International Maritime Organization (IMO) to take advantage of its plan to accelerate a review of its Initial GHG Strategy by 2023, and work on measures designed to increase the uptake of low- and zero-carbon fuels.

It will be increasingly difficult to defend global regulation as the preferred alternative to proactive national or regional initiatives if this opportunity is not taken.

2. Overcoming barriers to scale infrastructure

While much of the infrastructure and technology needed to decarbonise shipping could be available or is in development, it often remains commercially unviable, even for leading global organisations. Fixing this issue, with a particular focus on fuel alternatives, will help to catalyse change across the wider supply chain.

3. Finance and investment to drive uptake

Finding finance for new innovations and technologies is seen as a key challenge – but there is a flip side, as money is moving fast into 'green' funds and climate is becoming a filter through which investments are being considered.

Mounting pressure from consumers and society will continue to deliver new paths to finance and investment. But the longer the sector waits to act, the higher the cost of decarbonisation will be.

4. Data and analytics to deliver efficiency and innovation

Finding finance for new innovations and technologies is seen as a key challenge – but there is a flip side, as money is moving fast into 'green' funds and climate is becoming a filter through which investments are being considered.

Mounting pressure from consumers and society will continue to deliver new paths to finance and investment. But the longer the sector waits to act, the higher the cost of decarbonisation will be.

5. Cross-industry partnerships to harness momentum

To unlock global potential, ensure sector-wide alignment and take advantage of new ideas, partnerships must extend beyond shipping and its supply chains. If shipping can build collaborations within and beyond the maritime economy and avoid a silo mentality, it will maximise resources, eliminate duplication of effort and accelerate progress.

The industry needs uniform rules

Market-based measures (MBMs) – carbon pricing in particular – will help to ensure that decarbonisation is commercially viable. MBMs place a price on carbon dioxide emissions, or the carbon dioxide equivalent emissions of other GHG like methane and nitrous oxide, providing an economic incentive to pursue less GHG intensive behaviours; reducing fuel consumption and GHG emissions.

"The good news is that it is no longer a question of whether there will be a price on carbon or shipping," says Lasse Kristoffersen of Torvald Klaveness. "Now, it is a question of who would regulate it and who would benefit from the proceeds."

MBMs can also play a role in allowing the industry and individual companies to manage change, reducing the risk of regulatory shocks that could be associated with an approach reliant on prescriptive controls on fossil fuels and GHG emissions. Notwithstanding, combining MBMs with, for example, sustainability criteria on marine fuels and energy sources would serve to avoid MBMs encouraging unsustainable fuel selection behaviours.

"The IMO adopted binding measures that will ensure achieving the 2030 carbon intensity reduction target in the [IMO's] Initial GHG Strategy, but it's generally understood that market-based measures, carbon pricing and life-cycle GHG emission guidelines are the regulatory instruments that need to be put in place by the IMO to bridge the current price gap between fossil fuels and alternative zero/low carbon fuel options," says Hoenders.

"At the same time, we need to make sure that certain regions, and particular island regions in the world, continue to have access to affordable maritime transport services, because they are entirely reliant on maritime transport while other developing countries also require equitable access to the world's markets to safeguard their exports," he says.

So a global approach is vital. "Uniformity is important to have a level playing field and that's why we prefer global legislation to regional legislation," says Andreas Sohmen-Pao, chairman of BW Group. "Otherwise, you get regulatory arbitrage because we're in a global business where people can move to the place of least resistance."

As mentioned earlier, developing, launching and scaling sustainable fuel alternatives and the necessary landside infrastructure is one of shipping's leading barriers to decarbonisation.

"If you look at the total lifecycle cost of moving to a lower or zero-carbon fuel, about 80% or 90% of the cost is not down to the ship owner changing their engine and training their crew," says Simon Bennett, general manager for sustainable development at the China Navigation Company. "We need upstream bunkering facilities, infrastructure. There is a lot more investment required onshore than there is with your floating asset.

"If the methanol suppliers, ammonia suppliers and biofuel suppliers are not building the infrastructure, then you can have a lovely, shiny new ship with a shiny new engine, but you cannot sail it anywhere because low or zero-carbon fuel is not available," he says. "So we all have to move in lockstep. The suppliers will only build the infrastructure if they see a need, and we will only build the ships if there is the infrastructure."

Alternative marine fuels are described by Cyril Ducau, CEO of Eastern Pacific Shipping (EPS), as "the biggest opportunity for ship managers and owners to significantly lower their carbon footprint today".

"Contrary to popular belief, there is quite a bit that can be done today to reduce the environmental impact of existing tonnage," he says. "Biofuels, engine retrofits and optimisation technology are options available in the market."

He adds: "Most of EPS's 70 newbuilds will be powered by dual-fuel LNG, LPG, methanol, ammonia and ethane. These fuels are the best solution available in the market today. They are proven to be safe and have an established infrastructure."

Concluding, Mark Lutes at WWF Climate & Energy has no doubts about the consequences if the industry is not proactive enough.

He said, "The global shipping sector risks becoming a pariah of the global economy if they don't proactively address the emissions issue. The rest of the world will end up looking for alternatives to shipping as a whole, not just those with different kinds of emissions levels."

The full report is available to read at **https://bit.ly/3BU9za3**.

There is consensus that climate change targets and deadlines set for and by the shipping sector will not be met without global regulation.

The IMO's initial GHG strategy is a start, setting a target that total GHG emissions from international shipping should be cut by at least 50% by 2050, based on 2008 levels. The pressure to be more ambitious is rising, as many organisations, such as the Getting to Zero Coalition, businesses and governments announce net zero targets for 2050.

Global regulation should also create a 'level playing field' for everyone in the sector, wherever they are.

"Shipping is global and IMO regulations are global, so we provide an equal and level playing field. We do not treat certain countries differently," says Roel Hoenders, head of air pollution and energy efficiency at the IMO. "IMO regulations do not lead to distortion of specific trade flows and trade agreements, and, importantly, they do not lead to 'carbon leakage' [a situation where businesses or countries lower their own carbon emissions, but in doing so, transfer those emissions to other actors[6]]."

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Campaign to save and renovate a once great ship

The Falls of Clyde International Ltd (FOCI) team first started this project in 2016 and all because of a plea for help on a maritime facebook page. David O'Neill (the creator and director of FOCI) saw and answered this plea which was simple: Save the Falls of Clyde (FOC) from being 'scuttled' by the Honolulu harbour department.

However, David didn't just want her becoming another 'static' museum. Instead, he created plans which encompassed everything he feels passionately about – the environment, climate change, technology, social causes and heritage, bringing them all together into one ambitious project. Before long he had attracted like-minded people, all sharing the same vision as him, to both save the FOC and to get her sailing again helping communities around the world grow and thrive.

After extensive research of other vessels of similar stature and age, working with and building relationships with various tech companies and global maritime organisations and considering the biggest social and environmental problems facing communities around the world, David and his team were able to produce five distinct 'operations' that could be run on the ship.

Why the Falls of Clyde?
Throughout the years David has heard many people ask why save this ship. Yet, the answer was simple. Why not? After 140 years this beautiful ship is still afloat and she truly is a credit to those Scottish world leaders in ship design and technology.

She is a survivor and the last of her kind and, much like the people of Scotland she is hardy, strong and able to weather the worst of storms. The FOC remains the symbol of a time of great innovation, ingenuity and engineering. She truly is a piece of history that shouldn't be forgotten as ships like her opened the seaways for the new designs of the British Merchant Fleets of the 20th Century - fast steamships and turbine powered innovators of their day!

The FOC, and ships like her, allowed Britain to become the seafaring, trading nation and supplier of goods worldwide that put the Great in Great Britain. Additionally, she bears the name of a great river; a place that built the maritime nation that Britain became.

The foundations
The team has been working with the Hawaiian harbours authority to secure the release of the ship from the State. Furthermore, they have engaged with the state of Hawaii over ownership and ultimately aim to have her released into their hands. She was impounded with claims of her being unsafe, yet further clarification received means that she is only unseaworthy. The relationship between the group and the DOT (Department of Transport) Harbours authority hasn't always been easy but with determination, patience and time it has improved and we have been given the chance to put forward our own proposals to save the FOC. The local group that owned the ship, 'Friends of Falls of Clyde' (FFOC) had a vessel survey carried out in December 2016 ande she was found to be sound and safe as a static vessel. The same report does outline areas where she will need restoration, which in turn have helped the team to identify longer term work required.

Ownership of the vessel will be transferred the moment she sits on the deck of the lift ship. A further survey will be carried out before her journey back to Scotland ensuring that all are fully aware of any potential problems that need to be addressed.

The rebuild
Currently there are two options for her rebuild.

Option One: The most promising plan is to bring the FOC back to Inverclyde to Victoria harbour. Here she will be transferred from the lift ship to a submersible barge and she will be rebuilt on the barge. Use of this heritage site has been confirmed by both Inverclyde council and Peel Ports who have stated that they would take a 'peppercorn rent' for the time it takes to rebuild the FOC. The estimated time to rebuild is 3 to 4 years.

Option Two: If, for any reason, the FOC cannot be taken to Inverclyde there are several other sites along the Clyde that are available. Troon dock has made it clear that they would be available and they have a dry dock currently available for the rebuild. Several sites in Glasgow have also shown interest in taking the FOC during the rebuild phase, however, both rent and costs are still being negotiated.

Currently the cost of rebuilding is estimated at around £15 to £20 million based on other rebuilds similar to the FOC. Support has been sourced from industry and the public across Europe for the supply of materials and skills to complete this restoration and there was an overwhelmingly positive response. The cost of the rebuild would be comparable to the rebuild of the 'Wavertree' and 'Balclutha' ships in New York and San Francisco.

The proposed route home

Stop One: Hawaii
It is planned to give her a traditional Hawaiian farewell. As the FOC leaves Honolulu she will be given a traditional Hawaiian blessing and the Hawaiian Governor, David Igi, has already agreed to wave her off with a farewell address.

Stop Two: San Diego
As she approaches San Diego and her first stop we anticipate a flotilla of small crafts to escort her into harbour including the tall ship – the Star of India – along with other historical vessels.

Stop Three: Panama City/Canal
The team wanted to say thank you for the passage through the Panama Canal so we felt that a stop here was necessary to strengthen links with the maritime community and the Scottish links with the city itself.

Stop Four: Galveston
Here the Elissa (an Aberdeen built ship – constructed in 1877) will come to greet the FOC as she comes into port all with an escort flotilla in conjunction with the museum.

