THE REPORT

The Magazine of the International Institute of Marine Surveying

DECEMBER 2022
ISSUE 102

Marine Surveyors:
Your life in their hands

IF THE CONTAINERS FIT, THEY SHIP?

ARE THOSE HATCH COVERS WEATHERTIGHT?

2022: THE YEAR THAT WENT BY IN A FLASH

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Editor's Letter

Dear Colleague

Welcome to edition 102 of the Report Magazine. As always, my hunt for relevant, informed technical features, interesting stories combined with a dash of 'marine lifestyle' articles thrown in has produced rewards as you will discover when you turn the pages of this publication. My apologies to small craft marine surveyors as this edition is more slanted towards commercial ship matters - just how the news agenda flows sometimes.

You will notice a new feature in this edition – the launch of QR codes. Whenever you see a link to a website, more often than not it will be accompanied by a QR code. You can scan the code and download the content directly to your device.

I have been rather impressed by the progress the industry has made towards decarbonization this year from the big ship sector to small craft electric engines and especially in the workboat sector too. After many years of chatter and not much action, it seems innovation abounds, and things are now taking shape and moving in the right direction at pace. That means new technologies and alternative fuels to understand - challenges ahead for marine surveyors too surely. This topic is reflected in much of the content in this edition. But hold on just a moment. The article on page 58 is a study that reviews total methane and CO_2 emissions from liquefied natural gas carrier ships. The authors say it provides the first measurement and modelling of this scenario collated on a round trip voyage from the USA to Belgium and back, including loading, laden voyage, unloading, and ballast voyage, measuring emissions from exhaust stacks, vents, and fugitives. I think it gives a glimpse into some of the detailed work that is being undertaken behind the scenes by 'boffins' about which we know little.

The article entitled If the containers fit, they ship? (page 90) is a sign of the times. The unprecedented demand for container slots fuelled by an increase in consumer spending and port congestion caused containership rates to rocket. With the industry resorting to alternatives to satisfy global demand, the authors consider key legal issues arising from the carriage of containers on bulk carriers.

Sea waves can impede speed and performance, as well as increase the fuel consumption of ships travelling on the ocean is the introduction to the article called 'Researchers develop method to estimate resistance experienced by ships' (page 78).

At the end of September, I had the pleasure to co-host the morning session at a workshop on autonomous vessels and was greatly reassured by what I heard as I hope you will be too. Please see my review of the event 'Autonomous vessels are coming to a harbour near you, but ...' on page 106.

The use of drone technology in marine surveying is a topic we have looked at in the Report before, but Tony Small gives an update on the technology (page 94).

Now here's a subject we have not covered before and I am grateful to Capt. Jatinder Singh Chada, who has authored a thoughtful article on page 102 entitled 'Loss prevention measures for the carriage of electrically powered refrigerated containers in cargo holds'.

And finally, please allow me a little indulgence. My regular column 'What caught my eye', which appears in the IIMS news bulletin each month, seems to have gathered quite a following. I decided, therefore, to bring together my favourite odd and unusual short articles from 2022 loosely related to the maritime sector that caught my eye into one collection (page 121).

To those who celebrate Christmas, may I wish you a joyous one and all the very best for a successful year ahead in 2023.

Survey well.

Mike Schwarz,
Chief Executive Officer

The President's Column

Dear Members,

As Mike Schwarz has said in his opening - 'Where has the time gone this year?'

Who would have imagined the world-changing events that have unfolded these past twelve months? We thought we were having a bad time through COVID, but just as we were thinking that there might be some end in sight the war in Ukraine started in February 2022 with the Russian invasion.

The IIMS is a non-political organisation, and I will not go into the human tragedies that have occurred in Ukraine in the past eleven months, but we must consider the global impact on international trade and in particular the 'shipping' sector.

Shipping is at the forefront of the global supply chain and remains strategically important for world trade. Covid coupled with the war in Ukraine have had a tremendous impact on shipping and the welfare and liberty of the crews. The role of the marine surveyor is as important now as it has ever been. We often need to be 'diplomats' as well as surveyors when dealing with ships' crews as they are under more pressure than ever before.

I have seen several extremes in ship crewing in the past years. Some well-known operators, and not necessarily the flag of convenience operators, are cost-cutting and reducing the manning to the bare minimum. The consequence of this is a lack of planned maintenance as there are not enough crew, or time, to carry out these responsibilities between loading and discharge ports. Then the technical managers are critical of the crew when breakdowns occur. The charterers are upset when there is a poor vetting inspection. What do we observe as surveyors when we attend an insurance claim for hull and machinery or P&I?

So where are we going with this - autonomous ships. Really?

When will the industry realise that we cannot operate ships without competent crew who have reasonable terms and conditions and more than minimum manning on every vessel?

We have become so risk-averse that 'we' are not allowed to splice ropes onboard and use them unless they are load tested by an approved authority - that used to be the Bosun. Ah yes, we don't carry a Bosun anymore. Now we must throw away a Pilot Ladder if the falls or rungs are damaged and buy a new one as this is 'safer' than having a skilled crewman repair it.

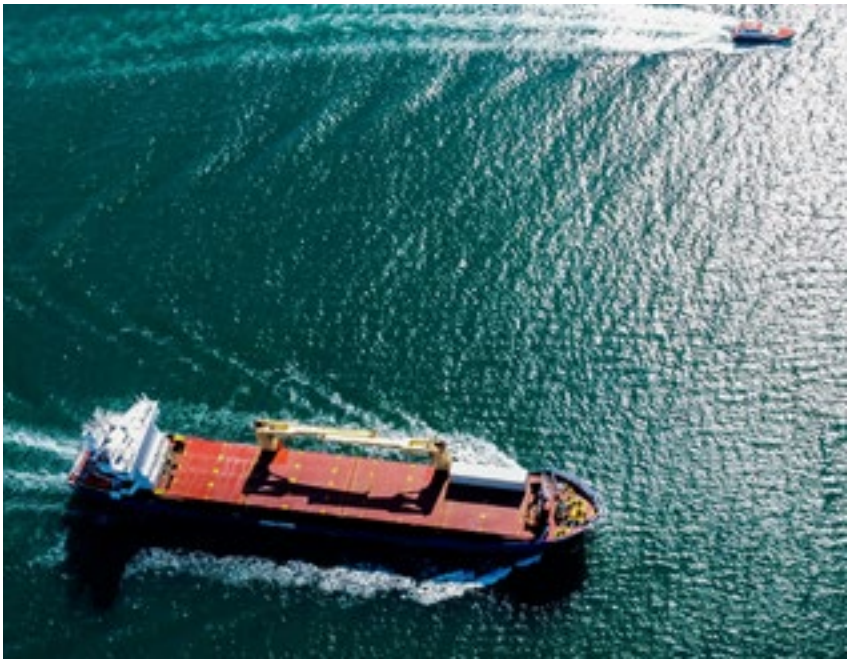
This lack of maritime skills, competencies, and experience is

impacting marine surveying. We at IIMS have been talking about 'mentoring' for a few years. How can a surveyor get experience? If they are working for a surveying company then it is possible that they will be trained and mentored in-house, but there are many new marine surveyors who work in isolation. It remains a sad fact that anyone can call themselves a Marine Surveyor without any qualifications or experience.

I am pleased to say that IIMS is a leading professional membership organisation for all disciplines of marine surveying. Member applications to join IIMS are stringently vetted before they are approved as members at an appropriate level. As members of IIMS you will be aware that we also enforce a continued professional development (CPD) policy where we are encouraged to 'keep up to date' and demonstrate that we are engaging in the industry through either formal training, or attending conferences to maintain and update our skills with industry best practice. I encourage members and other readers of this Report Magazine to check IIMS website to find out all that it has to offer as a platform for training (**www.iims.org.uk**).

I would like to congratulate Mike and all the IIMS Staff at HQ, Murrills House for their continued professionalism and for keeping the business going during turbulent times. We are first and foremost a professional membership organisation, but also a business. IIMS has continued to be innovative and leads the industry in many areas. The Marine Surveying Academy as part of the IIMS provides many courses and is currently setting new standards for qualifying inspectors in the superyacht coatings industry. It is just one example of the accreditation and raining schemes that we operate.

We should start to look forward to 2023 and the variety of events that IIMS members can attend and indeed platforms where IIMS can be showcased. We are planning our hybrid AGM, Conference and Dinner for June 2023 and hope that many members will be able to join us either in person or online. I look forward to meeting many more IIMS members throughout 2023.



I have been reaching out to members in the Asia Pacific region in the last quarter of this year. We have had several ZOOM gatherings and good interactive discussions. We have received positive feedback about IIMS as an organization and the benefits that membership brings.

I will close by wishing you seasons greetings and best wishes for a safe, healthy and prosperous 2023.

Peter Broad,
CEng, CMarEng, FIIMS, FIMarEST
President IIMS

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AMSA PROVIDES INFORMATION ON BIOFOULING AND IN-WATER CLEANING REQUIREMENTS

Image credit: AMSA

In a recent Marine Notice published by AMSA, the agency has given general information to vessel owners, operators, ports and marinas on the Australian biofouling management requirements, the Anti-fouling and in-water cleaning guidelines, the Australian in-water cleaning standards, and the International Maritime Organization's (IMO) 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (the Biofouling Guidelines).

New requirements for managing biofouling on international vessels arriving in Australia began on 15 June 2022. Operators of all vessels subject to biosecurity control will be required to provide information on how biofouling has been proactively managed prior to arriving in Australian territorial seas.

The department will use the information to target vessel interventions. This will allow more efficient use of resources and statutory powers to assess and inspect vessels, and more effective response to unacceptable biosecurity risks associated with biofouling.

Vessel operators will receive less intervent ion for biofouling if they comply with one of the following three accepted biofouling management practices:

- Implementation of an effective biofouling management plan;
- Hull and niche areas cleaned of all biofouling within 30 days prior to arriving in Australian territory, or;
- Implementation of an alternative biofouling management method pre-approved by the department.

Any vessel operator that has not applied one of these 3 accepted biofouling management practices will be subject to further questions and assessment of the biosecurity risk associated with biofouling on the vessel.

Australia will phase in the introduction of the new requirements. From 15 June 2022 to 15 December 2023 an education-first approach will be taken to assist vessels to comply. However, powers under the Biosecurity Act 2015 will continue to be used to manage any unacceptable biosecurity risks associated with biofouling. The Australian biofouling management requirements are available at Managing biofouling in Australia. Future updates will be available through the department's subscription centre.

2015 Anti-Fouling and In-Water Cleaning Guidelines for Australia and New Zealand | The 2015 Anti-fouling and in-water cleaning guidelines (2015 Guidelines) provide guidance on best-practice approaches for:

- Shore-based application, maintenance, removal and disposal of anti-fouling coatings, and
- In-water cleaning of vessels and movable structures to minimise environmental risk.

Anyone who wish to undertake in-water cleaning of vessels in Australian jurisdictions should:

- Check their obligations under the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act) as outlined by the Department of Agriculture, Fisheries and Forestry.
- If the EPBC Act is not triggered by the proposed activity, review the general recommendations about in-water cleaning in Commonwealth waters, and refer to the Department of Agriculture, Fisheries and Forestry's website for further advice and information on seeking permission to undertake in-water cleaning.
- In Commonwealth or State and Territory waters. Relevant State, Territory and Commonwealth jurisdiction contact points.

The Australian in-water cleaning standards | Australia is developing Australian in-water cleaning standards that will specify the minimum requirements for in-water cleaning of biofouling from vessels in Australian territorial seas. The objectives of the standards are to manage the biosecurity and chemical contamination risks associated with in-water cleaning to a minimum acceptable level and to support consistent regulatory decision-making across Australia.

Regulatory approval is required to undertake in-water cleaning operations within Australian territorial seas. The standards will be used by regulators to assess in-water cleaning activities in their jurisdiction.

The Australian in-water cleaning standards will be finalised and published on the Department of Agriculture, Fisheries and Forestry's webpage Australian in-water cleaning standards. These standards will supersede the in-water cleaning guidance in the 2015 Guidelines.

AN IMAGE OF A SURFER BATTLING A HEAVY WAVE WINS OCEAN PHOTOGRAPHER OF THE YEAR 2022

French Polynesia-based photographer Ben Thouard has won the 2022 Ocean Photographer of the Year competition.

Out of thousands of entries, it was Thouard who most impressed judges with his incredible image of a surfer battling against one of the heaviest waves in the world, captured off the coast of Teahupo'o in Tahiti.

Image captured by Ben Thouard

PRIME MINISTER MODI REVIEWS THE PROGRESS OF INDIA'S NATIONAL MARITIME HERITAGE COMPLEX

Prime Minister Shri Narendra Modi has reviewed the progress of the National Maritime Heritage Complex (NMHC) being developed by the Ministry of Ports, Shipping and Waterways in collaboration with Government of Gujarat.

The Prime Minister conveyed his satisfaction on the pace of the project. While addressing a huge gathering of the people from the neighboring villages and nearby areas, The Prime Minister stated that "India has a rich maritime history which was ignored for too long. We should preserve it so we decided to recreate Dholaveera and Lothal in the same way as they were during their peak time in ancient times".

Artist impression. Credit PIB

Showcasing India's rich and diverse maritime heritage, NMHC is proposed to be developed as a world class international tourist destination, the first of its kind in the country, comprising of maritime museum, light house museum, maritime theme parks, and amusement parks. It would showcase the maritime heritage of the country from ancient to modern times by adopting an edutainment approach using the latest technology to spread awareness about India's rich maritime heritage.

HULL AND MACHINERY UNDERWRITERS HAVE SIGNIFICANT CHALLENGES AHEAD

Speaking recently at the IUMI (International Union of Marine Insurance) conference from Chicago, Rama Chandran, chairperson on the Ocean Hull Committee, expressed concern over the long-term sustainability of the hull and machinery insurance sector.

He said: "Whilst it is encouraging to see the 2021 premium base growing from the previous year we face deteriorating loss ratios, albeit from a low 2020 base. Premium base has only recently begun to creep upwards following a sustained decline since 2012. The increase of 4.1% is lower than the 6% seen last year and the reducing quantum is a worrying trend. This is likely due to increased market capacity, particularly from London and Latin America which is a surprise for many."

Looking ahead, Rama Chandran continued, "The first half of this year (2022) has seen an increase in claims primarily caused by increased activities and inflation with higher steel price, higher cost of spares and labour cost. As shipping activity returns to pre-COVID levels, it is inevitable that we'll see a rise in claims and that will dampen the more encouraging loss ratios IUMI reported for the 2021 period. The 2022 outlook is worrying with increased losses and flattening of rates. Inflation could tip the profitability curve and see more capacity withdrawn."

CANADIAN COAST GUARD MAKES NEW MOVES TO REDUCE FLEET EMISSIONS

Mario Pelletier, Commissioner, Canadian Coast Guard

The Canadian Coast Guard (CCG) has announced two significant steps it is taking to reduce its emissions in line with the Government of Canada's 2030 and 2050 commitments on greenhouse gases: the start of a biodiesel testing project and the launch of the next phase in the construction of the Government of Canada's first hybrid electric vessel.

Following the award of a contract to procure biodiesel from Windsor, Ontario based Sterling Fuels, CCG became the first Government agency to trial a 20% biodiesel blend in one of its vessels, the CCGS Caribou Isle. Over the next months, various biodiesel ratios will be tested in order to enable the CCG to assess operational feasibility and technological compatibility of higher blend rates across various operational settings. The biodiesel test project will help advance solutions to decrease emissions in the immediate term.

"This new electric hybrid powered vessel and the use of biodiesel in our fleet have the potential to become a watershed moment in future shipbuilding and green fuel use," said Canadian Coast Guard Commissioner Mario Pelletier, Commissioner. "These initiatives give us reasons to be proud and to be hopeful. Congratulations to all Canadian Coast Guard personnel and project stakeholders on achieving these latest milestones."

BIG SHIPS IN NORTH PUGET SOUND TO SLOW DOWN FOR SAFETY OF FISH-EATING ORCAS

Large vessels leaving and entering Puget Sound have been asked to purposely slow down to eliminate underwater noise this fall to aid the Pacific Northwest's endangered orcas. Northwest News Network reported that Washington State is reportedly importing the voluntary slowdown from British Columbia for container vessels, tankers, cruise vessels, freighters, and car carriers that come from the Canadian province. The planned slowdown is intended to run until late December. It is expected to cover shipping lanes from the Admiralty Inlet by Port Townsend south to Mukilteo and Kingston.

SURVEY REVEALS SUBSTANTIAL GROWTH IN NEW ZEALAND BOATING MARKET

Recently released statistics from the NZ Marine Industry Association show boating is New Zealand's largest recreational activity with 1.9 million participating in boating each year. New Zealand continues to grow as a nation of boaters, with 40 per cent of the population boating annually and the nation's fleet growing by an estimated 44,810 vessels per year. Statistics released by NZ Marine have revealed a $2.9 billion dollar industry with more than 1,540,000 boats in New Zealand.

"The marine industry is New Zealand's largest non-agricultural, manufacturing industry," says NZ Marine CEO, Peter Busfield. "It's an industry built on high-tech design, industry-led training and passionate people."

BELOW DECK RETURNS WITH LARGEST YACHT IN SHOW'S HISTORY

The 10th season of hit reality TV show Below Deck has started and is set around the Caribbean island of St Lucia, according to TV network Bravo. The show, which follows a superyacht crew through an eight-week charter season, is one of the network's most highly-rated series.

This season will see Captain Lee and his crew on the 60-metre (196-foot) Benetti motor yacht known as St David. The season 10 yacht will be the largest yacht in the show's history and will be one of the few in the series to use the yacht's real name.

Delivered in 2008 by Italian shipyard Benetti, St David is a full-custom yacht with both interior and exterior design from UK-based studio Winch Design. The yacht also become a finalist at the 2009 World Superyacht Awards. At the time of her launch, St David was the sixth largest yacht in the Benetti fleet. She was last sold in 2018, with an asking price of $22,097,925 (c. €22.5 million).

GULF CRAFT COLLABORATES WITH DUBAI UNIVERSITY TO ENCOURAGE CAREERS IN BOATBUILDING

Gulf Craft and the Dubai Institute of Design & Innovation (DIDI) are teaming up to introduce a new project. Students in their second, third and fourth years will work on strategic brand and design innovations for Gulf Craft. UAE-based shipyard Gulf Craft says it hopes to introduce the next generation of innovators to the marine industry, encouraging them to consider an exciting career in the region's rapidly expanding yachting and boatbuilding sector.

The final stage of the project is marked by student presentations, where they will have the opportunity to discuss their learnings and showcase 2D and 3D design simulations.

"Innovation, design and empowering the next generation of the yachting community is a passion for Gulf Craft," says Abeer AlShaali, deputy managing director for Gulf Craft. "This is why we are partnering with DIDI, to share its values and vision and exchange knowledge and expertise with up-and-coming design talent."

WORLD OCEAN COUNCIL URGED NOT TO LOSE SIGHT OF SHIP EMISSIONS BELOW THE WATERLINE

The maritime industry is making significant progress in the fight to reduce ship greenhouse gasses and other ship-to-air emissions, but it should not lose sight of what's going on below the waterline, Thordon Bearings' Craig Carter said when addressing members of the World Ocean Council (WOC).

Speaking in Barcelona at the WOC's Sustainable Ocean Summit, Thordon's Vice-President of Business Development said: "There are a number of initiatives looking at reducing emissions above the waterline, but not so many looking at preventing pollution below the waterline."

In answer to a question raised during the Sustainable Ports and Shipping for the Blue Economy session, Carter said: "To further advance ocean sustainable development and put to sea truly zero-emissions ships, then we really do have to get rid of the oil-lubricated shaft line and replace it with one lubricated by seawater. From well to wake, the environmental impact of an oil-lubricated sterntube needs serious consideration."

According to numerous environment data sources, Carter estimated conservatively that leaks from the global shipping fleet's propeller shafts resulted last year in more than 60 million gallons of oil polluting the world's seas and oceans. "This is about the same as the Amoco Cadiz spill, but it's happening year after year after year, he said. "Oil-lubricated propeller shafts are often considered to be sealed systems, but they're not. If they were, then a ship's oil header tank containing 2000-3000 litres of oil wouldn't need topping up with oil every few years!"

While damaged and worn sterntube seals contribute massively to the constant flow of oil into our seas and oceans, a research paper carried out last year by Linnaeus University's Kalmar Maritime Academy concluded that sterntube seals are not at all leak free, with oil leakage considered "normal" operating conditions.

ROMANIA SET TO HAVE THE LARGEST RESEARCH VESSEL ON THE INTERNAL WATERS OF THE EUROPEAN UNION

The largest research vessel on the internal waters of the European Union is being built in Romania. The REXDAN is under construction in Giurgiu Naval Shipyard. The project of the Galaţi university is called "Integrated system for research and complex monitoring of the environment in the area of the Danube river". It mainly involves the construction of a research vessel, a fixed research centre and a self-laboratory, which will house 18 laboratories equipped with state-of-the-art equipment and software.

The mobile centre (which will be a ship), is under construction and will be ready in March 2023. It will be the largest research vessel on the inland waters of Europe and will have nine permanent laboratories and ten places for research teams. The ship's crew will consist of five people and ten permanent researchers.

The REXDAN will cover a large geographical area (2000 km on the navigable side of the Danube, from Sulina to Passau-Germany) and will allow research operations corresponding to multiple specializations (chemistry, biology, physics, environmental science, ecology, bathymetry, topography, chemistry of the atmosphere, sustainable development, etc.).

PORT OF ROTTERDAM TESTS DRONE FOR SHIPPING INSPECTIONS

The Port of Rotterdam Authority wants to find out if the Avy Area is suitable for supporting inspectors in their work. For this reason, it has tested a drone that is focused on sea-going and inland shipping inspections.

Photo credit: Port of Rotterdam

These inspections examine bunkering, water pollution, ship-to-ship transfer, zoning for hazardous substances, shore-to-ship transfer, air pollution, and repairs on board vessels. If the drone detects an open tank filler cap, this might be an indication of illegal degassing by the vessel and a call to have a closer look. The drone has a wingspan of 2.40 metres, a cruise speed of 90 kilometres per hour, and a 95-kilometre range at low energy consumption.

Two or three drones would suffice to cover the entire port area and have a drone over the spot quickly when an incident occurs. Additionally, this drone can carry small cargoes of up to 3 kilos, such as refrigerated medical supplies, vessel parts, or cargo samples.

On flight days, operations always begin with a briefing with the NHV helicopter pilots, who are also stationed on the Pilotage Service site. The drone and helicopters share the same airspace, so there should be clear rules in place as to how this airspace is used.

VOLVO PENTA, CMB.TECH TO PARTNER ON DUAL-FUEL HYDROGEN ENGINES

Volvo Penta is partnering with CMB.TECH, the clean tech division of Compagnie Maritime Belge, to accelerate the development of dual-fuel hydrogen-powered solutions for both on land and at sea applications.

The companies have worked together in pilot projects since 2017, successfully adapting Volvo Penta engines to run as a dual-fuel hydrogen and diesel solution via a conversion kit provided by CMB.TECH.

The companies say the strengthened collaboration will create synergies aimed at leveraging the competences and product offerings of both, establishing dual-fuel hydrogen technology as a low-carbon interim solution before suitable zero-emissions alternatives become viable. The partnership will cover pilot projects and small-scale industrialization of a hydrogen dual-fuel solution for selected customers.

STOLT TANKERS TRIALS INNOVATIVE IN-TRANSIT HULL CLEANING TECHNOLOGY

Stolt Tankers has successfully completed an in-transit hull cleaning trial using Shipshave's ITCH (In-Transit Cleaning of Hulls) on board the Stolt Acer as she sailed from Port Said, Egypt to Algeciras, Spain.

Biofouling on ships' hulls is a major concern for shipping companies as it not only increases fuel consumption but can also lead to the transfer of invasive species to non-native waters. In transit hull cleaning gently cleans the hull more regularly than manual cleaning by divers. The reduction in the amount of drag due to biofouling consequently decreases fuel consumption.

Energy and Conservation Manager at Stolt Tankers, Jose Gonzalez Celis said: "The results of the initial trial were very positive. We saw a reduction of fuel consumption during the voyage, and this when combined with some of the other technological developments we are investigating will have a significant impact on our overall fuel consumption."

Image for illustrative purposes only

SUNREEF YACHTS TO BUILD WORLD'S LARGEST ELECTRIC CATAMARAN

Polish multihull specialist Sunreef Yachts has signed an order for Sunreef 43M Eco, which is set to become the world's largest electric catamaran.

The 43-metre (141-foot) electric catamaran was first revealed in January 2022 as the newest addition to the shipyard's Eco fleet, and the sale of the first hull was confirmed at Monaco Yacht Show 2022.

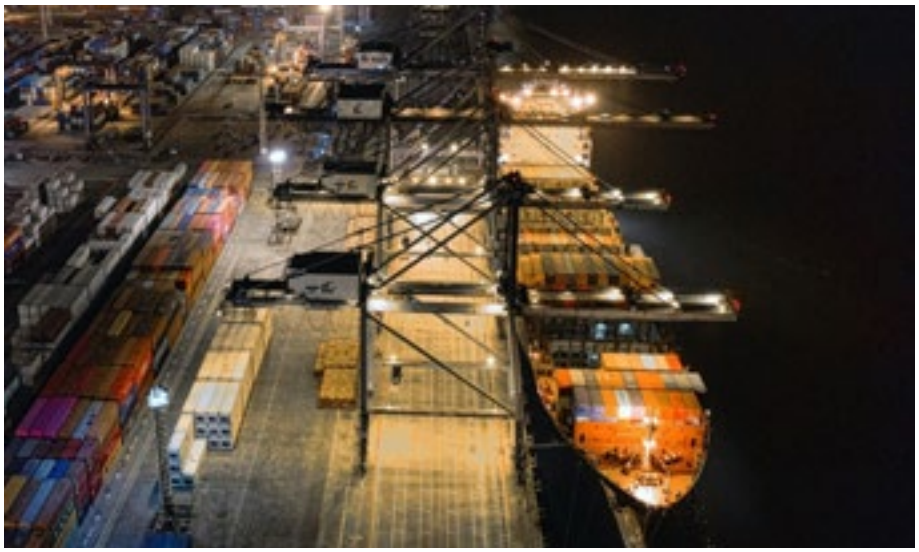
The hull, superstructure and rigging of the vessel feature integrated solar panels supplying the yacht with green energy while an advanced hydro-generation system produces clean power, for emission-free cruising and 'infinite range', according to the shipyard.

TIDAL WAVE OF NEW CONTAINERSHIPS EXPECTED: 2023-24 DELIVERIES TO BREAK RECORD

The container industry has experienced the most profitable two years in shipping history in 2021-22. Right on cue, owners ordered more new container ships than ever before.

"A huge number of new large container ships are going to hit the water at a time of stagnating demand," warned Alphaliner in a report. "The market could struggle to absorb all these new ships."

The containership orderbook now stands at 7.1 million twenty-foot equivalent units, according to Alphaliner shipping analyst Stefan Verberckmoes. The previous peak was 6.6 million TEUs in 2008. At that point, tonnage on order totalled 60% of the capacity of the on-the-water fleet.



The majority of tonnage on order will be delivered the next two years: 2.34 million TEUs in 2023 and 2.83 million TEUs in 2024, compared to around 1.1 million TEUs in both 2021 and 2022, said Verberckmoes.

ROLLS-ROYCE AND SANLORENZO TEAM UP FOR METHANOL PROPULSION IN LUXURY YACHTS

Rolls-Royce and Italian yacht builder Sanlorenzo plan to develop and build a large motor yacht with an engine that usees a methanol propulsion system able to run carbon-neutrally on 'green' methanol. The two companies announced an exclusive memorandum of understanding to this effect for yachts between 40 and 70 meters on the eve of the opening of the 2022 Cannes Yachting Festival. Powered by two mtu methanol engines based on the Series 4000, the Sanlorenzo yacht is expected to undertake her maiden voyage in 2026.

"We're making shipping more environmentally friendly and easier on the climate, and this agreement is a big step forward in the right direction," said Denise Kurtulus, Vice President of Global Marine at Rolls-Royce Power Systems: "Synthetic methanol, produced using electricity generated from renewable sources, is the obvious fuel of the future for many maritime applications – not least yacht propulsion." This is because methanol is a liquid which is easy to manage, and people are already used to handling it because it is already available in ports today. "Sanlorenzo is one of the most innovative yacht builders, making it our partner of choice for this project," she added.

Photo credit: Port of Rotterdam

VESSELS BOUND FOR SOME EUROPEAN PORTS ARE DIVERTING TO REMOVE FUMIGANTS FROM CARGO HOLDS

Vessels on route to some European ports are increasingly being requested by charterers to divert to an intermediate port to remove fumigants from the cargo holds prior to the final discharge port. According to North P&I Club, this mostly concerns vessels carrying Ukrainian and South American grains heading to the Dutch discharge ports of Rotterdam or Amsterdam.

Charterers are requesting vessels to divert to Cadiz for the reason that they wish to remove the fumigants to avoid delays due to strict requirements at the discharge port. Some European countries, such as the Netherlands, do indeed have strict requirements on fumigant gas levels in the holds. These requirements must be met before allowing the discharge of cargo.

On arrival, appointed chemists will measure the amount of residual fumigant gas remaining in the holds. This must be less than 1 part per million (ppm) to allow discharge to commence. If found to be 1ppm or greater, the vessel must remain at anchor, ventilating where possible to lower the fumigant gas level to decrease to below 1ppm. North's correspondent in the Netherlands reports this has in some cases taken up to three weeks.

To avoid the potential for delays at the discharge port, charterers are requesting the fumigation sleeves be removed earlier, to allow the holds to be ventilated for the remaining passage and to increase the chances of residual fumigant gases being less than 1ppm at the time of discharge. It is also reported that when measuring the residual gas levels in the holds and on deck, some authorities request the gas monitoring records taken on passage, as described in the IMSBC Code section 3.6. On occasion, these records have been found to be poor or not completed, leading to further delays and the potential for fines.

RIVER CANAL RESCUE'S CALLOUTS SET TO REACH AN ALL-TIME HIGH BY THE END OF THE YEAR

The inland waterways rescue organisation, River Canal Rescue, says figures up to September 30 are already 3318, ahead of 3235 logged for 2021, and 2850 rescues in 2020.

The callouts have generally been for electrical, fuel and engine issues, flat batteries, over-heating and gear box failures, with River Canal Rescue saying the rise is due to the high number of people unable to visit and maintain their boats during lockdown, resulting in minor niggles now becoming larger problems.

"Figures are currently at an unseasonable high and we still have a couple of months to go," said MD, Stephanie Horton. "It's worth noting that only 14% of callouts were attended by contractors this year, partially due to their availability.

She added: "Considering how busy we have been, it's likely 2022 will be one of the highest callout attendances on record."

UK ROYAL NAVY AIRCRAFT CARRIER HEADS TO ROSYTH FOR REPAIRS

The UK Royal Navy aircraft carrier HMS Prince of Wales left Portsmouth en route to Rosyth where the £3 billion aircraft carrier will receive repairs after breaking down off the Isle of Wight in August.

The 65,000-tonne warship will enter Babcock's dry dock in Rosyth where it will undergo repairs to its starboard propeller shaft which suffered a mechanical defect as the ship left for New York. Inspections by divers revealed the shaft coupling had failed.

Since the aircraft carrier returned to Portsmouth Naval Base in early September, the ship's engineers have been working with divers and expert naval architects and engineers from Babcock and the MoD's Defence Equipment and Support organization to work out what is needed to return HMS Prince of Wales back to operations.

NEW INTERIM CHIEF EXECUTIVE OF MARITIME AND COASTGUARD AGENCY APPOINTED

Damien Oliver has been appointed as the interim Chief Executive of the Maritime and Coastguard Agency (MCA). He begins his new role on Monday 17 October, following the retirement of MCA Chief Executive Brian Johnson.

MCA Chairman and board member Christopher Rodrigues said: "Damien has had a number of high-profile roles within the MCA since joining in 2001 and he will bring a wealth of maritime experience and knowledge.

"Damien has been responsible for major projects and programmes, procurement, commercial management and innovation, maritime business development which includes the UK Shipping Register and Shipping Concierge within the MCA.

"More recently, he has led on the programme to replace the current Coastguard aviation arrangements with the second-generation search and rescue aviation contract (UKSAR2G). And also been in charge of the project to replace the radio network infrastructure for HM Coastguard".

TWO NEW ISOs SET TO BE ADDED TO THE LIST OF DESIGNATED STANDARDS TO THE RECREATIONAL CRAFT REGULATIONS

Department for Business, Energy & Industrial Strategy

The Department of Business Energy & Industrial Strategy (BEIS) has published an update to the list of designated standards to the RCR (Recreational Craft Regulations). It has stated its intentions to add the following two ISO standards to the list of designated standards to the Recreational Craft Regulations (RCR).

They are:

- EN ISO 8666:2020/A11:2021 – Small craft – Principal data
- EN ISO 11592-2:2021 – Small craft – Determination of maximum propulsion power rating using manoeuvring speed – Part 2: Craft with a length of hull between 8 metres and 24 metres

This is a proposed update to the list of standards that businesses can use to show their products, services or processes comply with essential requirements of legislation, in this case the recreational craft regulations. This process is the UK equivalent to the EU harmonisation of standards to the RCD (Recreational Craft Directive).

For more information go to **https://bit.ly/3CSuqOE**. Or scan the QR code.

VITAL REPAIRS TO LIVERPOOL'S ALBERT DOCK SEA WALL UNDERTAKEN

Liverpool's historic Albert Dock sea wall will be more resilient to winter storms and River Mersey tidal surges in future, thanks to a £288,000 repair project. The waterways and wellbeing charity Canal & River Trust, which cares for the city's South Docks' water space and dock structures, is working on a complex eight-week maintenance programme along 350 metres of the dock wall, on the river side of the Tate Modern art gallery.

The project involves fitting new matching granite blocks into 18 holes in the 180-year-old wall, as well as clearing off debris and old grouting, and replacing it with new weather-resistant mortar. A drone survey has also identified 14 metres of significant cracks, and these will be repointed. New protective fenders will be attached to the Canning Half Tide Dock entrance.

NEW PROPOSED WORKBOAT 3 CODE FROM THE MARITIME & COAST GUARD AGENCY IS OPEN FOR CONSULTATION

Rules governing workboats, pilot boats and remotely operated vessels have been revised and remade to support innovation in industry. The revised Merchant Shipping (Workboats, Pilot Boats and Remotely Operated Unmanned Vessels) Regulations 2022 and accompanying Code is now going out for consultation across the marine industry.

It is felt the new version of the Code will help clarify the survey and inspection requirements and also addresses the growing autonomous vessel industry. Existing rules did not reflect those and other developments which is why the regulations and Code have been revised.

Rob Taylor, Code Vessel Lead for the Maritime and Coastguard Agency said: "We don't compromise on safety. It's as simple as that, so the safety underpinning these regulations will not change.

"However, we needed to reflect the fact that there is innovation happening right across the industry and we want to support that with appropriate regulations and guidelines. That's led to this work to provide a clear framework so that vessel owners and operators can continue to operate in confidence that they are fulfilling their legal obligations."

The consultation is due to last for 12 weeks and will close on 29 December 2022 at 11.45pm.

Background |This is a consultation on revoking and remaking the Merchant Shipping (Small Workboats and Pilot Boats) Regulations 1998 (S.I. 1998/1609) ("the 1998 Regulations") with amendments and modifications that will then provide a coherent legal framework for operators of workboats and pilot boats.

It will clarify the survey and certification requirements and responsibilities and updating the Code of Practice to reflect the current international standards that apply to these vessels and the equipment carried on board. This instrument also introduces new provisions for remotely operated unmanned vessels which now operate in this sector.

The original Code of Practice for the Safety of Small Workboats and Pilot Boats was one of four Codes of Practice published for small commercial vessels operating in UK waters under a common set of standards. The Code set a national standard and was generally accepted by industry because it could be easily referenced and understood, and it created a level playing field within the sector. The Code was also recognised internationally and is used by other national maritime administrations as a basis for standards of their own vessels. As a result, UK flagged workboats were able to win contracts and operate widely across the UK and the rest of Europe.

Consultation description | This consultation seeks your views on a new Statutory Instrument (SI) and accompanying code, The Safety of Small Workboats and Pilot Boats — A Code of Practice ("Workboat Code Edition 3"), which will provide a domestic legal underpinning for Workboats and Pilot Boats to operate on a commercial basis.

The Merchant Shipping (Small Workboats and Pilot Boats) Regulations 2023 and accompanying Code of Practice applies to workboats, including remotely operated unmanned vessels operating as workboats, and pilot boats that are less than 24m load line length.

This instrument updates the provisions previously made in the 1998 Regulations so that they set out in greater detail the application and certification process for vessels, the requirements on owners and masters to report incidents, the processes to be followed where a vessel is deficient or detained and the penalties that can arise if the Regulations are breached. The instrument also sets out the process that applies if a surveyor determines that a vessel is deficient to the extent that it does not correspond with the particulars under which it was certified or if it poses a danger to the vessels or a person on board. In addition, the instrument provides for disputes in relation to survey outcomes to be settled by arbitration.

The instrument also makes consequential amendments to other instruments which are needed to enable the provisions to apply to remotely operated unmanned vessels used as workboats. Remember you have until 11.45pm on 29 December 2022 to make your views known.

Read the main consultation document at **https://bit.ly/3V9ZCzV**. Or scan the QR code.

BRITISH YACHT BUILDER, JEREMY ROGERS, CREATOR OF THE LEGENDRY CONTESSA 32, HAS PASSED AWAY

The Jeremy Rogers Ltd boatyard has announced the sad loss of founder Jeremy Rogers MBE, who passed away aged 85 on 14 October 2022.

Jeremy Rogers is a name that will be known to many marine surveyors. He was something of a boatbuilding icon and many surveyors will probably have surveyed many of his many Contessa sailing yachts around the world. In a statement released by the company, the yard said, "His legacy as a boatbuilder and sailor is well documented, but he will also be remembered as a kind, generous man. Who can ask for more than that?".

Rogers set up business in 1961 at the age of 23, after serving his apprenticeship with Jack Chippendale MBE as a traditional wooden boatbuilder. Within a decade, Rogers had one of the most successful boat-manufacturing companies in Britain. Since the 1970s, the business has also been at the leading edge of building with composite materials, through the Atlas Carbon Products branch of Jeremy Rogers Limited.

During his five-decade career, Rogers built a large number of well-known yachts, and also made a significant contribution to the world of yacht racing as a keen yachtsman.

As a boatbuilder, Rogers was best known for designing the Contessa sailing yachts, ranging in size from the traditional 26 to the Doug Peterson-designed Grand Prix 35s, 39s and 43s, many of which were exported to a worldwide market. The two most popular Contessa yachts were the sprightly Contessa 26 and the hugely successful Contessa 32, designed in collaboration with David Sadler.

The Jeremy Rogers boatyard, operating from the Lymington Yacht Haven, still builds the much-loved Contessa 32, adding to the 650 or so already sailing all over the world. While Jeremy eventually stepped down as managing director of the firm in favour of his son Kit, he continued to be a regular presence at the yard for many years and remained on hand to pass on his lifetime of skill and experience.

SUNSEEKER INTERNATIONAL UNVEILS ITS NEW 42 M OCEAN 460 SUPERYACHT

Sunseeker International has unveiled the renderings for its new 42-metre Ocean 460 superyacht. The tri-deck yacht is part of the new Ocean range that includes the Ocean 156 and 182.

Rather than using the yacht's length for her model name, the Sunseeker Ocean 460's name references her gross tonnage, a new naming convention for Sunseeker.

The exterior of the Ocean 460 superyacht features sleek swooping curves and aggressive lines that are recognisable with the Sunseeker brand. One of the key highlights is her sky lounge that can be arranged to meet the owner's requirements with wet bars, dining and social spaces and free-standing or bespoke furniture options.

TWO NEW VIDEOS FROM WEST P&I CLUB

How to conduct a proper gas measurement of coal cargoes
When carrying coal cargoes, it is vital to obtain accurate gas measurements to determine the correct ventilation requirements. In a short video less than four minutes long, West P&I Club explains the correct way to undertake the gas measurement of coal cargoes in this short video.

Watch the video on YouTube at
https://youtu.be/g5DBUjiGcuo?t=4

Engine room fire safety
A new video has been added to the West of England P&I Club's LEARN THE ROPES video series, which deals with engine room fire safety to highlight the potential sources that can result in the development of a fire in the engine room and critical factors that the vessel's crew and superintendent should pay constant attention to for their prevention.

Watch the video on YouTube at
https://youtu.be/p2NoHalr7cs?t=2

REEFER CLAIMS INCREASE SHARPLY OVER THE PANDEMIC IS KEY REPORT FINDING

A new report by the Swedish Club, called "Container Claims – Refrigerated Containers," has identified a peak in refrigerated (reefer) container claims during the pandemic as a result of disruptions in the supply chain, with a high number of reefer containers being delayed either in port or during transportation to and from port via road or rail.

Between 2021 and 2022 the Club saw an increase in reefer container claims of 270%, with 4.1% of all container vessels having a reefer claim in 2020 compared with 11.4% in 2021. Reefer containers are the main cause of all container claims with 30% of the Club's total container claims being due to refrigerated cargo damage over the last five years.

"This emphasises the importance of monitoring cargoes properly and keeping correct records. If goods have already been damaged down the supply chain, then the onus is on the crew to demonstrate they have taken proper care of the container, from the moment it is on board until it leaves the vessel," Joakim Enström, Senior Loss Prevention Officer at The Swedish Club and author of the report said.

Download the report at **https://bit.ly/3DbwG23**.
Or scan the QR code

AMSA MARINE SAFETY BULLETIN NUMBER 16

This edition focuses on planned maintenance.

A lack of planned maintenance can have a significant impact on the safety of the vessel, people, and the marine environment. Maintenance-related issues do not always receive the attention they deserve, as these are often difficult to detect and can be regarded as entirely technical matters, unrelated to safety and pollution prevention. As a result, maintenance matters may not be reported or addressed as part of the organisation's safety management system. This increases risks to safety and can result in substantial costs arising from repairs and operational delays.