Stop Five: Miami
This will be her midway point and, again, she will be greeted by a flotilla as she comes into port.

Stop Six: New York
Similar to her Miami stop, she will be greeted by a flotilla and she will be moored nearby the Wavertree. Like other stops, she will be celebrating the Scottish history and heritage.

Stop Seven: Novia Scotia
This event will focus on the social and community aspects of the ship – focusing heavily on the education at sea and community benefits as well as the strong shared Scottish heritage and history.

Final Stop Glasgow
The team plan to go all out for it for her home coming. They are attempting a Guinness world record for the largest flotilla ever seen on the Clyde.

Once restored
Ultimately David and his team want to see the FOC restored to sea going condition so that she can fly the flag for Scotland's engineering and green tech abilities. She will become a symbol of Scotland's lead in the world of new eco-technologies, alternative propulsion and hydrogen/electric power systems. This eco-friendly ship will proudly announce her heritage credentials down to her last nut and bolt.

There are no plans to make the FOC a static museum piece. Instead, the team aims to show the durability and innovation of Scottish engineering as she will be sympathetically restored. The FOC will be fit for purpose, but she will be an ambassador abroad for all things Scottish. She will be using the latest technologies to sail the seas swiftly and safely.

Fairtrade cargo:
Once restored the FOC aims to provide the first carbon free cargo service from Scotland. Presently it

is estimated that around £5.2m per annum could be made from cargo. The team we will seek to carry Fairtrade Cargos and develop and nurture relationships with farmers and workers within third world countries.

Education at sea:
The intention is to offer an education at sea service and, based on other models around the world, full time education on board will be offered. This will be offered to private schools and colleges around the world and is based on the example of a company from Nova Scotia (Class Afloat). It is also planned to offer places to the neediest kids from their communities who see no prospects for their lives ahead of them and take them on the adventure of a lifetime.

Green technology platform:
Of all of the projects on-board the FOC one of the most important is for her to become a platform that will show the world the latest green and carbon neutral/carbon free tech. The team plans to show the world that green engines and tech aren't just sustainable but that they are the future. Final year students at Strathclyde University Marine Engineering took on and tackled new propulsion systems such as Hydrogen power. They also identified solar sails and high efficiency solar panels, wind turbines and battery storage as alternatives to the hydrogen power and are still looking at various other 'green' technologies that will be suitable for the ship.

The here and now
This has been a long and challenging journey so far but, despite the setbacks, the team is confident it will succeed. Hawaiian Harbors have now filed for a 'Disposal' notice to the state department for historic artefacts. As the ship has been in Hawaii for over 50 years, she is now considered to be of cultural and historic importance.

The proposal is simple. The team wants to remove the FOC and repurpose her in a way that protects her heritage but also offers a future that will support the marine environment and serve future generations of communities around the world. It appears that the state department for historic artefacts as well as the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA) are not happy that 'disposal' is the only course of action. The coast guard has final sign off on the entire process and the team's understanding is that they are not happy for an unnecessary and dangerous step to be taken when there is an option to remove her safely is on the table.

The biggest fear and risk is that the ship sinks in the narrow channel entrance or founders just outside the harbour; blocking Honolulu harbour for at least 6-12 months while a salvage operation takes place.

In conclusion
This is both an ambitious and global project which the team is confident isn't only possible but necessary. Once transformed, the FOC can and will become entirely self-sufficient by moving cargo, educating tomorrow's students and changing people's lives globally.

Rebuilding this ship is not an impossible task - it has been done before with ships in far poorer condition than the FOC with vessels such as Australia's James Craig, San Diego's Star of India, San Francisco's Balclutha, New York's Wavertree, Galveston's Elissa and Glasgow's Glenlee. These ships are just a few of the many successful restoration projects but other need to share the vision if the project is to succeed to a successful completion.

The FOC is not just a static exhibit like other ships; she is truly a survivor, a living, breathing leviathan which was built (and rebuilt) on the Clyde. She will pave the way for more ships for generations to come, showing the world that green energy and social entrepreneurism are the way forward. We speak of heritage and this is what heritage looks like.

The vision is that the FOC becomes the pride of Scotland, becoming a symbol of hope for the neediest of our communities as the opportunity is given to change their lives for the better.

This has been an incredible journey so far but the team wants you join us and share the experience and journey of the FOCs eventual coming home.

The IIMS team wishes all involved with this amazing project the best of luck in their endeavours and hopes for a successful outcome. We will keep readers up to date with any significant progress and developments.

Ship drawing | Ron De Vos

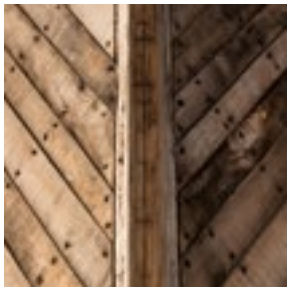
Contact information
Visit the Falls of Clyde International Ltd web site at **www.foci.scot**

Donations to the campaign may be made at **https://bit.ly/3BBcX9S**

The story of a 90-year-old lifeboat is captured in a new book by Graeme Ewens

W&S on acceptance trials in February 1931 by Beken of Cowes. Credit RNLI Archive

The LIFE of a BOAT is a new book, or as author Graeme Ewens calls it, a 'Nautobiography', about of a 90-year-old lifesaver comprising tales of shipwreck, heroic rescue, wartime tragedy and its later resurrection.



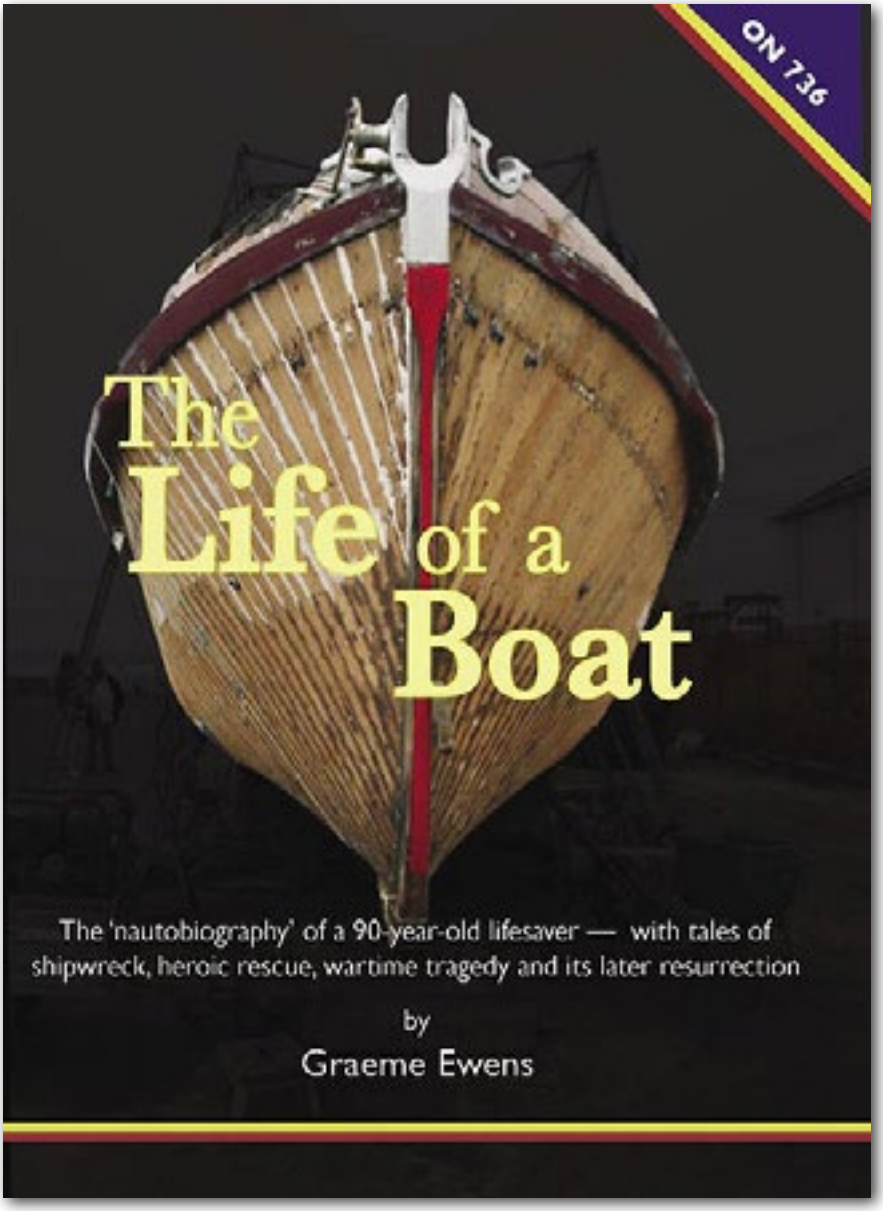
Ninety years ago, in February, 1931, the RNLI took charge of a new lifeboat, the W&S, which is still surviving after a heroic career and a longer period of retirement. The publication of its 'nautobiography' celebrates the boat's history and will help finance its life support. A share of proceeds will also be donated to the Penlee Lifeboat Station.

The LIFE of a BOAT is the story of a remarkable boat which served the RNLI for 40 years. The 45ft 6ins Watson Cabin class boat W&S (ON736) was named after the benefactors Winifred Coode and Capt Sydney Webb. It spent its first three decades at Penlee in Cornwall, responding to more than 100 shouts, often in the most extreme weather and including harrowing wartime conditions, before it was replaced in 1960 by the ill-fated Solomon Browne. It later spent a further 10 years in Scotland as part of the Reserve fleet, saving another six lives during its final service. One of the RNLI's longest serving lifeboats, it saved a total of 108 lives.

This diary of the vessel's long life is written by maritime journalist Graeme Ewens in collaboration with Elaine Trethowan (Bawden), Press Officer at Penlee lifeboat, and the current owner, Essex lifeboat man Capt Rod Shaw MBE. Its 224 pages include more than 300 period and contemporary photographs and artworks. The story begins with profiles and nautical interests of Winifred and Sydney whose bequests funded the build of the boat, designed by the legendary firm of G.L. Watson Ltd, and built at the Cowes yard of J.Samuel White. Chapters establish the Cornish context in which it operated and profile leading crew members - mostly fishermen from the village of Mousehole. This is social history, maritime history, lifeboat history, littoral history.

The LIFE of a BOAT details every single service, identifying the casualty vessels and people involved. Memorable services to several dramatic shipwrecks included the medal-winning rescue of the crew from the battleship HMS Warspite, which went aground in Mount's Bay in 1947.