Nearly three quarters of all marine incident reports received by AMSA between 2019 and 2021 involved deficiencies or failures with onboard equipment, systems, or structure. Between January and February 2022, AMSA conducted focused inspections on planned maintenance which continued to highlight systemic problems with vessel maintenance.

Download the report at **https://bit.ly/3VDzgX6**.
Or scan the QR code

ONBOARD CARBON CAPTURE EXPLORED BY ABS IN NEW PUBLICATION

Emerging onboard carbon capture (OCC) technology is explored in a new publication from ABS in its latest support for the maritime energy transition. Launched at the global trade fair for Shipbuilding, Machinery and Marine Technology (SMM), Insights into Onboard Carbon Capture examines the various methods of OCC as well as carbon handling and storage and downstream considerations, as well as regulatory issues.

"Although there has been increased interest from the industry, the technology and its associated value chains have a long way to mature, and there are many factors to consider such as onboard power supply, fuel types, exhaust characteristics and onboard storage. This Insights document is an important step in moving the conversation forward, supporting shipowners and operators with the latest information from ABS engineering and joint development projects," said Georgios Plevrakis, ABS Vice President, Global Sustainability.

Download the publication at **https://bit.ly/3RPtGO8**.
Or scan the QR code.

CANAL & RIVER TRUST ANNUAL REPORT 2021/22 PUBLISHED

The Canal & River Trust 2021/22 Annual Report & Accounts document a continued rise in use of the towpath with nearly 800 million individual visits across the year and a record summer for boating once the waterways were able to re-open in May 2021 for unrestricted navigation. It is also the second year to be severely affected by Covid-19.

Accounting for variances relating to the pandemic, income for the year remained broadly stable, and the Trust was able to increase the amount spent on core maintenance and repair works to keep the network open, safe and navigable.

In a year that saw both drought and further winter storm damage, once again bringing additional unplanned and costly works, the Report highlights the increasing impacts of climate change and how, with continued support and funding, the Trust's 250-year-old network is helping to address the national crises in public health, biodiversity and the climate emergency.

Download the annual report at **https://bit.ly/3SBBtk0**.
Or scan the QR code.

ITIC CLAIMS REVIEW NUMBER 47 PUBLISHED

This edition of the Claims Review provides a selection of marine cases recently handled by ITIC. The case stories are likely to be of interest and will help others to identify potential problems in order to avoid these types of situations occurring in the future.

Download the report at **https://bit.ly/3TnZvPs**.
Or scan the QR code.

EUROPEAN SEA PORTS ORGANISATION ENVIRONMENTAL REPORT 2022

The European Sea Ports Organisation (ESPO) has published its ESPO Annual ESPO Environmental Report 2022 – EcoPortInsights. The report concludes that climate change is top priority for European ports.

The ESPO Environmental Report 2022 contains a number of positive trends amongst key indicators. For the first time since the start of monitoring, climate change has become the top environmental priority of ports. This underscores the value of the Environmental Report reporting on environmental performance of the sector. It provides ESPO and European policymakers with insights on the environmental issues that European ports are facing.

The Top 10 priorities include the following:

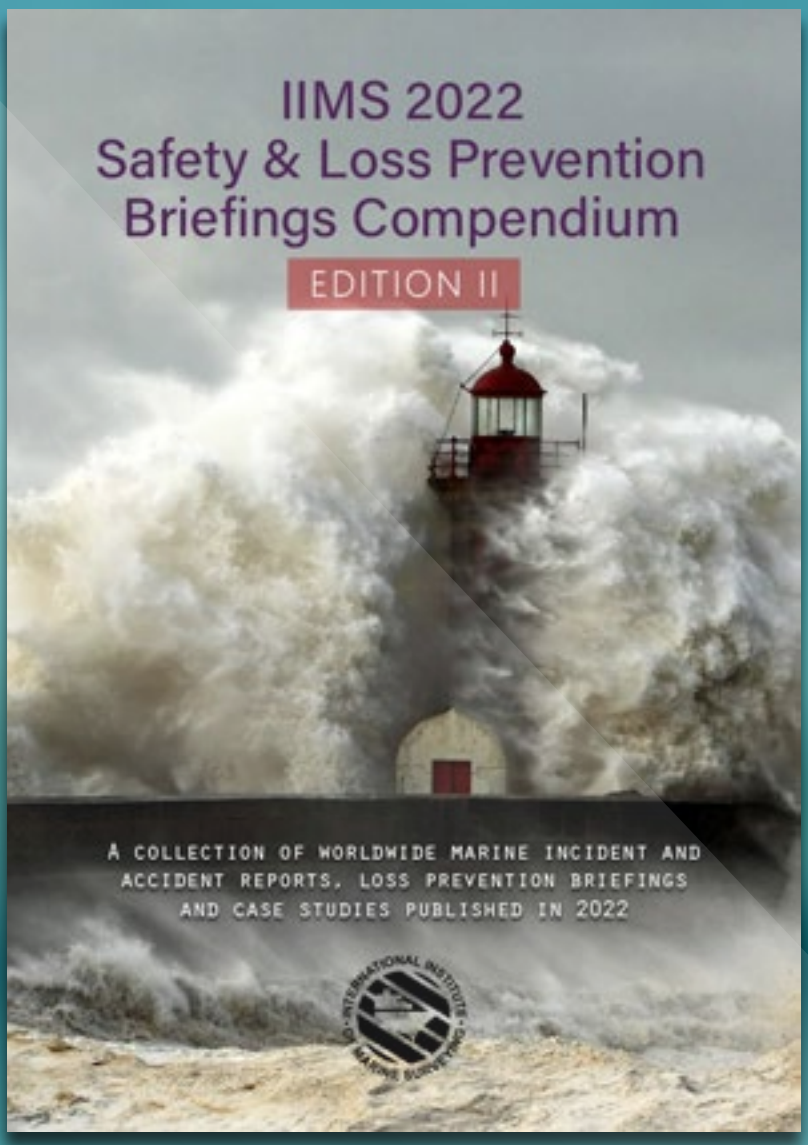
- Climate change
- Air quality
- Energy efficiency
- Noise
- Water quality
- Relationship with the local community
- Ship waste
- Garbage/ Port waste
- Port development (land related)
- Dredging operations

"Since 2020, the world is going through never before seen crises and Europe's ports are facing challenges they never had to face before. These challenges come on top of long-term efforts to move towards a more sustainable future in the maritime sector," said Isabelle Ryckbost, ESPO Secretary General.

Download the report at **https://bit.ly/3TujMn3**.
Or scan the QR code.

DOWNLOAD THE 2022 COMPENDIUM AT

http://bit.ly/3GpsbEr



SCAN THE QR CODE

PILOT FALLS INTO WATER AFTER LADDER ROPE BREAKS

In its monthly safety scenario bulletin, the Swedish Club describes an accident where a pilot had fallen into the water after one of the side ropes of the ladder broke, despite a recent monthly inspection. A couple of days before, the Safety Officer had done the monthly inspection of the safety equipment and had reported that the pilot ladder was in good, clean condition. The ladder had a four-year old certificate of conformity that was still valid.

To make it easier for the pilot boat to approach the vessel the Master made a small alteration to give the pilot lee from the wind. On the bridge the pilot put on his lifejacket and was escorted by the Chief Officer to the main deck. When the vessel had completed the alteration the pilot boat approached the vessel and the pilot started to climb down the ladder.

After a couple of steps one of the side ropes broke as it was rotten and the ladder swung heavily forward and aft. This caused the pilot to lose his grip and fall. He fell five meters into the water. At this time the vessel had a speed of about 2 knots. The Chief Officer told the Master over the radio that the pilot had fallen into the water. The Master immediately stopped the propeller pitch.

Read the full story at **https://bit.ly/3SLmeoC**. Or scan the QR code.

COMMON PROBLEMS ASSOCIATED WITH HATCH COVERS

The Japan P&I Club has published an excellent 26 page guide about hatch covers which can be downloaded at the end of this article. The guide highlights a number of key issues that need to be observed to reduce exposure to ingress and wetting damage claims.

Hatch cover maintenance and operation requires a thorough understanding of basic principles together with type specific issues and requirements. Experience and claims show hatch cover problems still remain one of the predominant causes for claims and accidents on board vessels.

According to the Japan P&I Club, "whilst hatch cover claims are generally associated with wetting damage, it should not be overlooked that incorrect maintenance or operation may involve loss of life and limb or pollution. Moreover, claims for wet damaged cargo, pollution or accidents and injuries will always have an adverse impact on the owner's business model."

To avoid hatch cover related claims, operators should consider setting up dedicated training and familiarization programmes related to occupational safety, operation and inspection. Relevant and type specific hatch cover checklists should also be made and their use implemented.

Download the guide at **https://bit.ly/3PYetdt**. Or scan the QR code.

POORLY IMPLEMENTED HOT-WORK PRECAUTIONS LED TO FIRE ON GENERAL CARGO SHIP

The Transport Accident Investigation Commission (TAIC) of New Zealand has published an investigation report on the general cargo vessel Kota Bahagia, which experienced a fire in the cargo hold forcing the crew to evacuate the ship.

At about 0648 on 18 December 2020, two fitters from a local engineering company commenced hot works in number 2 cargo hold 'tween deck. The number 2 'tween deck cargo consisted of nine 40-foot (12-metre) containers at the forward 5 end and six wind turbine nacelles at the aft end.

Specifically, the fitters' task was to remove the cargo stoppers that had been welded to the 'tween deck pontoons for securing the cargo. The removal of the cargo stoppers required oxygen/acetylene gas-cutting. One of the fitters carried out the cutting operations. The other watched for stray sparks and ejections of hot material, and placed the offcuts in a steel bucket after cooling them with water from a portable fire extinguisher. The master and the harbour master had issued permits allowing this hot work to take place. The fitters had completed their own job safety analysis prior to the vessel's arrival.

TAIC engaged the services of a specialist fire investigator to complete a report on the origin and cause of the fire. The fire investigator's conclusion was that the most likely ignition sequence was a hot slag bead from the gas-cutting igniting the sawdust from the dunnage that was used between the cargo and the steel deck, resulting in a smouldering fire.

Download the report at **https://bit.ly/3SLn9FA**. Or scan the QR code.

RIVER CRUISE SHIP EVACUATED AFTER SUSPECTED BATTERY EXPLOSION

Dutch officials are investigating an explosion aboard a river cruise ship docked in Amsterdam as a likely malfunction of the vessel's battery power system. The newly launched Viking Gymir, which was introduced by Viking for river cruises on the Rhine in 2022, features a new hybrid propulsion system that was developed in place of solely diesel propulsion on Viking's other Longships.

According to reports from the Amsterdam fire brigade, they were summoned to the vessel Monday, July 25 around 6:30 p.m. after reports of an explosion in the engine room followed by a small fire. Pictures posted on social media show the fire teams venting the ship. Testing is reportedly ongoing to determine what if any substances or toxins might have been released.

According to EST-Floattech, its energy storage system has a raft of integrated safety features. "Its unique active balancing and passive safety system is applied at the module and string level. Heat is dissipated by a simple off-the-shelf aircon unit." Their website says the battery racks are a favourable option as they can easily be installed in a modular fashion.

REPORT bites

California State University Maritime Academy has appointed Samaro Bannister-Schneider to serve as interim captain of its Training Ship Golden Bear, the first female to be appointed to this role.

The largest container ship in the world the MSC Tessa has been floated out of its dock at Jiangnan Changxing Shipyard. Its total carrying capacity is 24,116 TEU.

Rolls-Royce and Sanlorenzo are teaming up to build a large motor yacht capable of running on green methanol.

Sunseeker introduced a new range of luxury performance motor yachts, the Ocean 156 and Ocean 182, at the 2022 edition of Cannes Yachting Festival.

DNV has secured a contract to provide the evidence required to demonstrate the safe use and conversion of the local transmission systems high-pressure pipelines for transporting 100% hydrogen in the UK.

Norway's H2Carrier and Statkraft have entered into an MOU regarding a study for the possible use of H2Carrier's green ammonia floating production vessel on certain offshore wind locations.

BASF and Samsung Heavy Industries will carry out a collaborative feasibility assessment of capturing CO2 onboard maritime vessels using BASF's OASE blue technology for flue gas applications.

Finland-based ferry company Viking Line has managed to cut emissions from its vessels by 30 percent per nautical mile since 2008, the company revealed.

Kongsberg Maritime has signed a contract with Holland Shipyards Group to provide electrification and control systems for electric ferries, on behalf of the Swedish Transport Administration.

A period of aggressive vessel scrapping will be required to address a looming "severe risk of overcapacity" in container shipping.

Safety Briefings

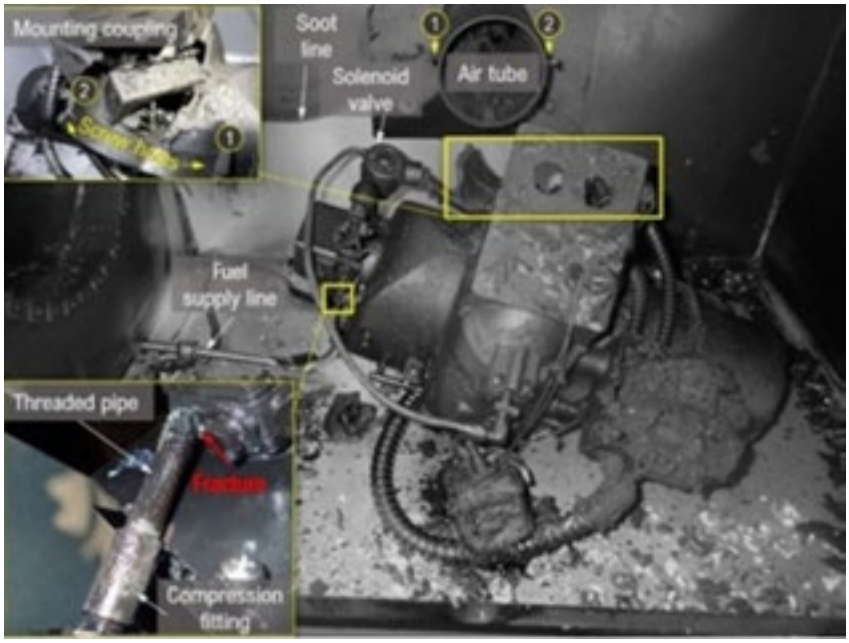
PORT STATE CONTROL AUSTRALIA 2021 REPORT PUBLISHED

The Australian Maritime Safety Authority (AMSA) has released its Port State Control (PSC) Annual Report for 2021, which shows that detention and deficiency rates per inspection have continued to remain low. AMSA Executive Director of Operations, Michael Drake, said the authority's reputation for having a zero-tolerance approach to non-compliance with internationally agreed standards, continued to have a positive influence on the quality of ships being brought to Australia.

Key highlights

- 26,400 ship arrivals by 6,170 foreign-flagged ships.
- 2,820 PSC inspections.
- 159 ship detentions.
- Bulk carriers accounted for 56.1 per cent of ship arrivals and 60.7 per cent of PSC inspections.
- Port State Control inspections were carried out at 53 Australian ports.
- The average gross tonnage per visit was 54,015 GT compared to 54,318 GT in 2020.
- The average age of ships calling Australian ports remained at 11 years, the same as 2020.
- The 2021 detention rate sat at just 5.6%, down slightly from the 2020 detention rate of 5.9%. The 2021 deficiency rate per inspection was just 2.2, almost on par with the 2020 rate of 2.1.

To read the analysis go to **https://bit.ly/3SzQinr**. Or scan the QR code.



REPEATED REMOVAL AND REINSTALLATION OF FURNACE'S BURNER CAUSES ENGINE ROOM FIRE

The National Transportation Safety Board (NTSB) has published its accident report about an engine room fire on the Roger Blough during the dry bulk carrier's winter layup at the Fincantieri Bay Shipbuilding facility at Sturgeon Bay, Wisconsin.

The Roger Blough had a fixed carbon dioxide (CO2) fire-extinguishing system to suppress fires in the engine room; the system was disconnected during winter layup due to the risk of an accidental discharge with workers in the space. Six portable B-II fire extinguishers and one semiportable CO2 fire extinguisher were also in the engine room.

As a safety measure during this layup period, the vessel operator had installed temporarily in the engine room a wireless monitoring and notification system comprised of two smoke detectors, air blower pressure indicators for the sea chest, and bilge-level indicators. The temporary monitoring and notification system was intended to ensure notification when no crewmembers were on board standing watch on the bridge or in the engine room to monitor the vessel's vital systems. Engine room equipment, such as the vessel's diesel oil-fired hot air furnace, was not connected to the temporary monitoring system. An alarm panel for the temporary monitoring system was mounted in a passageway on the ship's spar deck, port side, in the accommodation spaces near the crew's staterooms. If any issues were detected, the system would activate an audible/visual alarm locally at the panel and notify three designated cell phone contacts via a text message. Another temporary system of smoke detectors was in the crew's accommodation spaces, including individual staterooms, and sounded locally; it was not connected to the monitoring system.

Analysis

At the time of the casualty, the Roger Blough, a bulk carrier designed to operate exclusively on the Great Lakes, had been in winter layup with no reported issues. However, about a month before, the vessel's diesel oil-fired furnace, which had been installed in the engine room to heat the space during the winter, had stopped operating; it was repaired soon afterward.

When the fire erupted at nighttime, the wireless monitoring and notification system temporarily installed on the vessel for the layup period activated the alarm panel in a passageway within the crew's accommodation spaces and then notified the three designated contacts. The shipkeeper, the only person on board (and who was not listed as a designated contact), was awakened 7 minutes later by the alarm to the individual smoke detector inside his stateroom as thick black smoke filled it.

By the time the fire department arrived 12 minutes after the designated contacts were notified, the shipkeeper had departed the vessel without injury as the fire was spreading throughout the engine room and up through the aft house of the Roger Blough.

Safety issues identified in this report are as follows:

- The lack of a fire-activated valve on the fuel oil piping to the burner on the furnace in the engine room;
- The lack of regulations governing furnace installation and operation on board certain vessels;
- Inadequate notification to onboard personnel of a fire.

Download the report at **https://bit.ly/3TcGMX8**. Or scan the QR code.

LITHIUM-ION BATTERIES: FIRE RISKS AND LOSS PREVENTION MEASURES IN SHIPPING

Given the many difficulties in suppressing battery fires, particularly at sea, focusing on loss prevention measures is crucial, whether batteries are transported within EVs or as standalone cargo, according to a new risk bulletin published from marine insurer Allianz Global Corporate & Specialty (AGCS).

Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS, said, "Shipping losses may have more than halved over the past decade but fires on board vessels remain among the biggest safety issues for the industry. The potential dangers that the transportation of lithium-ion batteries pose if they are not stored or handled correctly only add to these concerns, and we have already seen a number of incidents."

As a key component of electric vehicles (EVs) or electronic devices, the transport of highly inflammable lithium-ion (Li-ion) batteries is increasingly impacting shipping safety as demonstrated by a number of fires on vessels such as roll-on roll-off (ro-ro) car carriers and container ships.

In fact, the pressing issue of fires onboard was prominent at Allianz's latest Safety and Shipping Review. AGCS noted that there have been over 70 reported fires on container ships alone in the past five years.

Fires often start in containers, which can be the result of non-/mis-declaration of hazardous cargo, such as chemicals and batteries – around 5% of containers shipped may consist of undeclared dangerous goods. Fires on large vessels can spread quickly and be difficult to control, often resulting in the crew abandoning ship, which can significantly increase the final cost of an incident.

Hazards and causes

The risk bulletin "Lithium-ion batteries: Fire risks and loss prevention measures in shipping": highlights four main hazards:

- Fire (Li-ion batteries contain electrolyte, an ignitable liquid);
- Explosion (resulting from the release of ignitable vapor/gases in a confined space);
- Thermal runaway (a rapid self-heating fire that can cause an explosion);
- Toxic gases that these hazards can produce.

According to Allianz, the most common causes of these hazards are:

- Substandard manufacturing of battery cells/devices;
- over-charging of the battery cells;
- over-temperature by short circuiting;
- damaged battery cells or devices.

Download the report at **https://bit.ly/3CLiL3R**. Or scan the QR code.

SINKING OF EMMY ROSE BRINGS FRESH CALLS FOR MANDATORY PERSONAL LOCATOR BEACONS

The National Transportation Safety Board (NTSB) is reiterating calls for personal locator beacons to become mandatory following its investigation the publication of its report into the 2020 sinking of the F/V Emmy Rose that claimed the lives of four crew members off Cape Cod.

The NTSB said the fishing vessel Emmy Rose likely capsized in 2020 after seawater collected on the aft deck and flooded into the vessel through deck hatches that were not watertight. NTSB investigators also found that two freeing ports, designed to drain water, were closed. That caused the vessel to list starboard, further reducing the Emmy Rose's already compromised stability. All four crewmembers were never found and are presumed dead. The vessel was declared a total loss valued at $325,000.

Although investigators could not definitively determine the source of initial flooding, it most likely began through the lazarette hatch's cover, which did not have securing mechanisms and therefore could not be made watertight. That allowed following seas—seawater that flows in the same direction as the vessel—and accumulating water on deck to flood down into the lazarette, a compartment below the deck in the aft end of a vessel.