After years of neglect it was rediscovered in a sad condition near Falmouth by retired sea captain Rod Shaw, who took the boat to Harwich on a prolonged labour of love to bring it back into use, realising that the superb quality of the hull would see it safely through into its next century. Capt Shaw has been immersed in the boat's resurrection since 2013 and had managed to get her back up and running. As Capt Shaw says, "This is obviously an ongoing, long-term project and despite inevitable ups and downs, I am determined to maintain the W&S (ON736) fully functional and in a serviceable condition for whatever role awaits her. In the context of nine decades a few more years is a mere blip. The resurrection continues and I wish to thank everybody who has expressed interest and support for the project and hope to welcome you aboard when circumstances permit."



The author, Graeme Ewens is a photojournalist, author and editor of magazines and non-fiction books, with a particular interest in maritime affairs. His works have been published and/or syndicated on five continents and in many languages. From 2008-2015 he published Harwich Ahoy! for the Harwich Lifeboat, and witnessed the arrival of the W&S, which he documented and helped to decaulk.

This edition of The LIFE of a BOAT is limited to 1,000 copies and any proceeds, after the production costs, will be shared between the boat's restoration and the Penlee lifeboat station.

The cover price of the thread-sewn paperback is £15.

The book extends to 224 pages, 240 x 170mm, Buku Press, 2021. ISBN 978-0-9523655-3-2
For sales and distribution enquiries please contact by email: lifeofaboaton736@gmail.com

Many marine surveyors starting up a new company go blindly forward without considering the many pitfalls which may lie ahead, learning on the hoof and succeeding by accident rather than by design. The first obstacle will be setting up the company with a name and its objectives. A company name is important in attracting business. It could be catchy and trip off the tongue easily, eg, it can be abbreviated to 'AMC', 'KMC', or it could be more formal, Fred Bloggs & Associates Ltd for example.

By ***Mike Wall***

The pitfalls of starting up a marine surveying company

The three little letters after the company name are there to protect you by limiting your liability. The nomenclature for such companies varies around the world, but the operating and legal principles adopted in establishing this type of company are generally very similar.

A limited company is a corporation with shareholders whose liability is limited by shares (Ltd), which is the most common form of privately held company. Setting up as a limited company is an attractive option for many people as, unlike sole traders, personal assets are completely distinct from company finances. Some countries insist on there being two or more directors whereas others allow single directors. If a client successfully sues your company, he will only be able to recover financial compensation from the company and not you as a director.

If your company is a limited liability company, it should be shown on all company documents, including your reports, eg, Company Name Ltd, Company Name LLC, PLC, Pty Ltd, etc.

You will need the help of a good lawyer and accountant at this early stage of the company's development. Whilst some consider this to be an unnecessary expense, it is not. They will guide you through the necessary legal procedures required.

Getting your message out to potential clients is also important. You should have marketing literature ready to send out on request. Many people believe that marketing is just about advertising or selling. However, marketing is everything a company does to acquire customers and maintain a relationship with them. Even the small tasks like writing thank you letters, taking a client for lunch, returning calls promptly and meeting with a past client for coffee can be thought of as marketing. The ultimate goal of marketing is to match a company's products and services to the people who need and want them, thereby ensuring profitability.

The general thinking is that when you are busy you don't need to do any marketing, leaving it for the quiet times. However, by carrying out some

marketing during busy periods you will reduce the possibility of quiet periods.

The internet has been the biggest boon to marketing. It being relatively easy and inexpensive to compile a web page with all necessary company information. This should include qualifications and experience of the key staff. A word of caution here, do not try to dress up the information. A CV must be factually accurate as in some jurisdictions an inaccurate CV is considered as fraudulent and is a criminal offence.

Your staff (if you employ any) are your greatest asset, so look after them. Other assets such as computers and office furniture are easy to replace but good employees are hard to find. Whilst replacing them may seem to be easy, the time and cost to train up a new employee will be more than just the time consumed. The cost may include the loss of good clients.

Marine surveying is a dangerous profession. New entrants should be appropriately inducted to your company. Apart from the administrative matters they should be prepared for working aboard ship. The induction literature should include a reference to safe working practices, eg, The Code of Safe Working Practices for Seaman published by UK Maritime and Coastguard Agency.

An example of why this is needed is the case of a surveyor who entered a closed hold after the chief officer had got into difficulties. Both died as a consequence. The family's insurer paid out on the chief officer's death but then went after the survey company accusing it of negligence. Having an induction process in place would have prevented such an action.

Whilst your staff may be your most valuable asset they can also be a liability, particularly if they continually make mistakes and endanger your company's welfare. All staff should be subject to performance monitoring to ensure that they are fulfilling their potential with improvements being in stages. The other consideration is when they are dismissed, meaning the possibility of sabotage exists. Staff who are serving out notice should be sent home to reduce such possibilities.

Your company should be dynamic and continually responding to changes. A SWOT analysis will help in this objective. SWOT is an acronym for Strengths, Weaknesses, Opportunities, Threats. The SWOT headings provide a good framework for reviewing the strategy, position and direction of a company or business proposition. It should be carried out on a regular basis.

Use SWOT analysis for business planning, strategic planning, competitor evaluation, marketing, business and development and research reports. Technically, Strengths and Weaknesses are internal factors, whereas Opportunities and Threats are external factors.

Strengths are those features of the business which allow you to operate more effectively than your competitors, eg, a strength could be your specialist technical knowledge of tankers. As part of your marketing strategy, you should be frequently talking with clients to find out if their needs have changed.

Weaknesses are areas capable of improvement. Are you lacking skills or new products? Do you have a higher cost base or lower productivity than your competitors? You must face any unpleasant truths about your business and be realistic.

Can you identify any new opportunities for your business? Are there any interesting trends of which you can take advantage?

Threats can be external or internal and are anything which can adversely affect your business. External threats could be inflation, new legislation, or a new competitor in your market. Internal threats could include a skill or staff shortage within your organisation.

Once these have been identified, you should create an action plan to ensure that something is done. Assign someone to each point and set deadlines. Review the results of your analysis regularly to determine if anything has changed and what has been achieved.

Last of all, your product is your report to the client. One of the most neglected aspects of marine surveying is good report writing. Many surveyors starting up do not focus on this aspect of their jobs. A bad report can ruin a promising career whilst a good one can enhance your reputation.

SWOT

Further reading

'Running a Marine Survey Company' by Mike Wall, is published by Petrospot. Cost GBP 75. ISBN: 978-0-9548097-7-5.

Available from **www.petrospot.com/books**

NEW PRODUCTS

Each quarter The Report brings you an update on some of the new products and innovations to hit the boating, shipping and maritime industry.

New inspection access hatch from Clamcleats

Clamcleats has launched its 150mm 6" inspection access hatch in both white and black. The "invisible slotted fixing" is designed to ensure "the lines of the yacht are not compromised without effecting the performance of the cover". Manufactured from ASA polymer which is resistant to acetone, UV, weather and colour fading and has been specially formulated for the marine and automotive industry.

Clamcleats has two versions available in white. The finger recess cover and the winch handle socket version allows for easy opening and closing even in extreme conditions. The cover comes complete with an EPDM UV resistant 'O' ring seal. The deck ring has been designed with deep ribs where it meets the deck, which allows plenty of sealant to create a positive watertight seal between the ring and the deck.

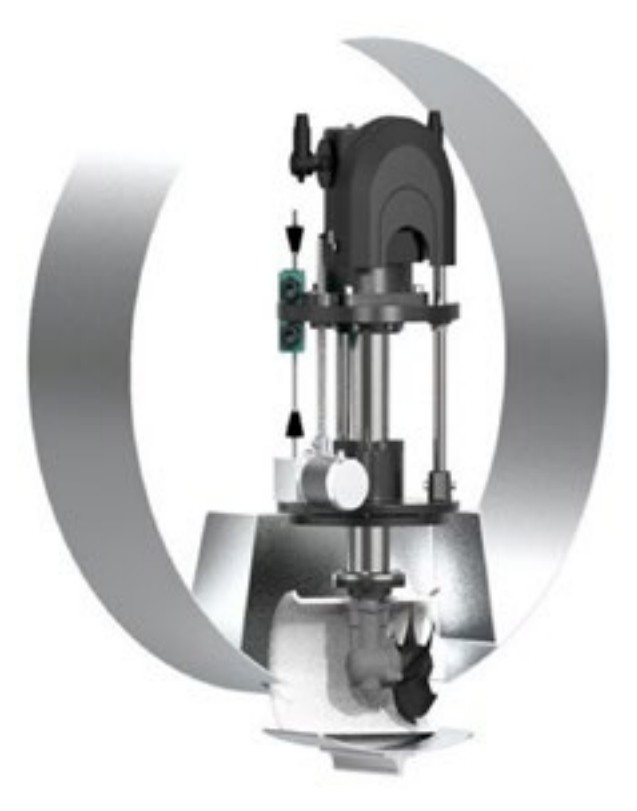
Composite propeller technology comes under the spotlight

Photo credit: Teignbridge Propellers

Teignbridge Propellers International is exploring how composite material technology developed for the aviation industry can be adapted for marine use. With the National Composites Centre as partner, the new Capsule project will look at improving the design and modelling of a scalable composite propulsion system, with a propeller diameter up to six metres. With potential benefits for the leisure marine industry, Teignbridge is already working with a major production boat builder.

"We are confident that the output of the project will be the preliminary design of a composite propulsion system that maximises the opportunities and benefits of composite materials to improve efficiency, reduce greenhouse gas emissions and enable the use of low energy density and zero carbon fuels," said Mark Phare, director at Teignbridge.

Gary Offord, technology programme manager for NCC Surface Transport said that Teignbridge has a 'fantastic history' in bronze cast precision performance propellers and stern gear. "Merging their maritime and product knowledge with the NCC's composite expertise creates the perfect partnership for success and a real opportunity to offer the market products that facilitate a route to net zero targets," he said.



Vertical retracting thruster from Lewmar

Using technology from its power and sailboat docking systems, Lewmar's design team has created a new vertical retracting thruster. The 125VRTT is aimed at the growing pontoon boat market, designed to provide ultimate manoeuvrability without compromise below the waterline.

"Docking is always one of the most stressful parts of a day out for any new boater, so the Lewmar system is designed to give confidence and truly allow stress free low speed manoeuvring and docking," said a Lewmar spokesperson.

"Using a vertical retract system, the thruster is retracted into the hull to allow non-displacement hull speeds but can be deployed in a matter of seconds below 5 knots to offer full control when approaching the dock - whatever the wind and tide conditions."

Thruster features include plug-together switch connectors, a 90-degree drive train featuring hardened and ground spiral bevel gears for maximum efficiency and quiet power transmission.

Boundaries being pushed in carbon yacht design

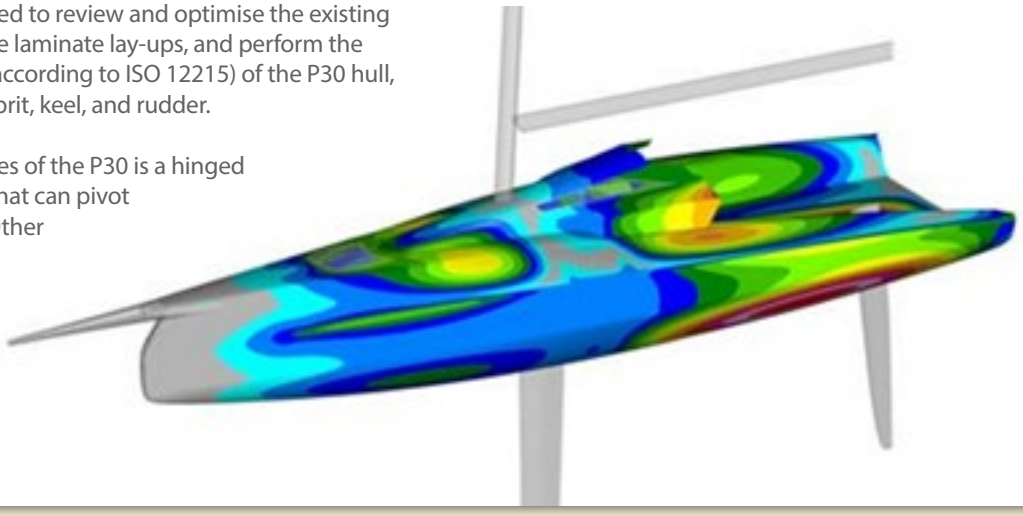
Composite engineering company Solico has engineered the new Aeolos Performance 30 in collaboration with Aeolos Composites.

The Aeolos Performance 30 (P30) is a 30ft lightweight carbon racing yacht, optimised for single and double handed sailing that was conceived by Aeolos Composites' founder Hans Genthe during the Covid-19 lockdown.

"The P30 has been a great project to work on," commented Matej Prevc, lead engineer, Solico. "The P30 was a fantastic opportunity for the team - many of whom are sailors themselves - to really push the boundaries and develop a fully weight optimised carbon structure, maximising performance on the water."

Solico was commissioned to review and optimise the existing structural design, define laminate lay-ups, and perform the structural verification (according to ISO 12215) of the P30 hull, deck, coach roof, bowsprit, keel, and rudder.

One of the novel features of the P30 is a hinged carbon fibre bowsprit that can pivot upwards after sailing. Other features include the use of a full composite construction for the keel.



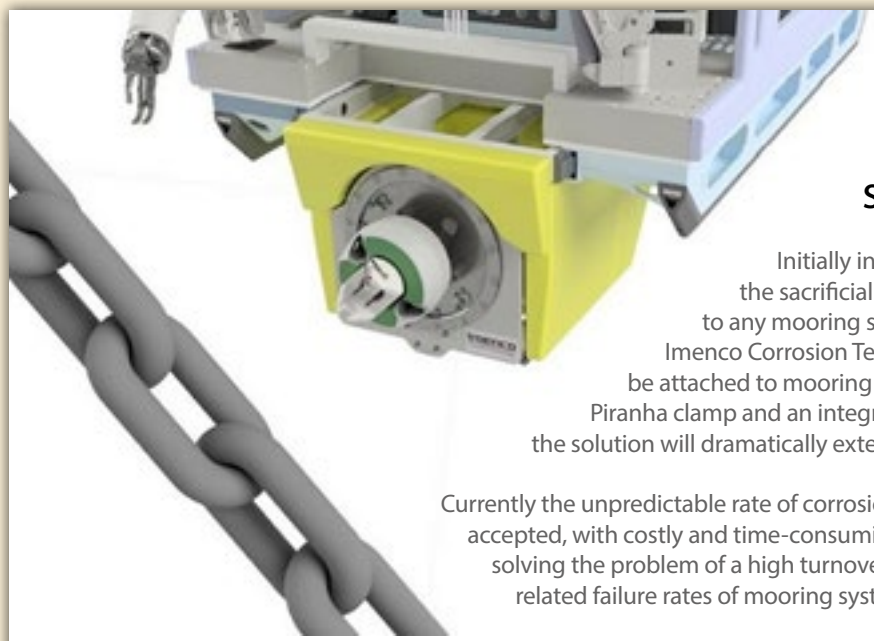
New electric outboard with underwater motor

Candela has unveiled a new electric outboard with a revolutionary design which the company claims is four times more efficient than its rivals. The C-POD electric pod drive features a completely submerged motor with two propellers, reducing maintenance, increasing efficiency and giving an almost completely silent boat ride.

"What would be the best boat propulsion one could imagine?" asked Gustav Hasselskog, Candela's founder and chief executive. "Here are some ideas," he continued. "Electric, completely silent, without oil changes and with an almost unlimited lifetime. Add to that almost no losses – converting most of the energy to thrust."

In most boat engines, the motor is typically situated in a box above the waterline, transferring thrust to the propeller through shafts, gears and bearings. The C-POD eliminates the need for this by mounting two electric motors under the water in a torpedo-like socket, directly powering its two propellers.

This brings the benefits of a ready-made cooling system from the water, almost silent operation and greatly reduced wear and tear with more than 3,000 hours of maintenance-free operation.



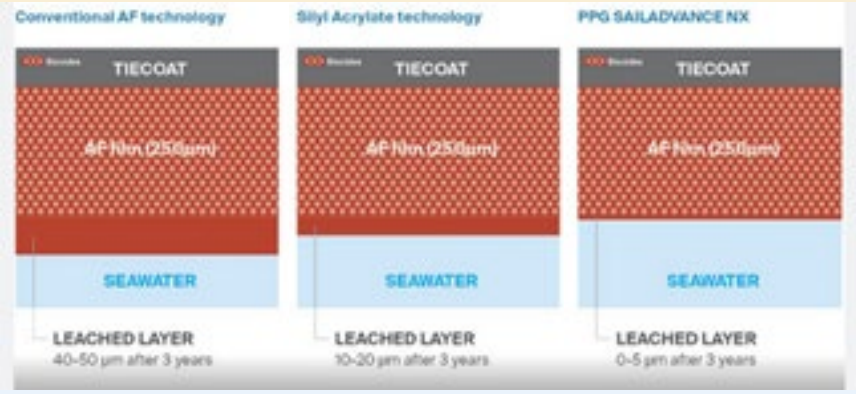
Corrosion protection for submerged chains

Initially intended for use in the Oil & Gas market, the sacrificial anode system is equally applicable to any mooring system on other offshore installations. Imenco Corrosion Technology's 'Pacu' product is designed to be attached to mooring chains. Comprised of ICT's well-known Piranha clamp and an integrated bracket-mounted sacrificial anode, the solution will dramatically extend the lifespan of mooring chains.

Currently the unpredictable rate of corrosion on existing mooring chains is widely accepted, with costly and time-consuming replacements taking place but not solving the problem of a high turnover in the lifespan of chain and corrosion-related failure rates of mooring systems.

Prior to launch, ICT worked with a major international operator to complete a Technology Qualification Project with the objective of de-risking an anode retrofit solution for mooring chains. The project demonstrated that cathodic protection and the use of Pacu provided a viable solution for operators.

The use of Pacu will reduce the risk of mooring system failures while providing a cost-effective solution, which can be easily retrofitted to existing chains. The cathodic protection of chains opens up the opportunity to reduce corrosion allowances, thereby enabling thinner chains to be used in new and replacement systems. This leads to less weight and therefore less equipment needed for handling, transportation, and installation, reducing the carbon footprint of operations.



PPG extends its antifouling range

PPG has announced the launch of its PPG Sigma Sailadvance NX coating. The coating was developed to provide maximum hull protection and vessel performance in line with the requirements arising from IMO energy-efficiency measures. The coating delivers significant savings in fuel and related carbon dioxide (CO_2) emissions, resulting in lower total operational costs and improved contribution toward global carbon-reduction measures.

The culmination of 10 years of intensive product development by PPG's resin synthesis experts, PPG Sigma Sailadvance NX coating is claimed to 'solve the shipping industry's antifouling technology challenges' by delivering real linear polishing, a minimal leached layer and protection against a broad spectrum of global fouling conditions.

The coating uses a binder formulation that provides real linear polishing that is unaffected by changing seawater temperatures and minimizes the development of a leached layer. Tests and applications with existing customers are claimed to show no performance loss over the period of operation, with the coating reliably achieving 45 days of idle-time protection.

Largest bio-epoxy resin hull to date

Photo credit: Sicomin

Composites company Sicomin has supplied the epoxy resin for the latest model from Bordeaux-based yacht builder, Couach Naval Shipyard. Sicomin has supplied Couach with range of reinforcement fabrics, cores, release agents and vacuum consumables for the past 15 years. This latest project is the culmination of four years of collaborative research between the two firms, resulting in the creation of InfuGreen 810 bio-based epoxy infusion resin, which has 38% of its carbon content from plant-based sources.

The hull of the new 26m Fly 86/2600 is the largest to date to be produced using Sicomin's GreenPoxy bio-epoxy system. "Our InfuGreen 810 resin really does offer the optimum solution for infusion in a large structure such as the Fly 86/2600," said Philippe Gruaud, head of technical sales for western France, Sicomin.

"The significantly lower viscosity and increase fibre wetting enable rapid, controllable and void free infusion of the laminate, particularly when using heavyweight multiaxial and woven reinforcement plies," he added.

New free UK tidal information platform launched

The UK Hydrographic Office (UKHO) has launched its ADMIRALTY EasyTide platform, which will provide free tidal information for over 600 UK port locations. Following extensive research on enhancing its tidal product portfolio, the new ADMIRALTY EasyTide service provides free access to seven-days' tidal predictions for over 600 UK port locations, displayed as a tide table and tidal curve.

The newly launched website has been redesigned to improve usability across all devices and provides access to the UKHO's considerable UK tidal database. The design and usability improvements of the new website will support leisure users and enable safer activities at sea such as watersports, beach going, coastal walking and sailing.