NTSB determined the probable cause of the sinking of the Emmy Rose was a sudden loss of stability, aka capsizing, caused by water collecting on the aft deck and subsequent flooding through deck hatches, which were not watertight or weathertight because they had covers that did not have securing mechanisms, contrary to the vessel's stability instructions and commercial fishing vessel regulations.

Download the report at **https://bit.ly/3BkE0Yd**. Or scan the QR code.

LITHIUM-ION BATTERIES CONTRIBUTED TO FIRE ON MY SIEMPRE REVEALS MSIU REPORT

The release of the Malta's Marine Safety Investigation Unit (MSIU) report into the fire onboard MY Siempre has once again brought the subject of Lithium-ion batteries into sharp focus. The report says that it can't exclude the fact that the Lithium-ion batteries on board were either the cause of the fire, and/or a contributing factor to the intensity and spread of the fire. Neither can it exclude the possibility that the fire may have started due to a short circuit in the electrical power socket of the yacht's water scooter.

Conclusions

1. It was not excluded that the Li-ion batteries on board were either the cause of the fire, and / or a contributing factor to the intensity and spread of the fire.
2. The safety investigation did not exclude the possibility that the fire may have started due to a short circuit in the electrical power socket of the yacht's water scooter.
3. The yacht most probably lost its stability and eventually listed to port side as a result of the water from the fire-fighting activity.
4. The fire continued intermittently for two days after the accident, even with the yacht partially submerged.
5. The retention on board of a dead battery suggested that there was not full awareness of related fire hazards.

Download the report at **https://bit.ly/3ysHBD0**. Or scan the QR code.

REPORT bites

With its TMON (Oil lubricated, +) notation, DNV said it becomes the first classification society to provide a qualified notation that adds another dimension to propeller shaft and bearing condition monitoring.

The European Commission has announced that it will protect 87 vulnerable marine ecosystems from deep-sea bottom fishing near the Atlantic coasts of France, Ireland, Portugal and Spain.

Freire Shipyard has laid the keel of an all-new superyacht project that will exceed 100-metres in length.

Abu Dhabi National Oil Company (ADNOC) has sent out the first shipment of low-carbon ammonia from the United Arab Emirates to Hamburg, Germany.

The UK Government is launching a £60 million clean maritime competition aimed at helping finance innovative projects that can facilitate the maritime sector to cut its greenhouse gas emissions.

Dutch company Huisman has developed a harsh environment semi-submersible drilling rig design, which can be powered with onshore-produced hydroelectricity but also with floating wind turbines.

Worldwide renewable energy employment reached 12.7 million last year, a jump of 700,000 new jobs in one year according to a new report by International Renewable Energy Agency (IRENA).

German battery technology company Freudenberg e-Power Systems received type approval from classification society RINA for the first methanol-powered fuel cell system.

The Panamanian Consulate in Marseille commemorated its 114 years serving the maritime industry this summer by hosting a coffee-tasting session for guests from the French maritime sector.

Norway's cleantech company TECO 2030 has launched a new product concept for its containerized fuel cells, the TECO 2030 Power Barge.

A worker has died after falling off a rig and into the water at a Kiewit Offshore Services' yard near Corpus Christi, Texas.

Safety Briefings

SWEDISH CLUB HIGHLIGHTS THE DANGERS OF CARGO FUMIGATION

Many freight container units and bulk cargo holds on ships are treated with chemical pesticides termed fumigants. Fumigant must be applied according to the correct instructions. As holds are always unventilated for a time after fumigation, there may be a risk of excessive condensation, which can produce sweating or dripping. This can lead to cargo damage as well as fire and explosion risks, the Swedish P&I Club has warned.

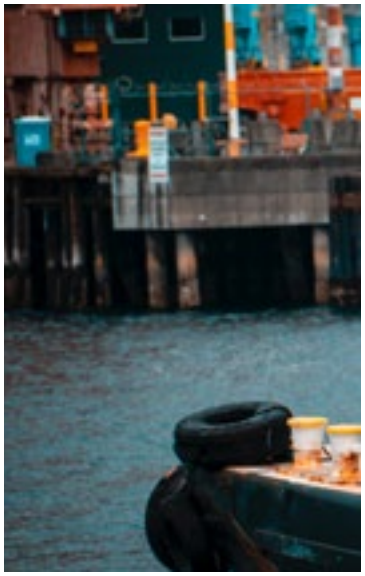
In particular, the Club says that agricultural products in bulk may be fumigated in ships' holds to prevent insect infestation. Solid aluminium phosphide (or similar) is often used for fumigation. Aluminium phosphide reacts with water vapour (humidity) in air to produce phosphine, a toxic and flammable/explosive gas, which kills insects.

Heat is also given off during the reaction. The solid fumigant may be applied in fabric 'socks' or as pellets on the surface, just before closing holds. Holds are then kept closed for a period before ventilating and people must keep out of holds that are being fumigated due to the toxic fumigant.

If there is an excessive amount of fumigant in one place, or if the fumigant is contacted by liquid water e.g. from sweating or condensation, then the fumigant can react too quickly. This can evolve excessive heat and lead to ignition of cargo and/ or packaging such as bags or paper placed over the top of the cargo. Under certain conditions the fumigant gas itself may ignite, producing an explosion.

It is important that fumigant is applied according to the correct instructions. As holds are always un-ventilated for a time after fumigation, there may be a risk of excessive condensation, which can produce sweating or dripping. This can lead to cargo damage as well as the fire and explosion risks mentioned above. The weather conditions and cargo conditions, such as moisture content, therefore need to be considered properly before fumigation, which is often carried out by specialist companies.

BUNKER FUEL CONTAMINATION CASES ARE ON THE INCREASE



UK P&I Club has said bunker fuel analysis indicates more cases of contaminated bunker fuel in the Rotterdam and Amsterdam areas (ARA), suggesting that the problem persists.

During July, Veritas petroleum services (VPS) issued a bunker alert regarding the same issue. VPS reported that they had investigated samples of very low sulphur fuel oil (VLSFO) taken in the ARA region following reports that vessels using these fuels were experiencing operational problems, such as excessive wear of fuel pump plungers, barrels and injectors.

One vessel lost propulsion and had to be towed, and the failure started with engines unable to take the load due to damage within the fuel system.

Due to the severity of the problems faced, it will be prudent to pre-test the fuels bunkered using accredited testing methods as a precautionary measure to detect these contaminants and assess the risk that each bunker stem poses to machinery.

DUTCH TALL SHIP ACCIDENT RESULTING IN THREE DEATHS CAUSED BY WOOD ROT SAYS INVESTIGATION

An investigation into the fatal accident onboard the Amicitia where its mast broke and killed three people has revealed wood rot as the cause. The Dutch Safety Branch report revealed that there was no maintenance plan for the mast in question. The mast certificate issued in 2012, which was valid until 2018, caused the captain to think that this safety critical part of the ship met all safety requirements.

"In order to guarantee the safety of passengers, the historic ships sector must professionalise. With the commercial growth of the past decades, a backlog has been built up in knowledge and expertise about the safe maintenance of these special ships," said the report.

The Amicitia is one of 300 sailing ships in what is known as the 'bruine vloot', or brown fleet, which comprises of historic ships chartered for passengers. In the main, the Human Environment and Transport Inspectorate (ILT) is responsible for verifying that these ships and their owners comply with legal requirements under its role as a supervisor. But the report said that "In practice, the ILT does not appear to execute this responsibility."

The body previously did inspections itself, but now has private approval bodies which conduct the fleet's safety checks. The report added that these inspection bodies do not comply with the legal regulations and there is a lack of supervision from the Inspectorate. Worryingly, the Dutch Safety Board said that other parts of the vessel may not be adequately inspected, giving rise to multiple safety concerns.

REPORT bites

French classification society Bureau Veritas has awarded approval in principle to Gas and Heat, an Italian designer of liquefied gas handling systems, for its flexible solution for the transport of LNG and ammonia.

A shipping industry group representing 80% of the world's commercial ships is proposing a global carbon emissions reduction fund to reward "first movers" using low emission fuels.

Sustainable yacht builder Vaan Yachts has taken over yacht service company Yagra in Hellevoetsluis.

Vision Marine Technologies is launching what it describes as a '100 per cent recyclable boat', called the Phantom, for the US leisure marine market.

A post-pandemic boom in boating in the UK has corresponded with a notable increase in theft and damage of marine equipment, according to the police-owned non-profit Police Crime Prevention Initiatives.

Statistics released by the NZ Marine Industry Association show boating is New Zealand's largest recreational activity with 40 per cent of population participating in boating each year.

Dover is being re-connected with Boulogne by a pioneering cross-channel service. A sailing yacht is being used as ferry service, to transport foot passengers and cycle tourists.

An experiment to boost restoration efforts of the seagrass for use in marine regeneration projects has reached an important stage in its trials in Falmouth Harbour.

Parts of the St. Lawrence River near Montreal have hit 10-year lows, said Bryce Carmichael, hydraulic engineer and US section secretary for the International Lake Ontario-St. Lawrence River Board.

New Zealand's MOVE Logistics Group says it is going full speed ahead on green coastal shipping solutions, using a methanol-ready RO/RO.

Ingenity Electric has signed a multiyear agreement to provide and install all-electric drivetrains in new Hacker-Craft models.

Safety Briefings

MARINE Safety Forum

CO2 SYSTEM LEFT NON-OPERATIONAL AFTER SERVICING

The Marine Safety Forum (MSF) has issued a safety alert and shared some lessons resulting from an incident where the safety pins of the fixed CO2 system flexible hoses had not been removed and were still in place. An MSF member vessel had undergone a firefighting equipment survey. All equipment was fully inspected and any faults or discrepancies were rectified. The fixed CO2 system flexible hoses were renewed as the system had reached its 10 years of service life.

To allow the survey to be conducted in a safe manner the safety pins had been put in place, while the outside contractors carried out their inspection. When finished these should have been removed, to make the system ready for activation.

On re-joining the vessel at the scheduled crew change almost 4 weeks after the survey, the C/E/O after a routine inspection, found that the safety pins inserted during the survey had not been removed and were still in place making the system inoperable. This unnoticed action had a high potential to develop into a serious incident if the CO2 system had been required for extinguishing an engine room fire.

Details on causes and corrective actions specific to this incident were not provided by the vessel owner but lessons learned, and actions below were re-enforced from a previous safety alert that had been issues in August 2021. This guidance was relevant to the incident described

It should be noted that the below recommendations were specific to that vessel owner and each vessel should review against their own processes.

- Before any work, including contractual work commences on essential Fire Fighting equipment, a permit to work should be issued, this must include an entry in the isolation log, to the effect that the system has been isolated. This should be backed up by an entry recorded in the deck log. This helps to ensure that the system cannot be left in an inoperable condition.
- Never assume and rely that all will be well and ok. Assumption is the pathway to undesired events. Always check and verify.
- Always inspect 3rd party actions to ensure any systems they work on, is reinstated to original design intent after completion of the task.

Work is only complete when the isolations are removed, and the permit can be closed.

ENSURING SAFE OPERATION WHEN CARRYING BAGGED RICE CARGOES

In collaboration with CWA International, The Swedish P&I Club has issued cargo advice and guidance to assist operators when carrying bagged rice cargoes.

1 Pre-loading
Prior to loading, the crew must ensure that the cargo hatches are watertight. It is prudent for a hatch cover test to be undertaken. This can be done using an ultrasound device or hose test. These tests are important as they enable the crew to make any necessary repairs to the hatch covers prior to loading of cargo. Furthermore, they provide good supporting evidence against accusations of water ingress through the hatch covers in the event of a wet damage cargo claim.

2 During loading
Dunnage & Stowage: Dunnage refers to the material used to separate cargo from the interior steelwork of the holds. The purpose is to reduce the risk and severity of damage arising from bags in contact with the hold steelwork and condensation.

Fumigation: Bagged rice cargoes are usually fumigated on completion of loading. The fumigation is typically for in transit fumigation although sometimes the cargo may be fumigated ashore prior to loading or on arrival at the destination.

3 During voyage
Bagged rice is most at risk of ship's sweat-type condensation wetting when the vessel sails from the Indian Ocean to the Atlantic Ocean via South Africa. The vessel experiences a large temperature change due to the much cooler Benguela Current which runs up the south western coast of Africa. The risk of condensation can be exacerbated when the vessel also sails on this route during the Southern Hemisphere winter.

Bagged rice may also be at risk of cargo sweat type condensation on certain voyages. This is associated with the shipment of low temperature bagged rice from Northern China in winter. Moisture will condense on the relatively cool cargo if the holds are incorrectly ventilated with warmer air during the voyage or when the holds are opened for discharge in high temperature and humidity conditions at the destination.

4 During discharge
A tally company should be appointed at discharge. It is common for there to be tally discrepancies between the various parties at discharge. Ideally, the tally should be performed jointly at an agreed tally position to avoid differences in final tally figures.

A tallyman should be stationed in the hold being worked, at the truck alongside the vessel and if possible, at the receiver's warehouse. The location of the receiving warehouse should be noted particularly if the cargo is delivered outside the port area.

Crew, tallymen and surveyors should also be vigilant of stevedores cutting bags deliberately to pilfer rice and to inflate the quantity of sweepings at the end of discharge.

5 Mitigation
The receiver will normally perform a survey of any damaged bags at the completion of discharge. This is usually a joint survey with all surveyors present. The survey should include cutting open a representative number of the bags segregated as damaged to assess depreciation of the rice. The bags for inspection should be selected randomly and from across the whole bag stack not only the top layer. Surveyors should also request to be present at any reconditioning or rebagging exercises and witness the destruction of any damaged rice after such activities.

MAIB REPORT INTO THE FLOODING AND SINKING OF SURVEY WORKBOAT BELLA

Image courtesy of Geosight Ltd

On 6 July 2021, the UK survey workboat Bella flooded and sank while carrying out hydrographic survey operations in the approaches to Lynmouth, England. Bella's crew abandoned into the liferaft and were rescued uninjured by a local boat owner; there was no pollution.

Safety Issues

- The survey workboat Bella was vulnerable to swamping, even in moderate sea conditions because its multibeam echo sounder gantry reduced its forward freeboard.
- Despite being issued with the necessary certification, Bella was not compliant with The Workboat Code; shortcomings in construction and means of flotation were missed during the certifying survey due to the surveyor's overreliance on Recreational Craft Directive documentation.
- Bella's crew were inexperienced and underestimated the risk of operating the vessel in the open sea and were guided by an ineffective safety management system the crew's wearing of PFDs and familiarity with lifesaving equipment led to a safe and orderly abandonment.

Conclusions

- Bella sank because it became swamped with seawater and had insufficient reserves of buoyancy or means of flotation to remain afloat. The vessel was vulnerable to swamping even in moderate sea conditions because the addition of the multibeam echo sounder gantry had significantly reduced its forward freeboard.
- Despite being issued with the necessary certification, Bella was not compliant with The Workboat Code; shortcomings in construction and means of flotation were missed during the certifying survey due to the surveyor's overreliance on RCD documentation.
- The Geosight team at Lynmouth almost certainly underestimated the risk of Bella flooding and swamping as they had no recent experience of operating in the open sea and had become accustomed to operating in sheltered waters with low sea states.
- Geosight's operations manual was not an effective safety management system; shortcomings included underestimation of hazards associated with vessel modifications, operating conditions and crew qualifications.
- Bella's two crew managed the emergency creditably and were fortunate to be rescued by local vessels soon after their boat sank. The wearing of PFDs and their familiarity with lifesaving equipment led to a safe and orderly abandonment.

Recommendations

- The Maritime Coastguard Agency has been recommended (2022/131) to Provide guidance to Certifying Authorities regarding the application of the Recreational Craft Directive when certifying vessels for commercial operation.
- Bella's owner has been recommended (2022/132) to implement a safety management system for its vessels that follows the principles of the ISM Code.

Download the report at **https://bit.ly/3edW12A**. Or scan the QR code.

FURTHER ACTION REQUIRED FOLLOWING THE CONCEPTION FIRE LESSONS

Conception.
Image credit SeaWayBoats

Three years after the fire onboard the Conception dive boat in the US, more progress is needed on the safety recommendations the National Transportation Safety Board (NTSB) issued as a result of the investigation.

The Conception was anchored in Platts Harbor, off Santa Cruz Island, California, when it caught fire in the early morning of Sept. 2, 2019. The vessel burned to the waterline and sank less than 100 feet from shore. Tragically, the 34 people asleep below deck were trapped in the bunk room: 33 passengers and one crew member lost their lives.

Following the investigation, the NTSB issued 10 new safety recommendations:

1. US Coast Guard (USCG): Revise Title 46 Code of Federal Regulations Subchapter T to require that newly constructed vessels with overnight accommodations have smoke detectors in all accommodation spaces.
2. USCG: Revise Title 46 Code of Federal Regulations Subchapter T to require that all vessels with overnight accommodations currently in service, including those constructed prior to 1996, have smoke detectors in all accommodation spaces.
3. USCG: Revise Title 46 Code of Federal Regulations Subchapter T and Subchapter K to require all vessels with overnight accommodations, including vessels constructed prior to 1996, have interconnected smoke detectors, such that when one detector alarms, the remaining detectors also alarm.
4. USCG: Develop and implement an inspection procedure to verify that small passenger vessel owners, operators, and charterers are conducting roving patrols as required by Title 46 Code of Federal Regulations Subchapter T.
5. USCG: Revise Title 46 Code of Federal Regulations Subchapter T to require all small passenger vessels with overnight accommodations, including those constructed prior to 1996, to provide a secondary means of escape into a different space than the primary exit so that a single fire should not affect both escape paths.
6. USCG: Review the suitability of Title 46 Code of Federal Regulations Subchapter T regulations regarding means of escape to ensure there are no obstructions to egress on small passenger vessels constructed prior to 1996 and modify regulations accordingly.
7. USCG: Review the suitability of Title 46 Code of Federal Regulations Subchapter T regulations regarding means of escape to ensure there are no obstructions to egress on small passenger vessels constructed prior to 1996 and modify regulations accordingly.
8. Passenger Vessel Association, Sportfishing Association of California, National Association of Charterboat Operators: Until the US Coast Guard requires all passenger vessels with overnight accommodations, including vessels constructed prior to 1996, to have smoke detectors in all accommodation spaces, share the circumstances of the Conception accident with your members and encourage your members to voluntarily install interconnected smoke and fire detectors in all accommodation spaces such that when one detector alarms, the remaining detectors also alarm.
9. Passenger Vessel Association, Sportfishing Association of California, National Association of Charterboat Operators: Until the US Coast Guard requires small passenger vessels with overnight accommodations to provide a secondary means of escape into a different space than the primary exit, share the circumstances of the Conception accident with your members and encourage your members to voluntarily do so.
10. USCG: Require all operators of U.S. flag passenger vessels to implement safety management systems, taking into account the characteristics, methods of operation, and nature of service of these vessels, and, with respect to ferries, the sizes of the ferry systems within which the vessels operate.

REPORT bites

The Saildrone Surveyor departed Dutch Harbor in Alaska's Aleutian Islands, embarking on a multipartner project to better understand the ocean and seafloor in one of the most understudied parts of the United States.

ABS collaborated with Sea Machines and Foss Maritime to advance adoption of autonomous operations at sea by issuing approval in principle to their vessel autonomy system.

Artemis Technologies has rolled out 100% electric passenger ferry design.

Seeking to grow its inland navigation workforce, Germany is offering new programs to train inland waterways boatman/boatwoman and boatmasters.

The American Boat & Yacht Council (ABYC) has named Sarah Devlin as the new accreditation director to manage and promote the ABYC Foundation's expanding Marine Trades Accreditation Program.

Canada intends to start shipping green hydrogen produced by wind farms to Germany by 2025, the first step in a partnership to help Europe's biggest economy reduce its reliance on fossil fuels.

Carnival Corporation's Holland America Line reports that it has completed the cruise industry's first multiweek test of biofuels on board its 1,432-guest cruise ship Volendam.

Oy M. Rauanheimo Ab is now operating a new, eco-efficient Generation 6 Konecranes Gottwald Mobile Harbor Crane at the Port of Röyttä.

South Korea's Daewoo Shipbuilding & Marine Engineering has developed a land-based test site for electrification within its research and development center at the university campus in Siheung.

Iconic Italian boatbuilder Riva has presented a prototype of its El-Iseo, the brand's first full electric runabout in Monaco.

Safety Briefings

ICHCA GUIDANCE ON SAFE LIFTING OF ISO CONTAINERS AND TANKS USING HOOKS AND WIRES ISSUED

The International Cargo Handling Coordination Association (ICHCA) has published a safety briefing document to offer advice into some of the safety principles associated with safe lifting of ISO containers and tanks using hooks and wires.

According to ICHCA, any lifting operation of this type should be undertaken by competent persons in compliance with applicable regulatory frameworks and is the responsibility of the duty holder.

The use of gantry cranes and spreaders is the optimal and preferred method for lifting ISO containers and tanks (collectively referred to as Cargo Transport Units, CTUs) in most situations. However, not all terminals have this equipment available. At some terminals it is therefore accepted practice to lift ISO containers and tanks using wires or chains and single-rope cranes, such as mobile harbour cranes (MHCs)1 or barge-mounted derricks.

Safety should always be considered in any lifting operation and this alert sets out some key principles when lifting any cargo including containers by hook and chain or wires. When handling ISO containers only methods allowed in ISO 3874 should be used. In general, lifting a packed ISO container by the top corner fittings requires a spreader or vertical slings or chains. Angled slings should not be used.

Download the safety alert at **https://bit.ly/3rFa70B**. Or scan the QR code.

AMSA TO INCREASE FOCUS ON PLANNED MAINTENANCE AS PART OF PSC INSPECTIONS

The Australian Maritime Safety Authority (AMSA) is highlighting to vessel operators the importance of planned maintenance in ensuring safe operation of ships, and says it will increase its focus on planned maintenance during Port State Control (PSC) inspections.

Recent incidents have demonstrated the potentially serious consequences of a lack of effective maintenance of main engines and power generation systems that can pose serious risks to the safe and pollution-free operation of vessels.

In response to this, AMSA will immediately increase focus on planned maintenance during routine Port State Control inspections. During Port State Control inspections, AMSA will place a greater focus on planned maintenance of propulsion and auxiliary equipment and associated systems and will take necessary compliance actions to address any identified areas of concern. This may include the physical attendance of classification society surveyors to verify the condition of critical equipment and its suitability to continue to function under all voyage conditions to maintain safe operations.

Operators should note that this is not a Focused Inspection Campaign (FIC) or Concentrated Inspection Campaign (CIC) of limited duration. It is a sustained focus on an identified area of concern that is part of AMSA's data driven and risk-based approach to our PSC inspection regime.

FISHING VESSEL FIRE INVESTIGATION HIGHLIGHTS IMPORTANCE OF PLBS

The National Transportation Safety Board (NTSB) has published its investigation report for its investigation into the fire aboard the fishing vessel Blue Dragon on the November 10, 2021. No injuries or fatalities were reported, but the fire resulted in more than $500,000 in damages to the vessel.

The Blue Dragon departed Honolulu, Hawaii on October 25, 2021. Weeks later, on November 9, the NMFS observer discovered a fire in the wheelhouse under the console while the crew were preparing to retrieve fishing gear. While the crew was attempting to fight the fire, the NMFS observer and a deckhand retrieved the 10-person life raft and the vessel's EPIRB from above the wheelhouse. The NMFS observer used his satellite emergency notification device (SEND) to send an SOS along with a text that said "fire." He also manually activated the vessel's EPIRB and his personal locator beacon.

NTSB concluded that the actions of the observer and deckhand contributed to the survival of the crew by retrieving the EPIRB and life raft before they caught fire. The observer's activation of the vessel's EPIRB and use of his NMFS-issued personal emergency communications equipment also contributed to the crew's timely rescue, since the equipment transmitted the crew's location.

The NTSB determined the probable cause of the fire aboard the Blue Dragon was from an unknown source, likely electrical in nature, which ignited the wooden wheelhouse console. Contributing to the extent of the fire damage was the substantial use of combustible materials in the joinery, outfitting, and furnishings in the wheelhouse and accommodation spaces.

The NTSB previously issued a safety recommendation to the U.S. Coast Guard to require the use of personal locator beacons to enhance chances of survival following the sinking of the cargo vessel El Faro in 2015 with the loss of all 33 crewmembers. NTSB reiterated the recommendation after the fishing vessel Scandies Rose sank off Sutwik Island, Alaska in 2019. Two of the vessel's crewmembers were rescued; the other five crew members were never found.

NTSB concluded that personal locator beacons would aid in search and rescue operations by providing continuously updated and correct coordinates of crewmembers' locations. The recommendation remains open.

Download the report at **https://bit.ly/3Lo26pJ**. Or scan the QR code.

ADVICE ON SAFE OPERATION WHEN CARRYING MINERAL CARGOES

This cargo advice has been prepared by The Swedish Club in collaboration with Burgoynes – David Robbins (UK), Darren Holling (Singapore) and Jim Mercurio (Dubai). The advice relates to cargo advice on carrying mineral cargoes, including sodium metabisulphite.

According to Swedish Club, a number of serious incidents have occurred in recent months involving mineral compounds (i.e. inorganic chemicals) in bags carried as general cargo. Besides a potentially serious risk of harm to individuals, the incidents have led to damage to vessels and loss of cargo, together with the problems that arise from them, such as the complication of dealing with port authorities, delays and associated claims, as well as contamination of the vessel and other cargoes and finally, the difficulty of arranging disposal of the hazardous residues.

On a practical level, when carrying sodium metabisulphite (a mineral cargo), all measures should be taken to avoid wetting it, or any other chemicals loaded with it, at any stage. Hatches on holds containing the substance should not, for example, be left open unnecessarily and the hatch covers should be fully sealed against the ingress of water during the voyage

Moisture issues
The incidents have principally occurred during discharge, with a number following periods of rain. Rainwater can penetrate any damaged bags at the surface of the stow or similarly react with any exposed, spilled cargo present. The cargoes also tend to be hygroscopic, meaning that they can absorb moisture from the atmosphere which could also lead to reactions in or between cargoes.
Once reacting, a number of toxic, corrosive and asphyxiating gases and compounds can be released, together with the generation of heat in the affected zones of cargo. The decomposition products themselves may also react further.

Toxic gas issues
The gases released in incidents have included sulphur dioxide and nitrogen dioxide. Typically, the odours of the gases produced are readily detected by individuals below toxic levels. However, this should not lead to complacency as personnel can be overcome or caught unawares by pockets of gas in poorly ventilated areas or in the event of release of significant volumes of gas from an opening in a hold.

These gases attack the eyes and respiratory system, causing irritation to the eyes, nose and throat at low levels, but higher levels can lead to nausea, vomiting, stomach pain, corrosive damage to the airways, eyes and lungs, and even to obstruction and death.

Significantly, the damage caused by inhaling the gases can develop over a period after exposure so that harmful effects on, or symptoms displayed by, individuals may not be immediately recognized as a result of exposure. Furthermore, dust created by the cargoes can become trapped in clothing, which when subsequently affected by sweat can becoming irritating and lead to redness and blisters. The gases released can also dissolve in sweat, becoming acidic and be retained against the skin.

Loss prevention essentials
- Ensure that the appropriate carriage instructions are obtained in advance.
- Hatches should be closed during rain at loading/discharge and fully sealed during voyage.
- Before entry to the hold, ensure gas readings are carried out and that there is adequate hold ventilation.
- Closely monitor the cargo handling at loading/discharge. Keep accurate records of any damage. Clear photographs of all stages of the cargo operations provide good evidence in case of a claim.

HIDDEN CORROSION CAN CAUSE DANGEROUS FAILURES

The US Coast Guard (USCG) has shared lessons learned from a recent marine casualty that resulted in a severe injury to a crewmember onboard a cargo vessel. The incident brought to light a dangerous and potentially fatal situation involving hidden corrosion involving D-ring lifting points.

While positioning a removable hatch cover on the vessel, three of the four D-ring securing straps failed, causing an uncontrolled snap-back of the lifting sling assembly that struck the crewmember in the head. The three fractured securing straps showed similar failures with a significant amount of corrosion beneath the paint and on the underside of the straps. It is likely that just one D-ring failed initially, which would have instantly doubled the load on the two adjacent corner D-rings, both of which were apparently weakened and subsequently failed. Without proper and periodic inspection and replacement, corrosion and stress can eventually lead to deck fitting failures.

After the incident, USCG verified that the arrangement of the hatch cover lifting points were in accordance with all available drawings and design schematics. There were no records of any pull-tests or other testing conducted on these lifting points since their installation in the mid 1980s. There were also no records of any D-ring replacements, indicating that these have likely been in an exterior weather deck environment for several decades. Although there are requirements for design and in-service testing of mooring fittings and cargo-handling cranes and associated gear, there are no prescriptive periodic testing or inspection requirements for general purpose D-rings or their securing straps. Consequently, similar failures may occur in the absence of an established inspection and maintenance program.

TRANSPORT MALTA ISSUES SAFETY ALERT OVER FIRE HAZARD CAUSED BY LITHIUM-ION BATTERIES

Transport Malta has issued guidance to Maltese-registered vessels regarding the potential fire hazards associated with Lithium-ion (Li-ion) cells and batteries. The Marine Safety Investigation Unit (MSIU) has issued a safety alert after being notified of several fires on board yachts and cargo vessels associated with Li-ion batteries.

The statement highlights the 'fierce intensity' of Li-ion battery fires, and also the potential challenges to control and extinguish them with the use of conventional fire-extinguishing systems.

Owners and managers of Maltese-registered vessels must ensure that the procurement of Li-ion batteries intended for a vessel's use includes safety and technical data on:
- protection, handling, safe use, safe storage, and safe disposal;
- fault/failure detection and required actions;
- and suppressing, extinguishing and post-fire management.

All concerned are strongly recommended to bring this Notice from Transport Malta to the attention of all crew serving on board Maltese-registered vessels and follow the recommendations contained therein.

Download the safety alert at **https://bit.ly/3BwnplM**. Or scan the QR code.

REPORT bites

The Boating Industry Association has partnered with the Australian Industry Trade College to establish the Boating Industry Academy, the first industry-driven program for high school students wishing to pursue a career in the marine industries.

The demand for containerships is expected to increase by 10 percent as of 2023 as shipowners move forward with the implementation of the IMO 2023 regulations, BIMCO estimates.

German operator A-Rosa Cruises has taken delivery of a new Rhine River hybrid cruise ship from Dutch shipyard Concordia Damen.

A Scottish boatbuilder, A & R Way Ltd (Lochgilphead), has embedded an electric propulsion system into a rudder on a new-build Oban Skiff.

Clayton Jacobson II, a California inventor credited as the inventor of the personal watercraft, died August 18th at his home in Byron Bay, Australia from complications of advanced skin cancer.

Norway's ASKO Maritime is moving right along with its plans to put emissions-free — and ultimately people-free — autonomous freight ferries into operation across Oslo Fjord.

Mayla Yacht, a German yacht manufacturer, made its debut at Cannes Yachting Festival having commenced production on its first electric boat which is due for launch in 2023.

The Port of Long Beach has won Asia Cargo News' annual award for best West Coast Seaport in North America for the fourth consecutive year.

Rolls-Royce has received an order from the Spanish shipyard Armon to supply nine mtu hybrid propulsion packs for nine new ships of Italian high-speed maritime passenger transport company, Liberty Lines.

Germany's Schlepp- und Fährgesellschaft Kiel (SFK) has christened its second all-electric ferry, MS Wellingdorf.

Safety Briefings

CORRODED PIPE LED TO OIL SPILL

The Swedish Club has highlighted and analysed an incident involving a corroded pipe that caused an oil spill. The 15 year-old bulk carrier was in dry dock completing its third special survey. As usual there were also many other maintenance tasks being carried out at the same time, including the replacement of a section of a de-aeration pipe in the cargo hold. The Chief Officer had discovered during a cargo hold inspection a month earlier that the de-aeration pipe appeared to be corroded. This pipe led from the sea chest, passing through the cargo hold, then through a heavy fuel oil (HFO) tank and finally out through the vessel's shell plate.

It was decided that the section of the pipe in the cargo hold should be replaced and that crossbars should also be fitted for protection against damage during cargo handling. The Chief Officer did not think it was necessary to inspect the section of the pipe inside the HFO tank and there was no scheduled inspection of the HFO tanks during drydocking. The damaged section of the pipe was replaced by the shipyard without any problems and the vessel left the shipyard after repairs were completed and sailed in ballast condition to the loading port.

The vessel arrived in the morning at the discharge port to carry out bunkering operations. A bunker barge came alongside and the First Engineer completed the bunkering checklist. About an hour later the bunkering began. At this time the cargo operation had also commenced. At lunchtime, one of the ABs discovered oil in the water, and informed the OOW in the cargo office. He came out on deck and could see oil trickling down the side of the hull. He went into the cargo office and made a general announcement about the pollution and on what side of the vessel the oil was escaping. Shortly after this he called the Master and informed him about the oil pollution. The Master informed the coast guard, harbour authorities and the DPA about the incident.

Pressure testing should be carried immediately after work has been carried out on any pipework. The thickness of the entire pipe should be measured. If pipes passing through the HFO tank cannot be avoided, then these pipes should have an increased pipe thickness and should also have some kind of surface protection e.g. hot dip galvanizing or coated on the waterside.

OBITUARY

Tom Elder MIIMS 1963 – 2022

Chairman of the IIMS Yacht & Small Craft Working Group Scotland

By Mike Schwarz with significant contributions from Tom's wife, Moira Elder and friend, Cameron Johnstone, Hon. Secretary, Inchinnan Cruising Club

The sad news reached IIMS HQ recently about the passing of Tom Elder, Principal Surveyor, Teemsurveys Ltd., who was based in the Glasgow area of Scotland. Tom was a long-standing member of the Institute and a coding examiner with the IIMS Certifying Authority. He passed away peacefully at his home on 30th August surrounded by his wife and family aged just 59.

I did not know Tom well but met him perhaps half a dozen times over the years and he struck me as a charming and thoughtful man with a kind heart. He took his role as Chairman of the IIMS Yacht & Small Craft Working Group Scotland seriously and was a regular attendee at training, both in southern England as well as in his native Scotland too. Indeed, he organized the venue for the past couple of IIMS training days at the Inchinnan Cruising Club near Glasgow, where he was a dedicated member. His wife, Moira, was on hand to provide lunch for the delegates. They made a great team.

Tom was born on 9 May 1963 in Glasgow. He graduated from Glasgow College of Nautical Studies with an HND in Marine Electrical and Electronic Engineering (Meritorious) – Radio and Radar Systems.
Tom's first job was with an innovative hi-fi company called Linn Hi-Fi as Test Engineer Team Leader which was a dream job for him due to his love of music. He moved onto a global manufacturing services company called Jabil Circuits where he rose to the rank of IT Manufacturing Business Systems Manager and travelled all over Europe and the US.

In the background, Tom was studying with the IIMS and obtained his Diploma in Yacht & Small Craft Surveying in 2004. Tom and his family always had a keen interest in boats and spent every spare minute sailing the West Coast of Scotland, Ireland, Isle of Man and the Clyde estuary in their Countess 28 'Freedom' and latterly their Moody 35 'Selene of Clyde'. The happiest of days writes Moira.

Shortly after obtaining his IIMS Diploma, Tom decided a career change was needed to de-stress after years of travelling; so Teemsurveys was born. He always said being a Marine Surveyor was the best job in the world and he was well known around the marinas and boatyards all over Scotland and beyond alongside his wife Moira, his wing woman, as he described her. Tom would have his moisture meter and scraper handy whilst Moira would have the clipboard and camera poised. TEEMsurveys stood for Tom Elder/Elder Moira!

Teemsurveys was highly respected, and Tom got involved as much as he could with customers, brokers and the organisations he was associated with. As well as Chairman of the IIMS Yacht & Small Craft Working Group Scotland, he served on the RYA Certifying Authority Committee. He loved the bread and butter of pre purchase, insurance, damage and tonnage type surveys. He also got stuck into the commercial side helping established and start-up charter companies as well as workboat operators.

Tom was taken far too soon after a four-year battle with oesophageal cancer. He continued to work as long as he could before Teemsurveys was wound up in March this year. He leaves behind a much-loved wife of 32 years, Moira and their son Fraser. The Scottish marine industry and beyond has lost a legend, a true gent who would help anyone.

Cameron Johnstone, Hon. Secretary, Inchinnan Cruising Club has written the following words to remember Tom.

"From an Inchinnan Cruising Club perspective, Tom was a member of ICC for over 30 years. In the last 12 years, he served the Club in the posts of Commodore, then Honorary Secretary. Tom epitomised the spirit of Inchinnan Cruising Club in assisting and supporting members to get a boat and get on the water and was always available to share boating advice and experiences. While Tom had a serious straight-talking side to him, he was also a very jovial and highly sociable person. He actively promoted the social side of Club and was frequently found behind the beach BBQ grill at Club cruises, flipping the burgers and garnishing them to ensure everyone was well fed. At social nights in the Club House, Tom wasn't shy at grabbing the microphone and giving a rendition of his karaoke favourites. In recent times, Tom's drive and commitment was demonstrated in the building of the new ICC Club House. Along with other members, Tom project managed the build project, ensuring it was delivered on budget and on time. Considering most of the assembly and build was undertaken by Club members, this was no mean feat. His love for life personality and willingness to go that extra mile will be sorely missed by the members of Inchinnan Cruising Club."

Tom Elder, may he rest in peace.

IIMS announces **two Fellowship awards**

Sanjay Bhasin

Sanjay spent 18 years at sea, including 6 years in command of geared bulk carriers and reefers carrying a variety of cargoes worldwide. He has worked with P&I correspondents in South Africa as a marine surveyor/marine manager, investigating a variety of incidents and claims. He also worked as Marine Loss Control Manager for a leading cargo insurer. Sanjay joined the IIMS Management Board a couple of years ago and since then has contributed fully behind the scenes helping the executive to steer and manage the Institute. Additionally, he sits as a member of the Institute's Professional Assessment Committee. It is for this and his contribution to the wider marine surveying world that he has been awarded a Fellowship.

Ken Hickling HonFIIMS

Ken has over 25 years' experience working in the superyacht industry and spent many years as a senior executive with AkzoNobel. Founder and Director of sherpa 63, Ken became heavily involved in the early development of the Registered Marine Coatings Inspector (RMCI) qualification in 2014.

Mike Schwarz took the opportunity to catch Ken Hickling unaware when the two met at an event prior to the Monaco Yacht Show to present him with his award certificate in front of a small audience.

This programme is run by the Marine Surveying Academy Ltd, a subsidiary of IIMS. The Institute presented him with a Blue Water Award in 2016 in recognition of his help. As the RMCI qualification is now set for rebranding and relaunch, Ken has been instrumental in redeveloping and updating the syllabus and visual presentation aids as well as acting as a course tutor. It is in recognition of his work in this area that he has been awarded an Honorary Fellowship.

Two IIMS Fellows caught on camera at the Chartered Master Mariner Alumni & Award Event

Two senior members and Fellows of the IIMS, Captain Allen Brink (South Africa) and Captain Zillur Rahman Bhuiyan (Bangladesh), both awarded Chartered Master Mariner status by the Honourable Company of Master Mariners, attended a special event in London. Allen is pictured extreme right and Zillur extreme left. The immediate past Secretary of State for Transport and the Member of Parliament (MP) for the Witney Constituency Robert Courts was the Chief Guest at the event.

New Regional Director appointed for Australia and New Zealand

IIMS has appointed James Newcombe, who is based in Auckland, New Zealand as its new Regional Director for Australia and New Zealand.

James was introduced to yachting almost before he could walk, he says. He worked his way up through the traditional New Zealand classes. As he got older, he started racing and cruising on larger keel boats, mainly up and down the coast of New Zealand and harbour racing.

James started trainee boat building as work experience from fifteen years of age, and after leaving school, secured a boat building apprenticeship. In New Zealand this requires 9000 hours of work, (about 4½ years), plus yearly block courses. Because of overtime hours done, he successfully completed this in just under 4 years, with merits in all subjects.

Throughout his boat building career, James was lucky enough to experience most building types, including wooden boat building, high tech composites, and traditional builds. Builds he was involved in included, timber yachts and launches, composite multihulls, maxi yacht and IMOCA campaigns, custom superyacht builds, and various repair work. James also undertook project management work for several years in Taiwan.

In 2011, he was awarded the Barry Thompson education scholarship through the New Zealand IIMS. After completing this, and being mentored by several New Zealand surveyors, James started his own business, Pacific Rim Marine Surveys Ltd in 2011. After eleven years, and nearly 2000 surveys, he has decided to give back to the industry where possible. James' goal is to promote open communication amongst surveyors, and to help trainee surveyors who want to start their own businesses.

In his spare time, he likes to spend time with his wife and two boys, sailing their keel boat, reading and writing, classic boats, cars and planes, and keeping up to date on survey and maritime news.

President's informal get togethers

Recently, IIMS President, Peter Broad, has put together an initiative to meet members in the far east region. He organised a face-to-face supper for the small group of South Korean members.

Pictured left to right are Jason Lee, Sung Hyun Kim, Si Won Kim, Sang Bum Park, Steve Kwon and Peter Broad.

Peter said, "It was a very positive gathering and nice to see the IIMS Korean members together in one place."

This event was followed up by two further online Zoom gatherings, joined by members from as far afield as China, Japan, Vietnam, Indonesia and Hong Kong. It gave members the chance to talk about their current work and projects and to discuss openly why their membership of the Institute is valuable. Watch out for more similar online gatherings happening soon.

Continuing Professional Development (CPD)

As the year draws to a close, members are reminded that they have until 31st March 2023 to make their claims for this year. At the AGM in 2021, members voted to increase the number of points required annually from January 2022 to 15 to become CPD compliant and the options for gaining points were broadened. The IIMS App remains available to all members and is simple to use. It can be accessed from the web site. And remember, once you have reached 15 points and have become CPD compliant, the roundel of recognition of your achievement will be added to both the marine Surveyor Search App and the web site search. If you are unsure how to claim your CPD points, email Rosie Webb at **info@iims.org.uk**.