As part of the new transition, Enhanced Predictions will no longer be available. Instead, the UKHO is encouraging customers to explore its wider tidal product portfolio which includes its ADMIRALTY Tidal Prediction Service, UK Tidal APIs, ADMIRALTY TotalTide, and a stock of leisure charts.

Yamaha introduces Harmo electric propulsion system to US market

Yamaha Marine's US Business Unit has officially introduced the company's Harmo electric outboard system to US boatbuilders. The company says its proprietary electric outboard propulsion system, introduced as a concept at the 2016 METSTRADE Show and having recently completed testing in Japan, will be available in the US market within 18 months.

Utilising a rim drive electric motor that turns a large four-blade impeller, Harmo mounts to the outside of the boat transom in a low-profile housing that more closely resembles a sterndrive than a traditional outboard. Integrated digital electric steering (DES) and Yamaha's Helm Master EX joystick provide a 140-degree total steering angle for what the company describes as exceptional handling and control, The system can rotate a single-engine boat within its own length and allows for true lateral operation in a twin-motor configuration. A 74-degree tilt angle helps keeps the impeller clear of the water when not in use.

Intelligent ergonomics and responsible resin for hard working RIB with new hull design

A Scottish independent workboat operator has recently taken delivery of an 11m RIB that breaks new ground in its design and materials. McLachlan Marine has taken delivery of the new O-CLASS, built by Glasgow-based The Ultimate Boat Company (UBC). The O-CLASS is a high-performance offshore craft that has been specifically designed and engineered as a 'heavy-lift' commercial vessel. Its intelligent ergonomics and superior shock mitigation technology provides a safer working environment for professional crew at sea.

Extra-wide gunwales, incorporating a durable anti-slip coating, make stepping up to a ladder or dockside easier and safer. The spacious deck areas are enclosed by high vertical sides which provide enhanced security and confidence for the crew when operating in big seas.

All UBC powerboats benefit from a revolutionary and patented hull technology that introduces compression or hydraulic lift resulting in vastly superior load carrying, manoeuvrability, performance, and stability. The hull has been designed by internationally renowned naval architect, John Moxham, who has had an illustrious career in the marine industry, from designing military high-speed craft through to creating the UK's fastest RNLI lifeboat (E-Class Mark I). He was also at the forefront of using GRP for boats, designing the first mass-produced outboard-powered cabin cruiser, the 'Microplus' and is well-known for his work on high-performance designs for brands such as Avon, Ribeye, Scorpion, and now The Ultimate Boat Company. This latest venture is, he says, "the pinnacle of my career". For UBC's pioneering portfolio of powerboats, John has completely redesigned the hull to fundamentally redefine the way a planing hull interacts with the water, positioning the company at the forefront of hull design and powerboat building.

Intelligent ergonomics and responsible resin for hard working RIB with new hull design

From the beginning of next year, engine manufacturer Deutz is splitting its operation into two segments, one focused on electric propulsion and other alternative fuels and one remaining dedicated to the more traditional diesel engine.

From 1 January, all activities connected with the development and production of non-diesel drives and technology, such as hydrogen fuel cells, will be assigned to the Green segment whilst the development, production, sales and service of diesel engines will be combined under the Classic segment.

"DEUTZ is getting greener, there is no doubt about that," said chief executive, Dr Frank Hillier. "The switch to new drives is on its way in all customer groups. Whether diesel, gas, synthetic fuels, electricity, or hydrogen, we are reinventing the engine. The era of fossil fuels is coming to an end, but the need for mobility will remain."

THE BASICS OF COPYRIGHT LAW

By ***Karen Brain***

Copyright law is a part of a wider area of law known as Intellectual Property often referred to as IP and its purpose is to protect the interest of those who create content but balance this with the public interest of having the widest possible access to the created content.

Copyright is commonly protected around the world but there can be national variations. Copyright is sometimes referred to as author's rights but there is often what is referred to as moral rights, a separate area of rights recognised in some areas of the world.

It is common that copyright remains for 50 years plus after the death of the creator, but this is looking to be extended.

The other branch of law that is encompassed by IP is industrial property, which we are not discussing here. This includes patents, industrial designs, trademarks, service marks, layout-designs of integrated circuits, commercial names and designations, geographical indications and protection against unfair competition. Often the protection is afforded for 20 years although it frequently can be extended.

The World Intellectual Property Organization (WIPO) is an international organisation dedicated to promoting creativity and innovation by ensuring the rights of creators and owners of IP are protected worldwide and that inventors and authors are recognized for their ingenuity. The WIPO administers the international treaties related to protecting copyright and industrial property listed at the end of this article. If you wish to know more about copyright and industrial property rights there is a link at the end of this article to the WIPO website.

So, what is copyright and what does it cover?

This word describes the rights that creators have over their literary and artistic creations and includes:

- literary works such as novels, poems, plays, reference works, newspaper articles
- music
- artistic works such as paintings, drawings, photographs, and sculpture
- films
- musical compositions and choreography
- computer programs and databases
- maps
- technical drawings including architectural
- advertisements
- your survey reports!

The protection afforded is only given to expressions, and not to ideas, procedures, methods of operation or mathematical concepts as such.

Some objects may not be protected such as titles, slogans, or logos, depending on whether they contain sufficient authorship.

What rights does copyright give me? What are my rights as an author of a work?

1. economic rights - this allows owners to derive financial reward from the use of their works by others; and
2. moral rights – this protects the non-economic interests of the author.

Most copyright laws state that the owner has the right to prohibit, authorize and prevent certain uses in relation to the work they have created and to receive remuneration for the use of their work. These are their economic rights.

So, owners generally have a say in the reproduction of their creations such as:

- printed publication or sound recordings
- public performance, such as in a play or musical works
- recordings in for example the form of compact discs or DVDs
- broadcasting by radio, cable or satellite
- translation into other language
- adaptations of their work for example a novel into a film screenplay.

Examples of widely recognized moral rights include the right to claim authorship of a work and the right to oppose changes to a work that could harm the creator's reputation.

There are some limitations on the protections and these limitations allow for free use of these creative works, but this can change nationally:

- You can quote work provided the source of the quotation and name of the author are mentioned and the extent of the quotation is compatible with fair practice.
- Whilst teaching and training you can quote works for illustration purposes.
- News reporting uses creative works frequently.

Who is the creator and who is the owner?

This is an interesting point. It is widely acknowledged that employees do not own the work of their employer if they were engaged by their employer to create the work. Ownership rights can also change by virtue of contract. So, the creator is not always the owner!

Also, owner and rights to economic benefits can differ if the owner has given licences for use by a third party.

How can I protect my copyright?

Copyright protection in countries is frequently obtained automatically without the need for registration or other formalities. However, most countries have a system in place to allow for the voluntary registration of works.

Penalties for using without permission

It can be expensive to use works without permission. You should always seek permission before using creative works not owned by yourself. If you use them without permission, you are likely to receive a request for money for the use. It can be expensive to argue and hard to win.

It is easy to overlook the rights of owners of creative literacy and art. So, do be careful when using photographs, databases, quotes from books and so on.

Copyright-related treaties administered by WIPO

- Beijing Treaty on Audiovisual Performances
- Berne Convention for the Protection of Literary and Artistic Works
- Brussels Convention Relating to the Distribution of Program-Carrying Signals Transmitted by Satellite
- Geneva Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms
- Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled
- Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations
- WIPO Copyright Treaty (WCT)
- WIPO Performances and Phonograms Treaty (WPPT)

View the WIPO website at **https://bit.ly/3mREAHp**.

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Note: IIMS offers members access to a copyright free image database containing over 560 categorized images via a password protected page on the website.

Images current available for free download are:
Yacht & Small Craft (212 images)
Workboats (31 images)
Commercial Ships (70 images)
Superyachts (63 images)
Equipment (125 images)
Ribs (34 images)
Miscellaneous (29 images)

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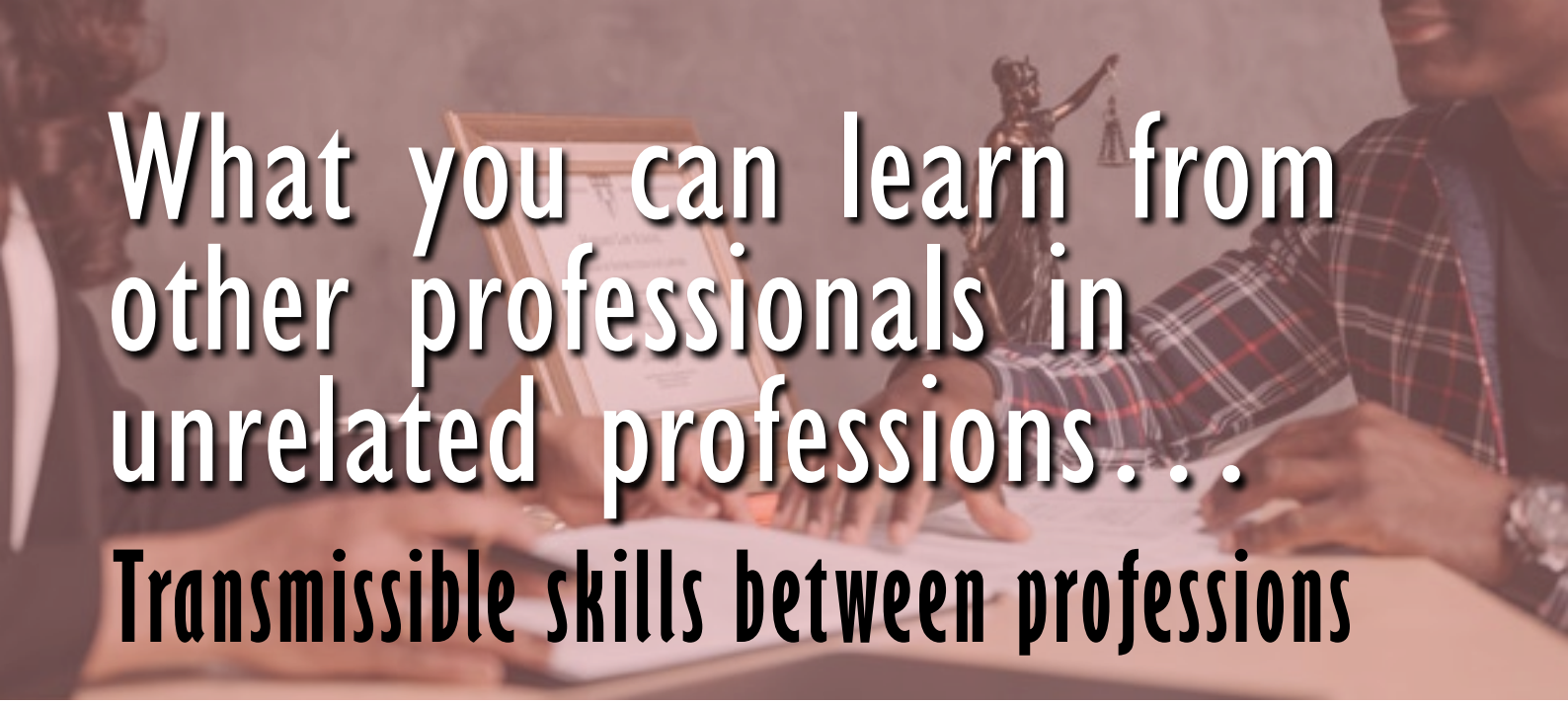


What you can learn from other professionals in unrelated professions...