RECENT NEW IIMS MEMBERS

Full members

Simon Malone	*MIIMS*	France
Werner Ahrens	*MIIMS*	Namibia
George Argiropoulos	*MIIMS*	Greece
Laode Arwin	*MIIMS*	Indonesia
Karim Mchich	*MIIMS*	Morocco
John Sharratt	*MIIMS*	UK
Quintin Lloyd	*MIIMS*	Hong Kong

Associate members

Panagiotis Plomaritis	*AssocIIMS*	Greece
Davide Pizzi	*AssocIIMS*	Italy
Vangelis Leontopoulos	*AssocIIMS*	Greece

Graduate members

Marco De Simone	*GradIIMS*	Italy
Nwankiti Ifeanyi	*GradIIMS*	Nigeria

IIMS congratulates Marco De Simone and Nwankiti Ifeanyi for completing their studies in the
IIMS Professional Qualification in Commercial Ship Marine Surveying

Affiliate members

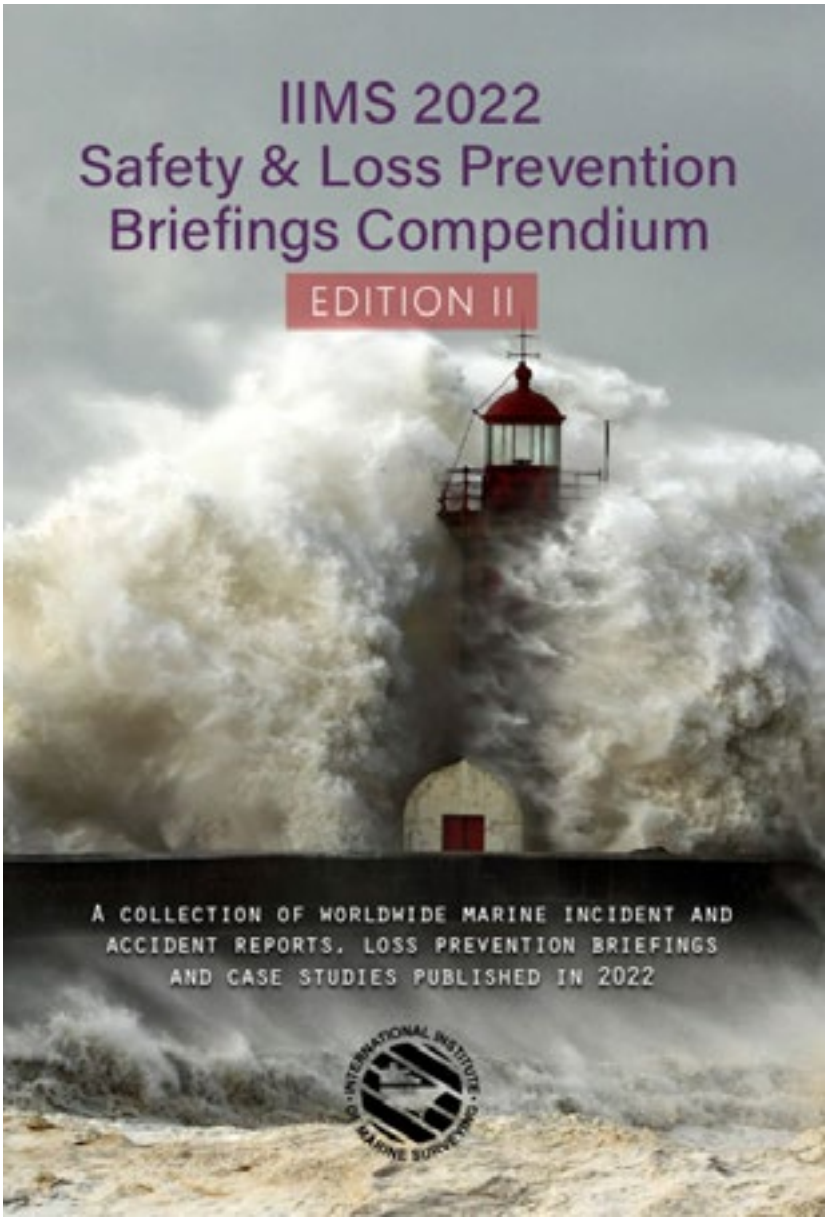
Anthony Paschal Gagliardo	*AffilIIMS*	USA
Ganesh Upadhyay	*AffilIIMS*	India
Luka Gishoi Gichuhi	*AffilIIMS*	Kenya
Tony Butler-Waite	*AffilIIMS*	UK
Jo Rees-Howell	*AffilIIMS*	UK
Catalin Razvan Moise	*AffilIIMS*	Romania
Tony Small	*AffilIIMS*	Portugal
Henry Topham	*AffilIIMS*	Spain

Technician members

Neil Murnan	*TechIIMS*	Italy
Sherif Abdallaa	*TechIIMS*	UAE

Timothy Whelan	*GradIIMS*	New Zealand
Stanley Collett	*GradIIMS*	New Zealand
Iva Mariyanova	*GradIIMS*	Greece

IIMS congratulates Timothy Whelan, Stanley Collett and Iva Mariyanova for completing their studies in the
IIMS Professional Qualification in Yacht and Small Craft Marine Surveying



IIMS 2022 Safety & Loss Prevention Briefings Compendium published

Following the surprise runaway success of the first edition of the Safety & Loss Prevention Briefings Compendium, published in January 2022 by the International Institute of Marine Surveying (IIMS), and subsequently downloaded many thousands of times, Edition II has been launched covering the period January to October 2022. It is now available to download and read in pdf or eReader formats.

Edition II builds on the success of the launch publication and extends to 160 pages. The simple aim is to highlight the dangers of working in the maritime industry, the ensuing accidents and some of the prevention measures available to mitigate disasters at sea. The publication blends a mix of incident and accident reports with essential loss prevention advice generated over the year. One significant new feature is a calendar, featuring some of the many accidents that have occurred during 2022, catalogued month by month.

Editor, Mike Schwarz, said, "On the face of it there have been few major accidents hitting the media headlines resulting in excessive loss of life in 2022 compared to previous years - on the face of it! Yet there have still been far too many unfortunate deaths at sea and marine assets destroyed, many of them seemingly avoidable."

Stuart Edmonston, Loss Prevention Director, UK P&I Club, author of the Compendium's main introduction said, "As loss prevention director at one of the world's leading P&I clubs, it's always tough to read maritime accident reports - particularly when people have tragically lost their lives or suffered life-changing injuries. It's even tougher when, as in most of cases, the accidents could have been prevented if the ships and people involved had been better prepared."

In his introduction, IIMS President, Peter Broad, said, "The first Compendium certainly reached a very wide audience, way beyond the marine surveying community itself, and makes sobering reading when we see all these 'incidents and accidents' together in one concise document."

The Compendium can be read in pdf format at **https://bit.ly/3GpsbEr** and/or in eReader format at **http://bit.ly/3XawqcW**. Or scan the QR code.

IIMS external involvement

The Institute has seats on various committees and technical working groups and during 2022, there has been a process of refreshing some of the personnel involved. The Institute is grateful to those who give freely of their time to contribute to committee work.

For many years, Jeffrey Casciani-Wood represented IIMS on the British Standards Institution's (BSI) GME/33 Small Craft Committee. Elliott Berry has agreed to replace Jeffrey and will sit on the committee on behalf of IIMS. James Hale continues to represent IIMS on the BSI GME/SME 32 committee.

The Boat Safety Scheme (BSS) Advisory Committee is the stakeholder committee that makes recommendations to the BSS Management Committee on matters concerning the operation and impact of the BSS. Boat-user-group interests, BSS Examiners and surveyors, British Marine sectors and the navigation authorities are represented evenly on the BSS Advisory Committee. Chris Williams took up a position on this committee representing IIMS earlier this year.

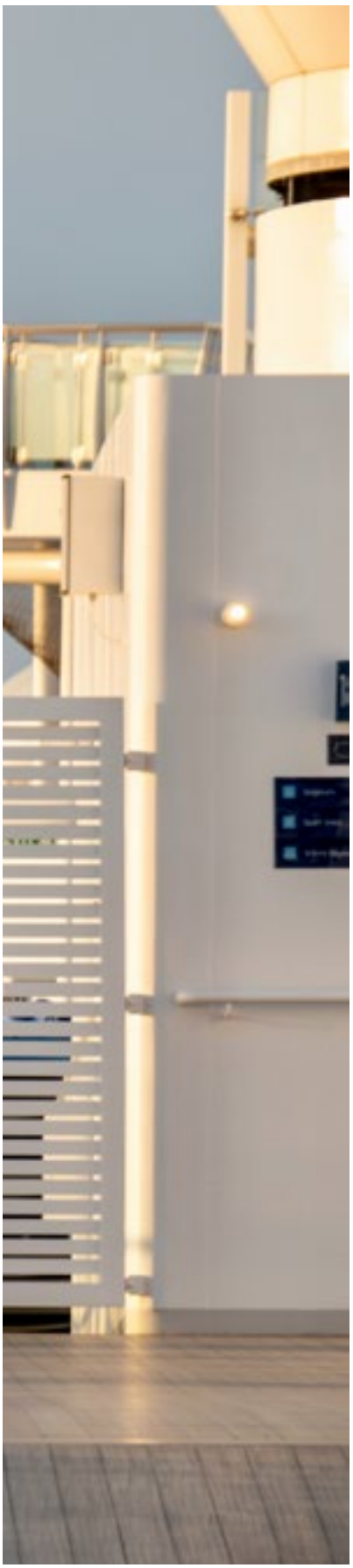
IIMS has a place on the Maritime & Coastguard Agency's (MCA) Technical Working Group. In recent years, this group has been solely focused on developing the new Workboat 3 code, currently out for consultation. Under the MCA's guidance, the Working Group has just come together to assess a new code for Sport and Pleasure vessels with a review to combining the various existing colour codes and MGN 280 into one document. Matt Folkes, an IIMS Certifying Authority committee member, is representing the Institute at this group.

Ross Wombwell from British Marine has recently taken up the Chair's role of the UK Recreational Craft Regulations Stakeholder Group, which meets twice a year. Other organisations represented at this committee are BEIS, RYA, British Marine, UKAS, MCA, BSS and the YDSA. Peter Brookes has agreed to join this group to represent IIMS.

The Registered Marine Coatings Inspectors (RMCI) qualification and standard is managed through the Institute's wholly owned subsidiary, the Marine Surveying Academy (MSA) Ltd. The stakeholder group comprises MSA, IIMS, Superyacht Builders' Association (SYBAss) and the International Council of Marine Industry Associations (ICOMIA) with input from AkzoNobel.

Also, through its work with the eCMID Accredited Vessel Inspector scheme run by MSA on behalf of the International Marine Contractors Association (IMCA), IIMS and MSA sit as part of the eCMID committee that meets quarterly. Other organisations represented and sitting at that table include DNV, BP Shipping, Siemens Gamesa, Subsea 7, Ørsted, TechnipFMC, Scottish Power Renewables and the Workboat Association.

The Maritime Professional Council of the UK (MPC) has continued to prosper since its launch in September 2021. Mike Schwarz (IIMS CEO) and Geoff Waddington (IIMS Immediate Past President) both sit as Council members. Over the year, MPC has met regularly and issued several press releases and safety flashes. Two Council members have also been responsible for authoring a report on Kind Leadership. Other Council members include representative from Cameron Maritime Resources, InterManager, Maritime Volunteer Service, The Honourable Company of Master Mariners, The Nautical Institute, The Institute of Seamanship, The United Kingdom Maritime Pilots Association, The Professional Charter Association and Trinity House.



IIMS training and events 2023 CALENDAR

Programme subject to alterations - check website for details at: **https://bit.ly/3WnhqIr**

J	
17th January 2023	IIMS Professional Qualification January intake online only student Meet & Greet
F	
2nd February 2023	Report writing online only seminar
M	
7th March 2023	Closed Management Board meeting
21st March 2023	eCMID AVI Festival of Knowledge - online delegates only
30th March 2023	Yacht & Small Craft Spring training day (Portsmouth area - in person and online delegates welcome)
March date to be confirmed	IIMS Baltimore Conference
A	
18th April 2023	IIMS Professional Qualification April intake online only student Meet & Greet
19th April 2023	Heel & Stability (Southampton area - in person attendance only)
20th April 2023	Certifying Authority training (Portsmouth area - in person and online delegates welcome)
April 26th and 27th 2023	Western Mediterranean Yacht & Small Craft Working group, Palma, Mallorca
M	
2nd May 2023	Report writing online only seminar
4th May 2023	Inland waterways working group (Location unknown - in person attendance only)
J	
6th June 2023	Closed Management Board meeting
6th June 2023	IIMS Dinner (venue to be announced)
7th June 2023	IIMS Annual General Meeting and Conference (Southampton - in person and online delegates welcome)
13th – 15th June 2023	Seawork Show (Southampton)
29th June 2023	Remote tonnage training (UK venue to be announced Southampton - in person and online delegates welcome)
J	
18th July 2023	IIMS Professional Qualification July intake online only student Meet & Greet
A	
1st August 2023	Report writing online only seminar
S	
5th September 2023	Closed Management Board meeting
11th to 14th September 2023	London Shipping Week
27th – 30th September 2023	Monaco Yacht Show
O	
3rd – 5th October 2023	IBEX Show (USA)
11th October 2023	Certifying Authority training (Portsmouth area - in person and online delegates welcome)
17th October 2023	IIMS Professional Qualification October intake online only student Meet & Greet
N	
2nd November 2023	Report writing online only seminar
7th November 2023	Yacht & Small Craft late autumn training day (Portsmouth area - in person and online delegates welcome)
9th November 2023	eCMID AVI Festival of Knowledge - online delegates only
14th and 15th November 2023	Scotland Yacht & Small Craft training - venue to be announced (in person and online delegates welcome)
D	
5th December 2023	Closed Management Board meeting
11th – 15th December 2023	Yacht & Small Craft 7-day residential course at the Boatbuilding Academy, Lyme Regis

2022:

The year that went by in a flash

By Mike Schwarz, Chief Executive Officer

I was often told by my parents when I was younger that as one gets older, so time seems to speed up and go faster. It certainly feels that way, but of course, this can surely only be an illusion; yet when I stop to think for a moment, 2022 came and indeed, went in the blink of an eye! Ergo, I must be getting older! This is my personal review of life at IIMS over the past year, looking back at the various aspects of the business and recounting some of the key highlights and the achievements, (as well as the challenges), that the IIMS secretariat has accomplished for the benefit of the Institute's membership and the wider marine surveying profession.

General overview

It has been a strange year in some ways - starting modestly and building to a crescendo would best describe it. Overcoming Covid and coming out of the various lockdowns has been a relief for us all, yet still some of my colleagues have picked up this illness over the course of the year. But as a team we are pleased to be back together in the desirable surroundings of Murrills House. Clearly Covid is going to remain a challenge for a while to come, just as it will be for you and others around the globe. The pandemic spectre, however, has not prevented us delivering all we had hoped to at the start of the year, although at times we have had to remain nimble on our feet and adaptable. For me, no international travel for three years has been a strange and unwelcome change. I have missed meeting members in person, although the benefit to the business of not travelling means the bank balance look healthier!

It is apparent that face-to-face encounters are still struggling to return to anything like what they were before the pandemic, and it is hard to gauge when this might change. We have had to alter our original plans from time to time to factor this in. As an example, an inland waterways training event earlier in the year attracted barely a handful of attendees. As the day was yard based with practical activities, it meant no Zoom possibility; and we had to convert our planned in person tonnage training day at Itchenor Sailing Club into an online event at short notice, which ultimately proved successful. Other organisations have faced their own challenges too. For example, the mighty Seawork workboat show at Southampton in June was a shadow of its former self and woefully short of visitors. It is clear going forward that unless impossible to do so, IIMS must offer a hybrid option for events and training days. The days of people decrying the value of online training have long since receded and it is now regarded as an effective and accepted way of disseminating knowledge and experience.

I admit to being concerned at the start of the year and issued a trading warning to the management board after the first few weeks. A worrying downward trend, if not halted, can become problematic for any business. Business activity generally was slow in the first quarter in every area. Perhaps the looming global financial cool down was a factor. But as the year has gone on, we have picked up strongly across the business and I expect IIMS to more than meet its original planned annual profit budget. In the UK, we are just starting to feel the impact of the crippling energy crisis which is going to make for a challenging and expensive winter. The electricity bill for Murrills House quadrupled last month! It makes budgeting a challenge.

I cannot let this review go by without a world or two on the Ukraine war. Of course, none of us know how this will play out and eventually conclude. But there is plenty of evidence to suggest things did not improve for some seafarers who, post pandemic, became embroiled in dangerous situations onboard ships in the region. And what of IIMS cadre of Ukrainian members? Sadly, I have no idea and suspect they are fighting in the war. I hope they return home safely and one day soon can resume their careers as marine surveyors. None of them, I am sure, were trained as front line soldiers. There has been no tangible direct effect on the Institute caused by the war other than surging energy costs, but let's hope for a swift conclusion to events in that part of the world.

One of the biggest challenges facing some yacht and small craft members in 2022, which came to my attention early in the year, was the massive hike in PI insurance premiums. Many members contacted the Institute to alert us to the problem and to seek our advice. Through our contacts we have managed to assist most. It still remains unclear what uncertainties in the market had specifically caused this spike or was it simply a knee-jerk reaction to a generally deteriorating insurance market which has seen insurers and underwriters take some big financial hits. I know my own personal insurance premiums have risen.

One of the surprising and most pleasing successes of the year for me personally came following the publication of the 100-page IIMS 2021 Safety & Loss Prevention Briefings Compendium. Sometimes one has a great idea, and it fails to register. This one has been a spectacular success, however. Essentially a magazine full of maritime disasters, accident reports and key loss prevention advice, it was unsurprisingly a hard read given the content. And yet, for many it proved to be essential reading and a great reference source. The publication has been downloaded many thousands of times in both pdf and eReader formats. I was also delighted to receive complimentary messages from many others not directly in the marine surveying profession, but those who touch the surveying business including P&I Clubs, marine insurers, hull underwriters, vessel owners/operators and even maritime regulators. You may be interested to know that this success has spurred me on to compile an even more comprehensive edition II. The IIMS 2022 Safety & Loss Prevention Briefings Compendium is now available to download from the web site. Go to **http://bit.ly/3GpsbEr** or scan the QR code.

Let's get into some specific business areas...

Head Office, Management Board & Committees

IIMS welcomed two new members to the team early in the year - Rosie Webb and Rachel Moores. Both have settled in very well and are making significant contributions to the business in their specific areas of operation. And in Peter Broad, the Institute welcomed a new President at the AGM in June. Consequently, Ruchin Dayal moved up to become Vice President and Mike Proudlove was elected as Deputy Vice President.

Our two new recruits joined the existing staff for the annual two-day team building event, held in the depths of the New Forest not far from the office. The weather was spectacular, and we took full advantage. The first afternoon gave us the opportunity to split into small groups and canoe up the Beaulieu River and back - about 4 miles in total. The evening was spent around the campfire exchanging stories and anecdotes. The following morning saw the team break into groups to undertake a SWOT (strengths, weaknesses, opportunities and threats) analysis. The morning concluded with a nature hike through the forest wilderness. Several of the team (including myself) took the opportunity to sleep overnight under the stars in hammocks. I was alarmed (and enchanted) to awake to the sight of a curious young deer just a few metres away peering in my direction. Very memorable.

We have continued to lavish care and attention on Murrills House, the Institute's head office and most valuable asset. The grounds have never looked better and have been well manicured throughout the year. There has been no significant additional expenditure on the structure this year, but plans are being prepared to do some essential internal redecoration in 2023, including new carpets to the public areas.

It feels progressive to report that the office is now entirely paperless. Everything we hold is stored in a secure and safe cloud and backed up regularly. The final sacks of old paper files, having been scanned, left the office mid-year for shredding.

It has been necessary to continue our succession planning as some members of the board and various committee members start to anticipate retirement. Three new management board members were formally appointed recently having sat in at the June and September board meetings in an observational capacity only. They are Elliott Berry (UK), John Walker (Mallorca) and Graeme Temple (Singapore). All are Fellows of the Institute.

Chris Olsen and Barney Sollars have both joined the Certifying Authority committee. Additionally, we are looking to add a couple of qualified naval architects to assist the committee with stability matters.

The Professional Assessment Committee has been strengthened with the addition of a couple of new members, drawn from all areas of expertise across the Institute.

The education committee, which oversees the two Professional Qualifications comprising thirty plus modules, has not been refreshed. IIMS would be interested to hear from anyone who feels they may be able to contribute to committee work, especially in the area of surveyor education. The committee meets online twice a year, and the work is not onerous.

Certifying Authority

The IIMS Certifying Authority under the management and guidance of David Parsons has had a progressive year. IIMS remains one of the smallest of the five UK coding authorities, but the fleet size is steady, increasing slightly over the year. A number of new examiners from other certifying authorities have applied to code vessels through IIMS and have been accepted. The same is true of tonnage measurers. A successful remote tonnage course saw a number come forward to be trained and recognized by IIMS, meaning they can process tonnages via the Institute.