Transmissible skills between professions

By ***Karen Brain***

We are frequently contacted by those who wish to develop a career as a marine surveyor and become a member of the IIMS with questions as to whether their past experience is a suitable background for changing professions to become a surveyor. Our discussions frequently enthuse and provide confidence to newcomers to the marine surveying profession when we explain that many skills are transferable between professions. We explain that they can and will be useful and relevant to the profession of marine surveying. Let's examine some of these common skills in more detail to show how relevant they are in many professions.

As the area of discussion could take us on many different paths, we are focusing on a select number of skills where difficulties can arise:

- Communication
- Observation
- Knowledge
- Analytical
- Report writing

Communication

Good communication skills are vitally important if you are to successfully gather the information you require to properly assess all the relevant facts before you formulate your report. You need those you are engaging with to feel comfortable dealing with you, be confident in you and to provide oral and physical information that you should be considering when compiling your report and providing advice.

For example, you should understand the reason why a person is purchasing a vessel. Are they expecting to cross the Atlantic in it? We have had a number of cases where a person purchasing a vessel has not understood the capabilities of what they are buying, resulting in them seeking compensation from the marine surveyor.

If a vessel is not suitable, be tactful, consider your words carefully, get your point across but avoid offending the sales broker (or the potential purchaser) and limit the possibility of being sued by them. Always stick to the facts in your statements.

Pleasantries first, of course: "I know you understand your vessel... but there is a problem with (you do have to tell them) and this has caused... (talk them through it) - again it is story telling.

Some people do place in their terms and conditions of business an exclusion to the effect that they are not commenting on "fitness for purpose", but it is always best practice to ascertain how a prospective purchaser intends to use a vessel.

Find out the background use of the vessel and where it has been. For example, has it been on a swing mooring and is there any chance of water entering the engine? This could form the "picture" as to any potential problems there may be, or provide an explanation for something you have noticed that may be of concern.

Explain tactfully the cost of maintaining vessels. Many new purchasers have no understanding of the cost of maintenance of vessels and the pandemic has brought a mass of first-time boat owners into the marine world.

It is important that clients understand that your evaluation of the condition of a vessel is bit like an MOT on a car - it only represents the condition on the day of your survey. Any car can be purchased one day and fail the next; particularly gear boxes, even if they have been properly maintained!

Observation

Before reports are written the writer has to observe as a part of the" fact finding" mission in order to make the decision on the conclusions and recommendations and to provide opinion.

Keep an open mind. Look for clues. You are a Police detective at the scene of a crime picking up evidence as to how it looks, feels and smells. What physical evidence can you find? Evidence of damage? Maintenance records? All these and other things should be used to build up a picture in your mind.

Knowledge

People gain knowledge in many ways. Some knowledge can be termed general, but other is more specific to the profession. You may have for example transferable engineering knowledge that can be adapted.

We gain knowledge through the whole of our lives. If you are unsure of something, never be afraid to ask someone else. The person who thinks they know everything is the person who does not. That is why lawyers confer to barristers and barristers discuss technical issues between themselves.

Analytical

You need to be able to assimilate and analyse all the information you have gathered. It is important to link your findings and consider those possible links carefully. This is no different to a doctor in general practice. If you give a doctor a list of multiple symptoms, they have to assimilate and analyse these with their observations and draw a conclusion or make a diagnosis. Sometimes further investigation is required. If something does not seem right, you may have to revisit an area as all professionals have to do from time to time.

Report writing

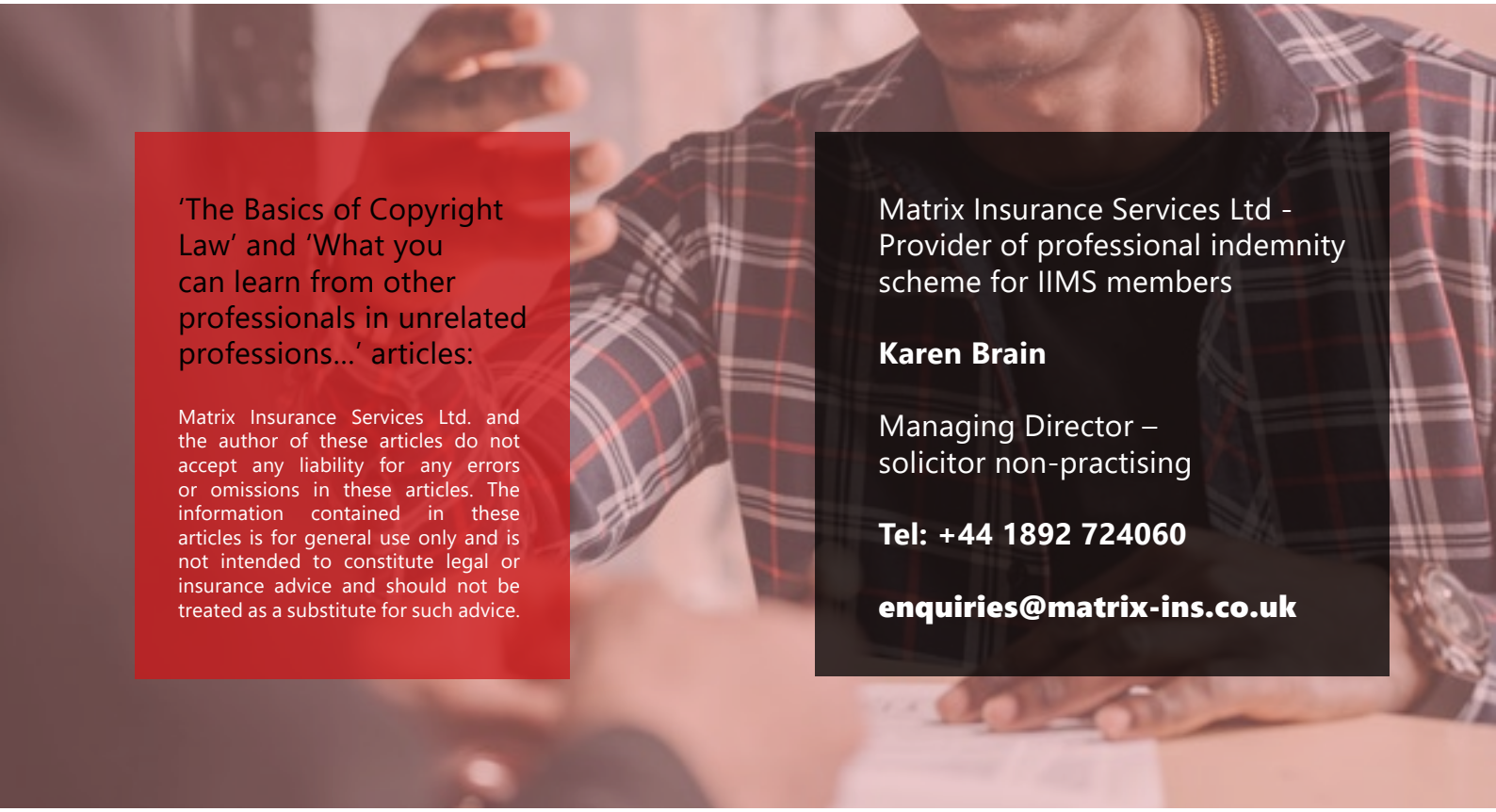
All reports require the content to support its conclusion(s), recommendation(s) or opinion(s) drawn from the factual findings whether you are a scientist, lawyer, financial analyst, surveyor or any other professional writing a report in your professional capacity. So, in all cases of report writing the same process is used to formulate a good report.

When a lawyer writes a report for their client, they have to gather factual information, specify its source, state the findings and analyse them, draw conclusion(s), provide recommendation(s) as well as opinion(s), all supported by the findings of facts that are clearly stated in the body of the report.

Good reports should flow - I call them a story - as they should be easily comprehendible by the reader and therefore you should consider before writing a report the abilities of the reader to understand your findings, conclusions and recommendations as this will influence the way you write it. For example, if a client has less knowledge than the average person of a particular area you are including in your report then more explanation may be required so they understand the findings and the implications and/or consequences of your findings. An example of this is when it comes to explaining costs that may be incurred in defending cases in litigation. Lawyers should explain the amount of potential costs that can be incurred in defending a claim and the possibility of recovery of costs incurred; for those clients who have not been involved in litigation before, a more in-depth explanation should be provided so they fully appreciate the financial risks, where they may arise and why.

Our conclusion

- Once the report writing process and skills are learnt and developed in one profession, they are fully transferable to others.
- Be methodical. Use a check list/ template to ensure you do not miss anything and make sure you comment on everything on the checklist/template and more if necessary.



'The Basics of Copyright Law' and 'What you can learn from other professionals in unrelated professions...' articles:

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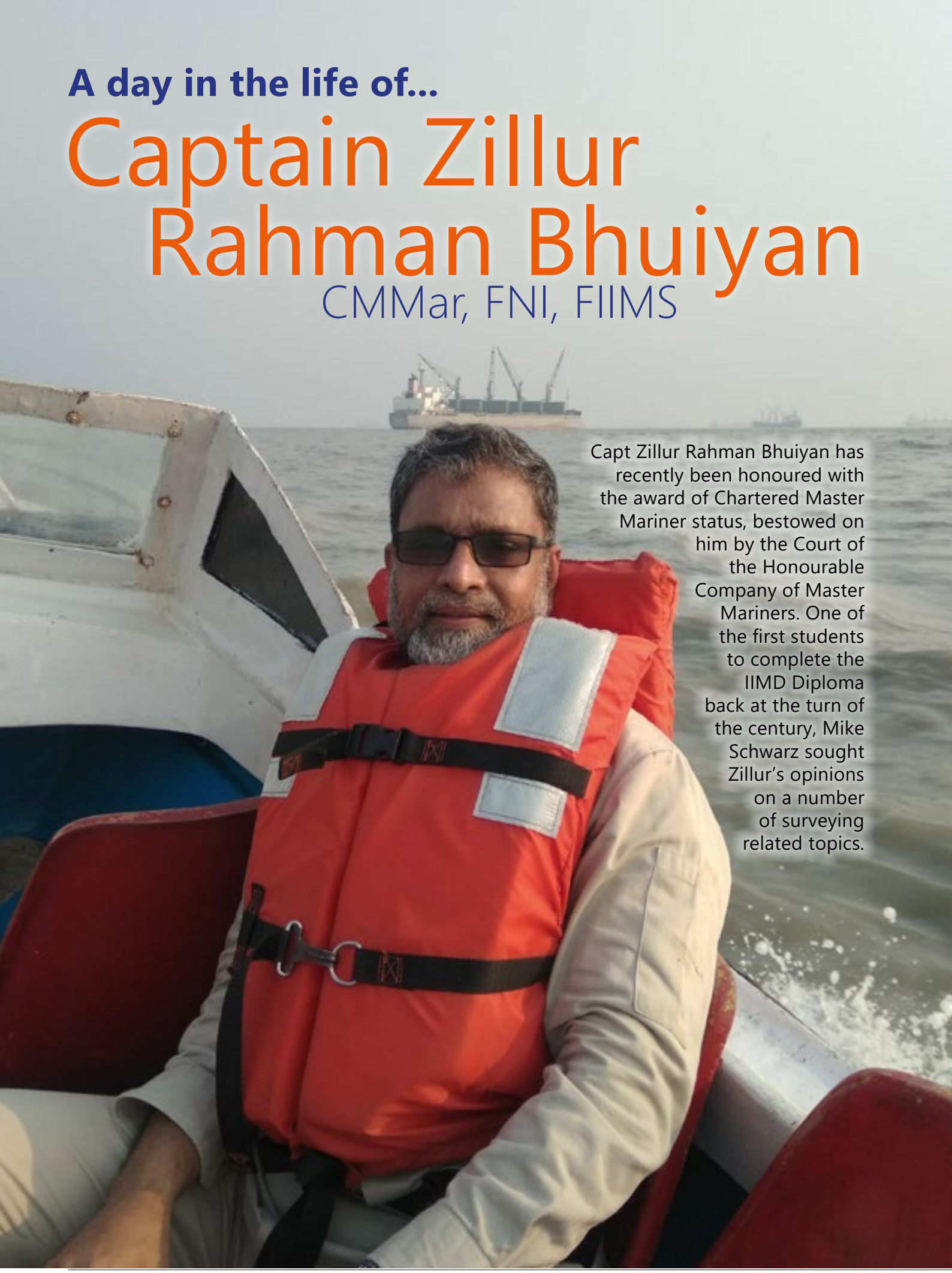
A day in the life of...

Captain Zillur Rahman Bhuiyan

CMMar, FNI, FIIMS



Capt Zillur Rahman Bhuiyan has recently been honoured with the award of Chartered Master Mariner status, bestowed on him by the Court of the Honourable Company of Master Mariners. One of the first students to complete the IIMD Diploma back at the turn of the century, Mike Schwarz sought Zillur's opinions on a number of surveying related topics.

Q1. Please tell me about your earlier seagoing career and what, if anything, you miss about?

I started my sea career as a deck cadet in 1976 and left the ocean after three years command in 1989. I enjoyed my career at sea to the fullest having a large number of crew onboard, comfortable living and working conditions; and long stay at ports close to the cities allowed visiting places of interest - the main charm of seafaring. Now it is a regret to see over-worked seafarers, hardly any shore leave from remote berths/ terminals and the wellbeing of seafarers is a global issue.

I had planned to leave sea and settle ashore after three years of command and I made it so.

Q2. What was the appeal of a career in marine surveying and what was your motivation to move into this field; and was it a natural progression for you?

I had the mindset to have an independent shore career and started with marine surveying at the outset of shore life, but it did not take off in the first few years and I switched over to ship management and operations for a few years keeping the desire alive to be a marine surveyor. Getting the surveyor's job in a British marine surveying company in Dubai in 1994 gave me a breakthrough to put the throttle at full speed ahead in my marine surveying career. In order to sharpen my skills, I was looking forward for some institutional support. I enrolled in the first batch of IIMS Diploma in Marine Surveying obtaining the Diploma in 1999. This professional qualification together with my diligent conduct of business and reporting gave me exposure in the international marine surveying and consultancy market. In 2001 I moved to Singapore working for another marine surveying company and then returned to my home country Bangladesh in 2003 starting with my own marine surveying business that is still going strong.

In order to bring diversity into my marine surveying career, I took formal training and became a Lead Auditor in the ISM and ISPS codes, and an MLC Inspector. I have been a busy Liberia Flag State Inspector for the Bangladesh ports. I completed an internal auditor for QMS (ISO 9001:2015) training course in 2017. Such auditor qualification increased my clientele base beyond flag state assignments. In the same year I qualified as an eCMID Accredited Vessel Inspector (AVI). I have been a Certified Members of NAMS, USA, since 2008.

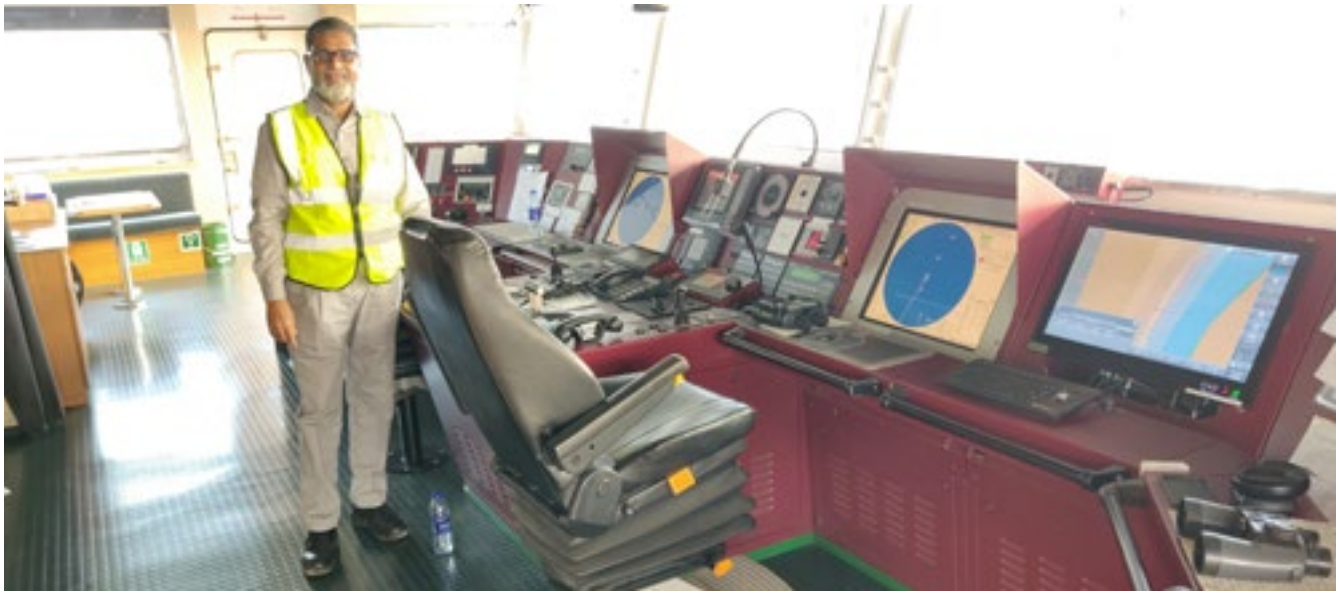
By applying the knowledge, I gained through the above-mentioned training courses, and by conducting surveys and audits to high professional standard and producing quality reports I have placed myself at a reputable level and has been empanelled in a number of the P&I Clubs and engaged by international and local customers for H&M, cargo and marine casualty investigation matters. The Lloyd's Syndicate of H&M underwriters in London approves me to conduct H&M Risk Assessment surveys worldwide.

Q3. Congratulations on recently being honoured as a Chartered Master Mariner by the Court of the Honourable Company of Master Mariners. You are one of a small group who have been recognized with this prestigious award. Please tell me your thoughts on being recognized and what the award means to you.

One of the requirements of the chartership is to develop the career beyond industry norms and chartership is more likely to be sought by those who have taken control and ownership of their lives and assumed responsibility for their personal development, goals, ambitions and life objectives.

Gaining my Diploma in marine surveying and completing courses and trainings as stated, have been with the intention of rising above the general level of marine surveyors. Additionally, I obtained Recognized Security Organization (RSO) training from an MCA approved international maritime security training institution. Since 2009 I am the only person authorized by the maritime authority of Bangladesh for implementing the ISPS Code in the port facilities and coastal vessels of Bangladesh.

I felt that some formal education and training would place me beyond industrial norms. I completed the certificate course in Floating Production Storage and Offloading (FPSO) systems with LMA in 2017. I obtained the Postgraduate Diploma in Maritime Safety and Security in 2019 from the World Maritime University, Sweden. I am going to



complete the Bachelor of Maritime Science shortly from the only maritime university in Bangladesh.

I have been a member of The Nautical Institute since 1980 without any interruption till date and became a Fellow in 2006. I have been voluntarily in the governance of the NI as Council Member (2009-2015) and a Member of Board of Trustees (2016-till date).

I became a member of the IIMS in 2000 and received a Fellowship in 2012. I am the regional Director of IIMS for Bangladesh.

I have also been the voluntary IMO expert delegate for the NI (2013-2015), for the ITF (2017 till date) and in a number of IMO expert correspondence groups.

A permanent member of the Maritime Safety Committee of the ITF London office since 2018 and ongoing, I was elected President of the Bangladesh Merchant Marine Officers' Association 2014-2019. I revived this trade union for officers and was made affiliate to International Transport Workers' Federation.

I was elected President of the Marine Surveyors Association of Bangladesh (2019 and ongoing). I have changed the decade old system of getting the Certificate of Ship Surveyor from the maritime administration of Bangladesh by just having two years command or chief engineer experience. Now a minimum 6 months training by accompanying senior surveyors is required before applying for the Certificate of Ship Surveyor.

One of the core requirements for Chartership applicants is that they should have contributed to the growth or development of the maritime industry in a significant and meaningful way.

By the award of Chartership my time and efforts in personal development, contribution to the maritime community and maritime industry have been recognised.