The new proposed Workboat 3 code was recently announced by the MCA. It is currently still in consultation until the end of December and likely to become law in 2023. It has ramifications for all UK certifying authorities and coding examiners, although the IIMS fleet of workboats is small.

The MCA has also kicked off a review of the existing Motor and Sail colour codes and MGN 280 with a view to creating a single combined new code. This makes good sense and I suspect discussions and technical review meetings (which IIMS has a seat at) will go on well into 2023. Work in progress.

The matter of levelling up standard across all Certifying Authorities, a piece of work which I was involved in leading for 5 years and remain passionate about, still shows little sign of moving to where it needs to be. There was talk about a new contract being issued by the MCA which would impose strict new rules on all Certifying Authorities to ensure examiners were treated exactly the same as a flag state inspector; but sadly, nothing has been forthcoming yet. It is absurd and frankly unacceptable that five organisations continue to apply entirely different levels of compliance with the codes and that no common standard exists.

Membership

Institute membership is little changed over the year, remaining around the 1,000 mark. There have sadly been a few deaths in the IIMS family, coupled with the normal and expected annual churn. New membership applications drop in on a regular basis and we have more than made up for those we have lost.

There are 107 countries now represented by IIMS members. Overall, commercial ship surveyors account for 53% of membership and 47% come from the yacht and small craft surveying sector.

I would like to reiterate that it remains IIMS policy that every application is assessed by members of the Professional Assessment Committee (PAC) and every care is taken to ensure that only capable marine surveyors are granted membership, using various means of verification. It is not uncommon for the PAC to reject applications and often they will grant a lower level of membership than has been applied for.

I wanted to reinforce the strict membership application procedure, as it has become a growing source of frustration to me over the past year to see a couple of what I would refer to as 'rogue surveying organisations' who are, in my opinion, damaging and eroding the marine surveying industry's hard-won reputation. Of course, I will not name them for fear of litigation; but you will see their courses heavily discounted by up to 70%. The origins of some of their learning material is dubious, and there seems to be zero barrier to membership entry. As a not-for-profit organization, IIMS will continue to deliver only the highest possible professional services and training opportunities to its members and will never cheapen what we offer and how we deliver it. My message to marine surveyors reading this is simply to be beware of organisations offering something that seems to be too good to be true as you are likely to be disappointed. Indeed, several members have contacted me this year to tell me they have been duped by these businesses. It seems they have no interest in furthering the reputation of the surveying industry and those engaged in it - only interested in making money. Stick to the recognized reputable surveying organisations is my advice.

Arranging face to face events has remained tricky in 2022, as I alluded to earlier. The appetite to travel and attend events for many post Covid has still not reappeared. Earlier in the year we ran two events in the UK, both of which were poorly attended. Our Conference in Baltimore, arranged by James Renn, did attract a few in-person delegates although far more joined online. The reality is that events must be hybrid for the foreseeable future. Much of the stigma associated with learning and meeting online has been swept away over the past couple of years. IIMS will try to ensure events are offered in-person and with online joining option unless they are strictly practical hands-on activities.

Membership research findings

Earlier this year, IIMS undertook its first membership research since 2018. So much has changed globally over that period and the findings made for interesting reading and were valuable. My thanks to the 250+ members who took time to participate. Your views and comments were well received and will help with the planning of future strategy.

Education and Professional Qualifications

The Institute made a significant investment in developing a brand-new student portal to replace the unsatisfactory and ageing previous platform. It took two years to build with help from our App developers eDot Solutions, based in Goa, and was launched in January. I was heavily involved at each stage in architecting the site along with colleagues. The result is a stunning state-of-the-art portal that is easy for students to use and puts everything they need, including their study materials and resources at their fingertips. Student feedback had been most positive.

Vicki Loizides, who manages the education programme, has engaged enthusiastically with the new portal and the neat new features have made her workflow considerably easier to handle.

Intake numbers struggled at the beginning of the year, but the most recent course, which started in October, far exceeded expectations. There are more than 200 students enrolled in studying for an IIMS Professional Qualification.

We rolled out the third iteration of the Professional Qualification in Marine Corrosion to a small but keen group eager to better understand this essential aspect of the job under the tutelage of Dr Mike Lewus.

Communication channels and mechanisms

This year has been exceedingly busy on the communications front. The Institute does not employ the services of a PR agent, but we do engage a specialist below the line digital marketing agency, whose ability to precisely target those we wish to talk to has proved to be invaluable. So, much of our media output and exposure is generated internally.

Monthly member newsletter

In the middle of last year, I made a deliberate decision to boost the size, scope and content of the IIMS monthly news bulletin which is available in pdf and eReader formats and circulated by emailer on the first of each month. The email carrier with links to the full bulletins is distributed to all Institute members and students as well as many thousands of potential members and the wider marine industry. I have been assiduously tracking the number of monthly email opens from a starting point of 3,000 per month in mid-2021 to just over 5,000 opens per month now. With a growing reach, this strategy can only be good for the Institute, widening its brand appeal and enhancing our reputation as the leading international marine surveying organization.

The news bulletins are capped at 9,000 words a month and regularly extend to more than 20 pages. In effect, they have become mini Report Magazines and cover a wide range of surveying and general maritime topics. And their popularity and readership have soared.

The Report Magazine

One of the jewels in the IIMS crown, The Report Magazine celebrated its 100th edition in June 2022. The publication has come a long way since those early editions over twenty years ago and this was the perfect opportunity for a nostalgic look back over time. The addition of QR codes in this edition for the first time is an example of embracing technological developments. The ability to download an article or report of interest directly to a personal device is powerful.

I am grateful to all those who have written articles and provided content for the publication over the past year. If you are reading this and feel you would like to contribute something to a future publication, the Institutes welcomes unsolicited articles for consideration.

My personal thanks to Craig Williams, our in-house graphic designer (who celebrated his 10th work anniversary with IIMS in 2022) who beautifully lays out and depicts each Report Magazine, as well as a whole host of other marketing and communications material that is distributed.

Web site

The Institute's web site remains constantly busy and is without question the most comprehensive online resource available to the professional marine surveyor.

One statistic that fascinates me is the sheer number of pdfs that are downloaded from the site. Since a tracker was installed in October 2022, nearly 100,000 pdfs have been accessed. Quite remarkable and a powerful reminder to me of the deep value of the site content to the surveying and maritime industry.

Social media channels

IIMS presence on social media has continued to mushroom and gain attention. The well-developed LinkedIn platform is followed by over 8,000 people. Recently, an Instagram channel has been established, a place for the Institute to post and share photos, but others are encouraged to add their content too. The IIMS YouTube channel – iimsmarinesurveying – hosts over 300 videos made in recent years and is a valuable free resource followed by nearly 1,600 people.

Press Releases and Marketing

The work of Vertical Leap, the agency retained by the Institute to provide targeted digital below the line marketing, goes largely unheralded. Our association with them extends back a number of years and is one of the reasons why IIMS has been so successful in attracting quality new membership and student applications. Their ability to use data to target the right people is highly innovative and, if I am being honest, goes way beyond my comprehension.

Over the course of the year, we have published and circulated to the maritime media several press releases to highlight specific Institute activities, some of which have been published.

Marine Surveying Academy

After a slow but steady start to the year, the Institute's wholly owned subsidiary, The Marine Surveying Academy (MSA), sparked into life under the guidance of Hilary Excell, ably assisted by Pui-Si Chung and Rachel Moores. The main reason that ignited this spark? The relaunch of the Registered Marine Coatings Inspector (RMCI) qualification. After several barren years, meaning the programme could not be run due to the pandemic, it burst back into life in September with gusto.

If you are not familiar with RMCI, it was started back in 2014 to serve a market niche and is the standard by which professional superyacht coatings inspectors are judged. The scheme was developed to enhance

the skills of those whose role it is to inspect complex superyacht coatings systems, many of which were subject to litigation due to inadequate paint jobs which did not meet the specifications! Nearly 150 individuals have gained the qualification to date.

The RMCI content has now been refreshed and updated, a new manual, logo and web site produced, the delivery mechanism tweaked, examinations delivered online, and three courses subsequently rolled out in October and November at venues in the UK, the Netherlands and Italy. Over 30 delegates have participated. I must offer my gratitude to our stakeholders ICOMIA and SYBass as well as to Gareth Thomas and his colleagues at Akzo Nobel, Ken Hickling and tutors Rory Marshall and Leo van Klaveren. More information at: **https://rmciinspectors.com**.

The other main area of business operation for MSA is the successful eCMID accredited vessel inspector scheme, run on behalf of the International Marine Contractors Association and closely managed by Pui-Si. Since the programme began some years ago, over 800 inspectors have come forward seeking accreditation - not all successfully. The programme has proved to be remarkably robust and my thanks to IMCA and their IT team who have consistently uprated and developed the back-end system to what it has become today. The opportunities to utilise the eCMID version for small workboats into the burgeoning wind farm sector are huge and we are working with IMCA to identify the key players and look at ways to do that, most noticeably on the east coast of America.

Those who have departed in 2022

These are the names of IIMS members who have sadly passed away during 2022 that we have been notified about. All will be missed, and my condolences are extended to the families and friends of the deceased.

Jeffrey Casciani-Wood (England)
Tom Elder (Scotland)
Arthur Serry (Canada)
Alex Gordon (Singapore)

External activities

The Institute continues to keep its fingers in a number of important maritime related pies.

In September, I co-chaired the morning session at a workshop on the future of autonomous shipping. It was an eye-opener and you can read my review of proceedings elsewhere in this publication.

The MCA has formed a Technical Working Group to review and ultimately combine the various existing colour codes and MGN280 into one document, as earlier mentioned. Matt Folkes has agreed to represent IIMS.

Elliott Berry took up the role as IIMS representative on the British Standards Institute (BSI) committee, responsible for feeding into the long-term development of future small craft ISOs.

Chris Williams sits as the Institute's representative on the Boat Safety Scheme general committee.

In recent week, IIMS has been invited to send a representative to the Recreational Craft Regulation (RCR) stakeholders group. Peter Brookes will represent us at future meetings.

The Maritime Professional Council (MPC) of which I am an engaged and founder member (along with IIMS Immediate Past President Geoff Waddington) continues to grow in stature and has issued a number of press releases, safety bulletins and one key report during 2022.

My personal thanks

As always, I choose to use this platform to thank the many people who have contributed to the success of the Institute over the past twelve months, some on a voluntary basis.

I am grateful to my head office colleagues who have handled a mountain of work this past year. Those I have not name checked specifically in this review so far are Camella Robertson (Membership Secretary and Office Manager) who has continued to provide excellent support to the membership and to me personally. She is also our expert minute taker! A big thanks to Jen Argent, assisted by Elly Bryant, for running an efficient accounts office and enabling me (and the management board) to make sense of the accounts with ease!

I am appreciative of the support provided by President, Peter Broad, and the management board, which has met quarterly. They continue to offer valuable guidance with future strategy planning.

A big thank you also to the various Chairs and Vice-Chairs of our committees, both those linked directly to head office as well as those engaged in branch activities around the world. I am thankful to you all.

IIMS is also surrounded by some first-class suppliers. We could not function as efficiently as we do without you and your support is invaluable.

Mike Schwarz

From the Murky Bilge

Some say... that a team upon exiting were wearing each other's hats.
Some say... that "Maurice" came out slightly agitated - his name was Bob when he went in...

Some say... if you put your head down to the lowest point and listen very carefully, your ear will come up wet, and oily.
Some say... Once inside - you cannot turn left.

We only know it as the... "MURKY BILGE"!

During the pre-purchase survey of a 24m fibreglass Mediterranean charter motor yacht, we slide aside the cover with trepidation and peer into the dreaded murky bilge. Must try to get a more powerfull flash-light, me thinks...

So, taking a deep breath and silently cursing that this was going to ruin these new white overalls, in we go.

And in the forward bilge - surprise! Look what we found this month:

Mr and/or Ms. Surveyor, do you:

(a) Run off the boat shouting "Rats, rats aboard"!
(b). Pretend you didn't see it.
(c). Taste the cheese and annouce "a fine bit of Parmesan/ Brie/ Gouda", and write up the report accordingly.
(d). Test the trap for functionality and report on the result - (if so be careful of your fingers!).
(e). Write up the report saying there is "rodent problem".

Just how would you handle this matter and what would you do? Suggestions by email to **murkybilge@gmail.com**. The person who provides the "best" answer will receive a printed copy of the next Report Magazine and the winner will be announced in the next publication.

Any of you who have interesting photographs like the one above, please send them to **murkybilge@gmail.com** with an explanation and what the light-hearted discussion based on the image should be. Should they be published you will be credited.

Congratulation to IIMS student, Leo Fahey from New Zealand who came up with the best answer to Murky Bilge 2 in the last Report Magazine.

Question: What was the father's name of the installer?
Answer: Mr William Gordon Workman

The father of the installer was a Mr. William Gordon Workman. William preferred to be called Bill, and he always signed his name:

Bill G. Workman.

Bill had married his childhood sweetheart, Ms Mavis Betty Knott. Mavis always preferred to be known as May, and she signed her name:

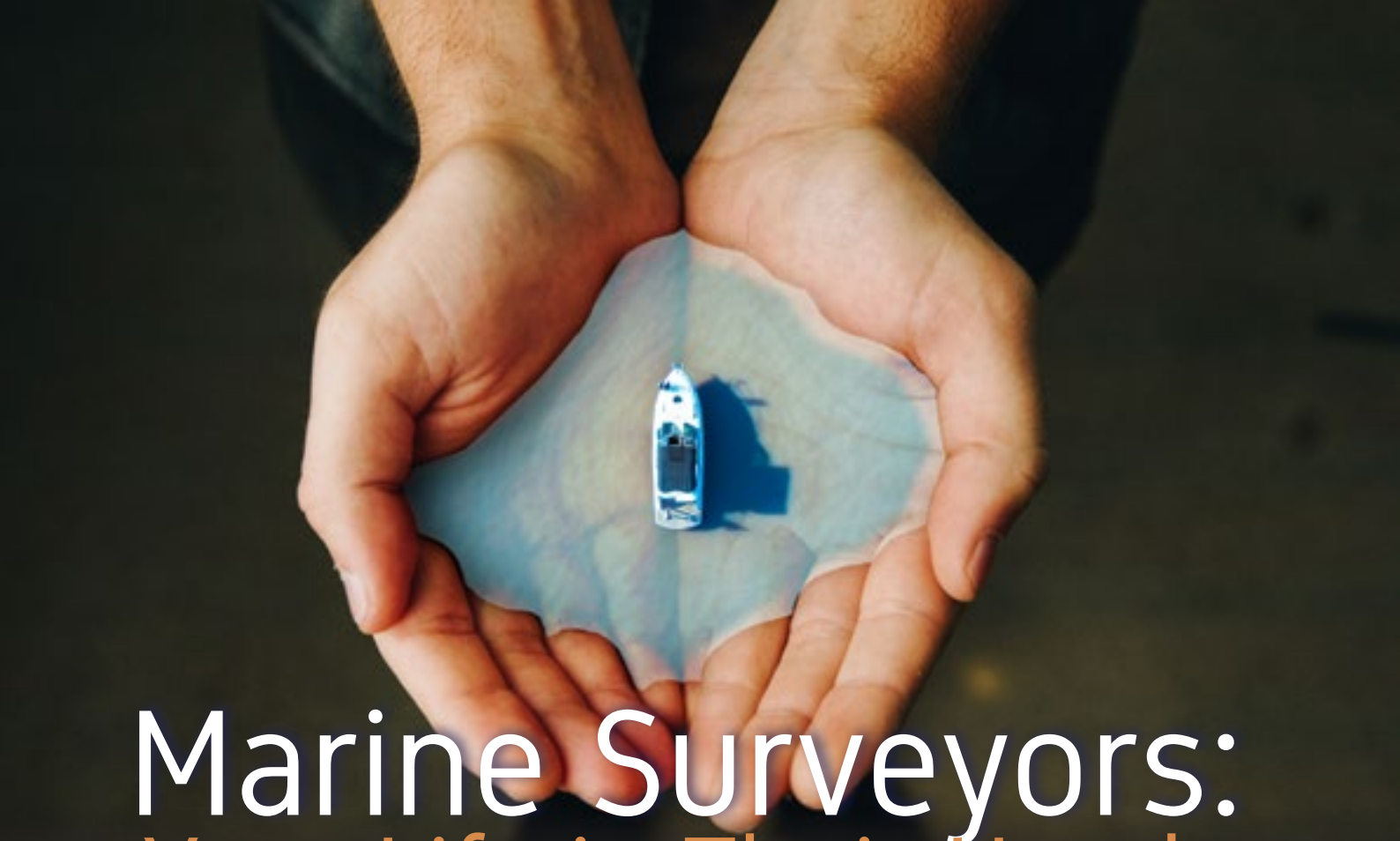
May B. Knott.

When Bill and May were married, they decided to hyphenate their surname, and they become known as Mr & Mrs Knott-Workman.

When their first child was born, Bill wanted his son to share his own name, so they named their son William Junior. Later when their daughter arrived, between them they chose the names Shirley Jane. When William Jr. grew up, he started working for his Uncle Andrew at the local boatyard. When William Jr, who always preferred to be known as Will, was working at Andy Workman Marine, he was required to sign-off on all his completed jobs. Records clearly show that it was William Jr who had installed the bilge pump and float switch in the photo, as it was signed:

Will Knott-Workman.

Maybe if Will had asked his younger sister for advice, even though she had limited knowledge of boats and bilges, Shirley Knott-Workman may have been able to point out the obvious error.



Marine Surveyors: Your Life in Their Hands

An opinion article by Captain Michael Lloyd, RD**, MNM, CMMar, FNI.

First a question for you. If an acquaintance calls you and asks for $20,000 immediately and says he'll give you back $50,000 next week on a sure investment, do you go ahead and give him the money? Hopefully not without carefully checking him and the investment out first. So why are so many of those who board strange ships more concerned with their money than with their lives?

As a Captain for many years, it always struck me as strange that those from ashore boarded and entered confined spaces totally putting their lives in our hands with no check whatsoever that we knew what we were doing. These days, regardless of what various agencies try to tell us, we know that standards of seamanship and safety are in decline, so it is more important than ever you take care of yourselves.

As professionals, you are in the position of making your own decisions but to do this you need information. This can start before you board the ship. The first is a check list. This can be personal or if working for a company, then a standard checklist. Either way this should be sent to the ship before arrival with the warning that should this not be completed in a satisfactory manner, then any intended boarding will not take place.

The check list should include:

Ventilation.

Is the ventilation mechanical or natural?

How long has the compartment been vented for?

Is the ventilation through ventilation?

Has the bottom of the space been ventilated?

How deep is the space?

Is the space illuminated?

What are the current oxygen readings at the bottom, midway and at the top.

If the space is horizontal vertical or a mix of both?

Is it illuminated?

What cargo is carried in the vicinity?

Has the space been tested for any gas present?

Is the ship equipped with dedicated rescue equipment?

Has the crew been trained for rescue?

Most important of all, does the ship have a self-breathing resuscitator?

While a number of these questions will most certainly be answered in the negative, at least you will be able to make your own informed judgement. One day we will get round to a system where the ship must verify the space is safe for entry and that a stated list of pre-entry measures has been taken through a written certification that contains the date, the location of the space, and the signature of the person providing the certification. That would certainly concentrate the minds of those on board, but we will all be dead, hopefully of natural causes, before the IMO gets round to that. At least by sending the ship the questionnaire before arrival, you will have the chance to state what additional measures you want to be taken before your attendance.

Meanwhile we must concentrate our own minds on putting your life in your hands rather than what probably will be a poorly trained crew with no dedicated enclosed space equipment, standing around peering into a dark hole in the deck. Always assume the worst-case scenario, then you may just be pleasantly surprised.

The chances are you will know the port you are working in, but not always. What do they have in the way of enclosed space rescue equipment and training? Worth checking. If you are attending in dry dock, hopefully the ship will have a specialist enclosed space company directing, under the Master, enclosed space operations. If they haven't, then ask why not.

How about your equipment. You should never trust the ship's equipment. Two years ago in Norway, a crew member was given a gas/oxygen meter that did not work, had never been calibrated and was last maintained 3 years before. He died. The accident inquiry personnel did not even test the equipment. The company said they would improve their procedures and that was the end of that. A typical marine accident report glossing over the fault of others.

Back to you again. Take your own gas/oxygen meter. What about EEBD? This could save your life by giving you time to get out of a dangerous situation. If you collapse, assuming they can get to you in time, how are they going to get you out? An escape harness is the answer especially if there is a vertical lift required. Few vessels are equipped with these as, to use the marine industry safety watchword, it is '*not required by legislation*'. Most ships don't know that safety helmets have a life span. Take your own, preferably with a good light attached.

What about the ship's communications? Do the walkie talkies work in the space? Does the ship even know if they do? Does the ship have a rescue team standing by?