Q4. How has the Covid-19 pandemic impacted on your ability to travel and to do your work effectively?

There has not been any overseas travelling for me for last 20 months. I used to travel to London a minimum of five times a year - two IMO meetings, two NI EB meetings and one ITF MSC meeting. Travelling to London used to be more in a year for attending events organised by IIMS.

On the job side, the loss of revenue from the overseas jobs has been compensated to a certain extent by conducting internal audits onboard foreign management ships due to the ship superintendents' travel restrictions.

During the lockdown period there were movement restrictions, however the local maritime administration issued a circular for essential services and persons for port operation and surveyors were exempted from travel restriction. However, having COVID-19 PCR tests, entering port areas, boarding ships and conducting surveys became inconvenient and time consuming and maintaining health restrictions during onboard activities.

The situation has returned to normalcy at present.

Q5. What would you say are the key changes you have seen taking place in marine surveying over the past 20 years and have they improved the profession?

The changes that have taken place in marine surveying over the last 20 years have been quite significant and made the marine surveying job efficient and expedient. The use of IT and digital photography has attributed considerable development in respect of report preparation and submission. The soft copies of report without using the mechanical typewriter with carbon paper and placing digital photographs directly in the report instead of shop printing and pasting, are of great advantage in all respects. The most suitable is the app-based reporting within a few hours of completion of survey and transmission to the client. Sending photographs and a short report from the site using the internet have brought comfort to the surveyors for not being under pressure of the client to issue the preliminary report.

The internet communication and instant messaging is of great help in the case of any confusion arising during the conduct of survey.

The surveying profession also benefited from the electronic networking and widening of the client base.

Q6. There is a currently big move towards remote surveying in the ship sector. Can I ask you for your considered opinion on this phenomenon please?

Like many other innovations, remote surveying has both merits and demerits. In my opinion it should be an alternative means of surveying where travelling, time constraints and prevailing circumstances would be a hindrance. The first choice should be surveying by physical presence.

For H&M and P&I condition surveys of ships and safety/security/MLC audits the interaction with the ship's staff for soft skill assessment and ascertaining crew competence and motivation, man to man interaction is indispensable. It would not be viable to assess the actual maintenance and safety culture onboard by remote surveying.

Some types of damage surveys can be conducted remotely, and the classification societies may find the remote surveying useful in lieu of some of the physical inspections and audits. To me the outcome of remote surveys for operational assessment of ships may lack in essence of the intended findings. However, remote surveying can be considered an alternative way and means where physical inspection becomes impracticable.

Q7. How easy is it for a younger marine surveyor making their way into this line of work in Bangladesh?

It has been quite easy for the younger mariners to step in as a marine surveyor in Bangladesh after having two years command experience or two years marine chief engineer experience. This made the marine surveying profession very inconsistent. Some of the surveyors used to go back to the ship if the surveying job did not fulfil their expectations, and some of them again start surveying when back ashore. Thus, there have been surveyors with lack of commitment to the profession. After I was elected President of the Marine Surveyors Association of Bangladesh in 2019, I took up the matter with the local maritime administration and since March 2020 it has been made compulsory that any mariner aspiring to be a marine surveyor must perform an internship for 6 months with a senior surveyor before applying for the Certificate of Ship Surveyor from the local maritime administration. My observation is that for the local surveyors to grow to international standard they need formal training/courses or mentoring with special care in developing the skill of report writing.

Q8. What key bits of advice would you pass on to the new generation of marine surveyors around the world in general?

In my opinion the first 2 to 3 years of surveying profession is crucial to sustain a career in this profession. The rigors of attending onboard ships at gruelling locations and timings with working unsocial days and hours coupled with the stress of report preparation may negate the progression of the career in marine survey. The new generation of marine surveyors must have commitment to the profession and knack of learning from their colleagues and experienced seniors. He/she must be focused on customer requirements and must learn the skill of report writing. The industry evaluates a marine surveyor by the standard of producing his/her reports and his/her interpersonal skills.

Q9. What has been the most dangerous or risky situation you have experienced on survey?

It has been during a discharging supervision of heavy lifts while units of machinery (260 tonnes, worth USD 1.5 mil each) were being discharged from a heavy lift carrier to barges made fast alongside.

The first unit was discharged and placed on a barge made fast alongside the vessel. While this unit was being lashed the second unit was being discharged. The second unit touched the deck of the barge and was gradually being lowered. Suddenly, the barge took a heavy list to the river side and the stevedores labourers jumped into river water thinking that the barge was going to sink. The chief officer of the vessel and myself remained on the deck of the barge. When the lashing of the unit already onboard started parting and the barge was about to topple and sink, the chief officer asked the crew in the crane to heave the second unit up immediately and that saved the two units falling into the water and the sinking of the barge. The falling of the two units of heavy lifts in the river would have been a financial disaster.

Q10. How important is IIMS to you and what more can the Institute do to grow its relevance in the Bangladesh and Asia region in general?

I had been in marine surveying for 10 years by the time I came to know about IIMS and enrolled in the Diploma in Marine Surveying in 1999. I became a member of IIMS in 2000 and have been actively involved with its objectives leading to my Fellowship in 2012. IIMS provided me professional confidence and a new horizon of the marine surveying industry. I am proud to be a member of such a world class professional body for marine surveyors and one of the founding organisations of the recently formed Maritime Professional Council of UK.

IIMS is quite well known in the marine surveying community of Asia. The IIMS members are quite active in this region in a personal capacity but in my opinion IIMS should have some hands-on approach in the professional development of marine surveyors in Asia.

The marine surveying activities in the Asian region are mostly concerned with commercial vessels. IIMS activities in the UK or European locations mainly involve small craft and yachts, and it is not cost effective to travel from the Asian region to UK for training and courses. My suggestion would be to engage local senior and experienced commercial surveyors to hold training courses for the regional or country-based surveyors. The trainers should have approval from IIMS for the trainees to have confidence in them and upon completion of training certificates should be issued by IIMS so that the training is recognized by the local industry and maritime administrations.

I consider the IIMS Diploma in Marine Surveying is the best form of education and training for the marine surveyors, and in my opinion, I did gain the expected reputation within the international marine surveying community. Instead, formal training courses tailored by IIMS and delivered locally by IIMS approved trainers can grow the relevance of IIMS in the Asia region to a great height.

Q11. Do you have a favourite cuisine and what is it?

The Lebanese or Middle Eastern cuisine is my favourite, but I never miss the opportunity to have fish and chips whenever I am in the UK.

Q12. What hobbies do you have and how you do like to do when it is time to relax when the work is done?

By now the reader would have noticed that I have been involved with a substantial extra-professional activity for the maritime community and the maritime industry. So, the time I have after the work is spent for the organisations I am involved with, and this is my hobby.

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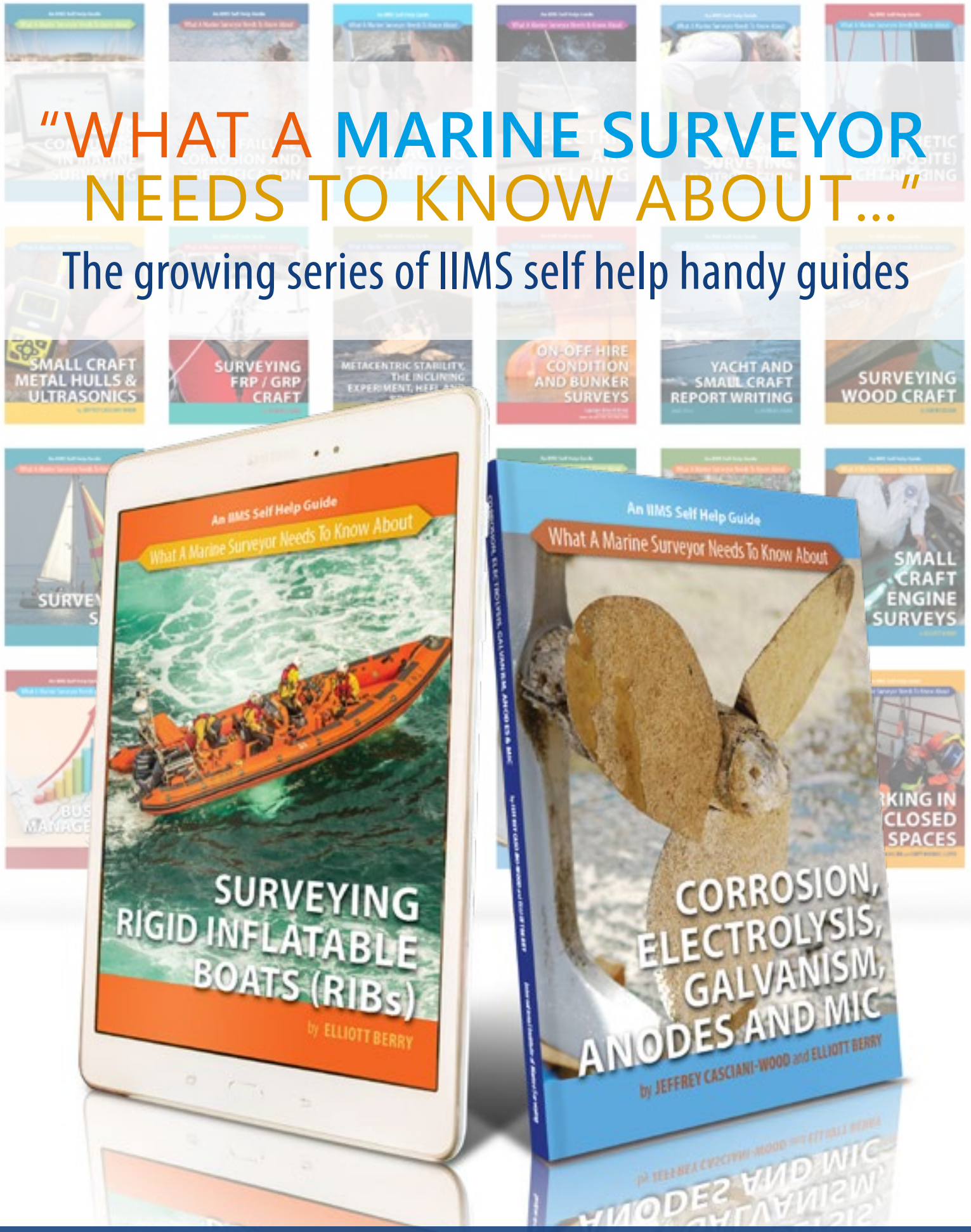

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