For many of you, what I have said is what you already know, but it does no harm to remind those who are about to venture forth onto these ships. On ships such as a ferry, you may know the ship and those on board well, on other occasions you have no idea what to expect. It is hard to judge. Some old hulk propping up the jetty may have it all in hand and a good Chief Officer and Captain who ensure that things are still done correctly. On the other hand, it could be a new ship being run from the office with little regard for the abilities on board as long as they have certificates and do what they are told. What you do know is that you want to go home that night rather than the morgue.

You do not have to go into a space if there is any doubt in your mind that all is not well. If the ship is held up by having to comply with your requirements, so be it. If the owners don't want it to wait for you, then let it sail. Your life is more important than the ship. If the owners of the ship had the same consideration for their crew, then it should be well equipped and have a properly trained crew for these spaces. Few do.

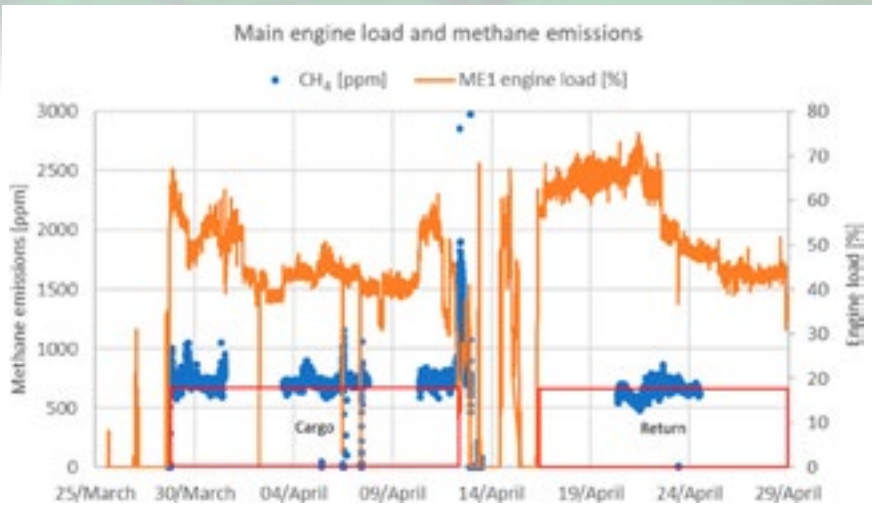
Stay safe.
Captain Michael Lloyd

Total Methane and CO_2 Emissions from Liquefied Natural Gas Carrier Ships: The First Primary Measurements

Paul Balcombe,* Dalia A. Heggo, and Matthew Harrison

ABSTRACT:

Mitigating methane emissions is vital in meeting global climate targets, but there is a lack of understanding of emissions and abatement opportunities to enable this. The natural gas supply chain is a key emission source, where methane emissions from liquefied natural gas (LNG) shipping have until now not been directly measured. This study provides the first measurement and modeling of total methane and CO_2 emissions from an LNG carrier on a round trip voyage from the USA to Belgium and back, including loading, laden voyage, unloading, and ballast voyage, measuring emissions from exhaust stacks, vents, and fugitives. Venting and fugitive emissions were extremely low, contributing less than 0.1% of total greenhouse gas emissions. CO_2 emissions from fuel usage were also lower than previous estimates due to improved efficiencies in modern engines and ship design. However, methane slip through the engines were higher than those in prior studies, averaging 3.8% across all engines: equating to 0.1% of delivered LNG. Generator engines are not typically included in emissions analyses but were the key cause of methane emissions. Engines exhibited higher methane slip rates at low loads, and optimized operation could reduce slip rates by half. More measurement studies are now needed to better understand fleet emissions and enable cost-effective mitigation strategies.



1. INTRODUCTION

Methane is the second most prevalent greenhouse gas (GHG), contributing a quarter of today's manmade warming,[1] and methane mitigation is vital in meeting a 1.5 or 2 °C global temperature limit.[2] Methane emissions arise from several sources including oil and gas, agriculture, and wetlands, and over the last 10 years, we have seen a rapid development in our understanding across the natural gas supply chain, including many primary measurement studies in the USA.[3] Both methane and CO_2 emissions have been found to be highly variable,[4] particularly across supply chain stages,[5] regions,[6] and operators.[7] However, there remains substantial gaps in our understanding of methane emissions from many regions and particularly relating to liquefied natural gas (LNG) transport.

The international LNG trade is a rapidly growing part of the natural gas industry and may increase further as the move to decarbonize national energy systems requires the decommissioning of more carbon intensive domestic supply (e.g., coal for electricity). LNG may offer reduced GHG emissions when compared to other sources such as coal for electricity or diesel as a marine fuel, but the benefit is dependent on limiting methane emissions that offset the CO_2 advantage for natural gas.

To date, there have been no direct measurements of total methane and CO_2 emissions from LNG shipping. While some studies have conducted measurements of methane emissions from marine engine slip,[8−11] none have published measurements of total methane emissions, which include fugitives (unintentional leaks, typically from seals or equipment connections) and venting emissions (intentional emissions via dedicated outlets to atmosphere) from the onboard LNG and vapor handling plant. There is an urgent need to understand the GHG emission profiles of imported LNG to meet national and international climate targets and corporate climate strategies.

This paper begins to fill this critical knowledge gap by conducting the first total methane and CO_2 emissions measurement campaign for an LNG carrier. The aim of this study is to quantify total methane and CO_2 emissions associated with an LNG carrier using direct measurement to identify the key contributors to total emissions. A measurement campaign was carried out over a full roundtrip voyage from loading, the cargo-laden voyage, unloading, and the return ballast voyage.

The measurements are used to develop a multiparametric emissions model of LNG shipping to estimate total GHG emissions. The study also seeks to shed light on the best methods to directly measure methane emissions from LNG carriers that can be employed in future studies or the retrofit of onboard continuous emissions monitors.

2. METHODOLOGY

2.1. LNG Carrier. The GasLog Galveston LNG carrier (LNGC) was chosen for measurement due to the WinGD XDF low-pressure dual-fuel (LPDF) two-stroke engine used for propulsion. The ship was built in 2021, and the measurement campaign was the ship's second voyage. LPDF two-stroke gas engines are currently the most popular for new ship builds, and to date, there has been no published direct measurements of uncombusted methane in engine exhausts (methane slip) while in operation,[12] which is consequently the key to estimating fleet emissions in the future. The ship houses two dual-fuel main engines for propulsion and four dual-fuel generator engines to produce power for other ship demands:

- Main engine 1 (M1): WinGD W5X72DF two-stroke, 11,530 kW
- Main engine 2 (M2): WinGD W5X72DF two-stroke, 11,530 kW
- Generator engine 1 (G1): Hyundai HiMSEN 8H35DF four-stroke, 3840 kW
- Generator engine 2 (G2): Hyundai HiMSEN 6H35DF four-stroke, 2880 kW
- Generator engine 3 (G3): Hyundai HiMSEN 6H35DF four-stroke, 2880 kW
- Generator engine 4 (G4): Hyundai HiMSEN 8H35DF four-stroke, 3840 kW

The main engines were typically operated at 60 rpm, and the generators were typically operated at 720 rpm. Further information on the engine operational conditions can be found in the Supporting Information. The main engines are designed for dual-fuel operation: the engines run on either gas or in the diesel mode. In the "gas mode", boil-off gas (BOG) from LNG cargo tanks is heated and injected into the engine at low pressure, along with a small amount of pilot diesel fuel (0.5– 1.5% of the total energy consumption) to facilitate ignition.

LNG cargo is loaded from the terminal into the vessel's storage tanks while at berth using loading arms. The Galveston's four insulated cargo tanks collectively hold a maximum of 171,000 m^3 LNG, stored at near atmospheric pressure and approximately −160°C. The containment system is a membrane type "Mark III Flex+", which has a rated maximum boil-off generation of 0.07% of the cargo per day.[13]

During the voyage, heat ingresses into the storage and LNG gradually vaporizes within the cargo tanks, creating BOG. To avoid venting of the tanks or pressure buildup, BOG is removed from the tanks and used as fuel for the propulsion and generator engines. If there is insufficient demand for BOG from the engines, BOG can either be sent to a reliquefaction facility and sent back to the storage tanks or combusted (flared) in the gas combustion unit (GCU).

2.2. Voyage.
A summary of the voyage is presented in the Supporting Information, Table S1. The researchers boarded the ship on March 25, 2021, while the ship was anchored off the port of Corpus Christi, USA. The ship docked and loaded the cargo in Corpus Christi on 27th March and began the laden voyage across the Atlantic on 28th March. The laden voyage lasted 16 days until the ship docked in Zeebrugge, Belgium on 13th April to discharge the cargo. Unloading began on 13th April, and the returning ballast voyage to USA began on the 14th. The ship stopped to refuel with diesel in Portland, UK, on 15th April, and the ballast voyage lasted another 13 days to reach Corpus Christi on 28th April. For further details on the voyage, please see Supporting Information Table S2.

2.3. Measurement Setup.
An inventory of all potential sources of methane and CO_2 emissions from the ship across different operational modes was developed in conjunction with the ship operators and is summarized in the Supporting Information (Table S3). Emissions are categorized as exhausts, vented emissions, and fugitive emissions, of which the measurement setup is described in this section.

2.3.1. Exhaust Monitoring: Continuous Emission Monitoring System.
Two extractive Fourier transform infrared (FTIR) continuous emission monitoring systems (CEMSs) were temporarily installed to measure emissions concentrations from seven sources: two main engines, four generator engines, and the GCU. Exhaust gas emission concentrations of methane, CO_2, O_2, and water were continuously measured using the two CEMSs: at any one time, two out of the seven exhausts (2× main engine, 4× generators, and 1× GCU) were being monitored.

Typically, one main engine and one generator were being monitored at a given time. The sample probe/line was periodically switched from one exhaust to another during the study period to ensure the capture of a representative emission profile across all stacks.

To ensure consistent FTIR performance throughput the testing period, the FTIR system was calibrated with reference gases once per day. Methane and CO_2 at known concentrations were used to assess the FTIR output readings. The calibration results must be within ±5% of the actual value to validate results as per US EPA Method 320.[14]

2.3.2. Vents. Vented emissions arise from the dedicated vent masts, as well as from maintenance activities where equipment is purged and depressurized prior to breaking connections. There are four vent masts connected to the LNG cargo tanks and one additional vent connected to the engine room. All vent masts are equipped with gas concentration monitors, and the forward mast is equipped with an inline flowmeter. From consultation with the ship operators, venting from the masts was expected to occur rarely, if at all, during the ship operation. If a venting event occurred, a procedure was in place to ensure that the measurement team would receive advance notice from the ship crew and monitor the vent in two ways:

- The forward mast vent flowmeter records the vented volume flowrate
- The event would be recorded by the measurement team using a portable optical gas imaging (OGI) camera.

Only one of the five vent masts (the forward mast, which is common to the vapor main and all cargo tanks) had a flowmeter installed. Therefore, it was agreed that should any vented emissions occur, we would receive prior notification from the operators, as well as use the ship's gas detection system and finally periodic spot checks of the masts using the OGI camera fixed on a tripod to check for unintended methane leakage. Two OGI cameras were used simultaneously: the FLIR GF320x and the Opgal EyeCGas 2.0.

Venting emissions associated with maintenance activities were

monitored, and an inventory was created of all scheduled maintenance activities. Such activities included testing of the vent control valve and checking filters. Each of these activities was monitored using an OGI camera, and the emissions were estimated via a volumetric calculation based on equipment/pipework volumes and operating pressures.

Ship-side methane emissions associated with loading and unloading included any emissions associated with connecting the loading arms, as well as methane slip and venting emissions.

Loading arm connections were monitored during connection and disconnection using an OGI camera, and emission volumes were recorded where identified.

Note that engine crankcases vent directly into the funnel of the ship, and we relied on the gas concentration alarm (at 4% vol/vol) that was installed in the vent line to determine the presence of methane. The concentration meters did not alarm at any point for any of the lines, and consequently, emissions were assumed to be negligible.

2.3.3. Fugitive Emissions.

Fugitive emissions may occur from any piece of gas-handling equipment, especially via connections, seals, or threads. The facilities onboard the ship with gascontacting equipment are as follows:

- LNG cargo containment system and associated pipework above the deck (including vents);
- the compressor room;
- the engine room (main and generator engines, GCU, and fuel delivery system);
- the reliquefaction facility; and
- the loading/unloading manifolds.

To detect the presence of fugitive emissions, walking OGI surveys were conducted across all facilities. Walking surveys were mostly conducted daily, where one of the above areas was the focus each day. Each area was surveyed around five times over the voyage.

The main and trunk deck cargo areas, the compressor room, and engine rooms were visited most frequently as these were continuously in operation. The reliquefaction facility did not operate at all during our voyage due to the absence of surplus BOG and so was only visited twice to screen for fugitive emissions as the equipment was not handling gas while idle. The loading and unloading manifolds were screened during use (before, during, and immediately after the loading and unloading operations).

During the walking survey, OGI cameras were used for detection. Each piece of gas-handling equipment was surveyed and recorded as leak/no leak. If a leak was qualitatively observed using OGI, the ship operators were notified. The leak emission rate was quantified before repair using the Bacharach Hi-Flow sampler. Note that the majority of equipment being surveyed was indoors, besides the above deck cargo containment system.

The outdoor surveys were only conducted in clear weather conditions, and wind speeds were not considered to negatively impact the survey given that all equipment being surveyed was within a 3m distance.

2.3.4. Ancillary Data.

Along with emissions measurement data collection, ancillary data from the ship's operating system were collected for the duration of the voyage, to develop a multiparametric model of emissions from the voyage. Data were collected at 1 min intervals to match the emissions measurement for the following:

- Engine load (×6 engines)
- Engine BOG consumption (×6 engines)
- Engine diesel consumption (for each main engine and total diesel consumption for generators)
- Engine exhaust temperature (×6 engines)
- Engine gas/diesel mode (×6 engines)
- Ship speed
- Ambient temperature and pressure conditions
- Cargo volume (×4 tanks)
- Cargo tank pressures and temperatures (×4 tanks)
- Vent mast flowrate
- GCU BOG consumption
- Auxiliary boiler diesel consumption

2.4. Emissions Modeling.

Once the voyage was completed, the emissions measurement and ancillary data were synthesized and used to produce a multiparametric emissions model of methane and CO_2 emissions from the roundtrip voyage. First, stack gas emission rates for methane and CO_2 (in kg/h) were determined from the concentration measurements using the standard US EPA Method 19.[15] Mass emissions of methane and CO_2 were determined from the stack gas concentrations measured using FTIR spectroscopy (ppm or %v/v), stack gas moisture and O_2 concentration (% v/v), fuel mass consumption rate, oxygen-based dry-basis fuel F factor (Sm3/J), and fuel heating value (mJ/kg).

Two of the six engine exhausts were continuously monitored at any one time, so an emission model was developed to estimate total emissions across the voyage. The correlation between ship operational/weather data and estimated engine exhaust emissions was investigated across all parameters detailed in the auxiliary data, mentioned in Section 2.3, and those that demonstrated a correlation were used to develop a parameterized model of emissions:

- Engine gas mode (gas mode and diesel mode)
- Load (% of maximum)
- Exhaust temperature (°C)
- BOG consumption (kg/h)
- Diesel consumption (kg/h)

Further information on the correlation factors and modelling to estimate total methane and CO_2 emissions is given in the Supporting Information (Section 3 and Table S4). Normalized estimates of methane and CO_2 emissions were estimated per tonne of LNG delivered: 67,500 tonnes of LNG was delivered at the unloading terminal in Zeebrugge.

3. RESULTS

Results of the measurement study are first presented by describing total GHG emissions and then split by the voyage stage, by the GHG (methane or CO_2), and by the emissions source to characterize the emissions profile. A technical summary of the voyage conditions, durations, fuel use, and emissions is given in the Supporting Information (Table S2), and the raw emissions data collected across the voyage can be found in the Supporting Information as a separate database.

3.1. Total Methane, CO_2, and GHG Emissions. The total quantities of CO_2 and methane emitted across the voyage were 4600 t CO_2 and 68.1 t CH_4, respectively. This equates to total GHG emissions of 7050 t CO_{2equiv} using a global warming potential (GWP) of 36 (100 year time horizon)[16] or 10,500 t CO_{2equiv} using a GWP of 87 (20 year). These GWP values reflect the IPCC fifth assessment report including indirect warming effects.[1] Expressed per unit of LNG delivered (67,500 t LNG delivered), GHG emissions are 104 g CO_{2equiv}/kg LNG using GWP100 or 156 g CO_{2equiv}/kg LNG using GWP20.

As shown in Figure 1, emissions are dominated by CO_2 emissions, both from the main engines (45% of total GHGs) and the generator engines (18%). Methane emissions contribute 35% of the total GHG using GWP100. Using GWP20, this dominance is switched, and methane contributes 56% to the total GHG (as shown in Figure S1 in the Supporting Information).

Relating to total methane emissions, the 68.1 t CH_4 emissions equate to 0.04% of delivered LNG. The generator engines produce 60% of total methane emissions, compared with the main engines, which contribute 39%, as shown in the Supporting Information (Figure S2). Venting emissions (including maintenance activities) and fugitive emissions are non-zero but represent a minor proportion of the total for this ship voyage (160 kg CH_4 or 0.23% of methane emissions).

3.2. Engine Methane Emissions. The engines (both main and generator engines) contributed a total of 51.6 t methane emissions over the voyage, equating to 99.8% of total methane emissions. The generator engines have a substantially lower power output than the main engines (11,530 kW for each of the main engines, compared to 3840 and 2880 kW for the two generator engine types), but methane slip is substantially higher.

Figure 2 shows the average methane slip rates for each engine (M_X = main engine and G_Y = generator engine) alongside the weighted average (in terms of the total voyage duration) across all engines.

The main engines exhibited average slip rates of 2.3 and 1.9% for M1 and M2, respectively. G1 and G3 were normally in operation (96 and 97% of the time, respectively, as per Table S1) and were preferentially used over G2 and G4 owing to operational issues with one of these engines. Average slip rates were 7.9 and 8.5% for G1 and G3, respectively. For emphasis, this means that ~8% of all LNG that is sent into the generator engines slips out and is emitted directly to the atmosphere. G2 and G4 were only in operation for 14 and 5% of the voyage, respectively, but produced substantially higher slip rates. The variation in engine slip rates is explored further in the Discussion section.

3.3. Venting and Fugitives. Venting of natural gas was extremely low over the duration of the voyage. The operational philosophy includes zero routine venting for the storage system, and the only venting that occurred were due to the following reasons:

- fuel switching between gas and diesel modes for each of the engines, where the pipework was vented automatically as part of the changeover routing, and
- testing and maintenance activities where venting was required to isolate short sections of the pipework.

All engines were operated in the gas mode for >95% of the time, as detailed in Supporting Information Table S5. Engines were only in the diesel mode during engine start up, when operating at very low loads (typically less than 20%), or during the cleaning of the turbochargers, which occurs once every 200 h. Venting due to fuel switching occurs via an automated fuel switching process, where a section of the line (~40 m length) is vented and purged with nitrogen to avoid creating an explosive mixture. Over the course of the voyage, the six engines were switched a total of 86 times, causing 47 kg CH_4 emissions or 0.07% of total methane emissions measured as part of this study.

Maintenance practices minimized venting emissions by isolating short sections of the pipe, pressurizing with nitrogen and back-purging two–three times before venting low concentrations of methane. The measurement team monitored several operations and developed an inventory of testing and maintenance activities alongside the operational crew to determine what is maintained

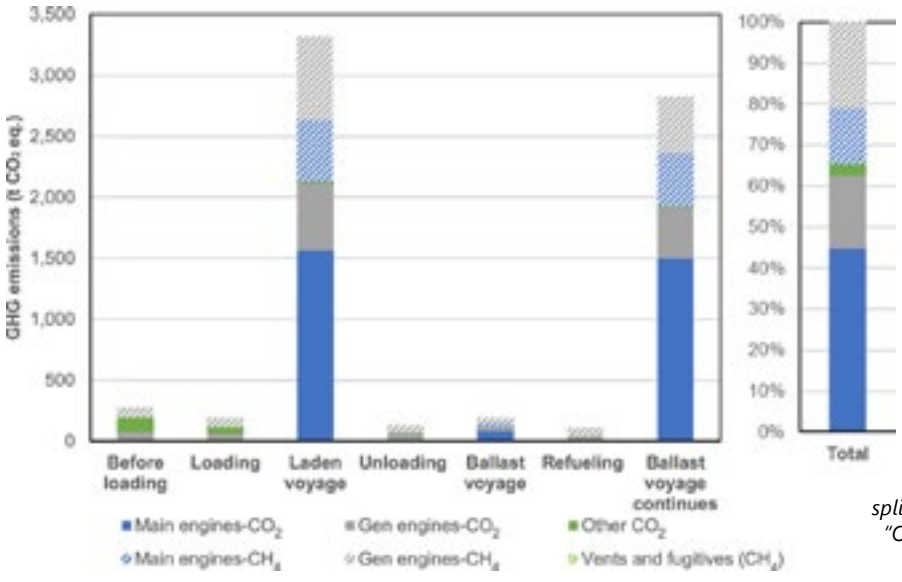


Figure 1.
GHG emissions from different voyage segments, split by the emission source, using a GWP100 of 36. "Other CO_2" includes CO_2 emissions from the GCU and from the auxiliary boiler.

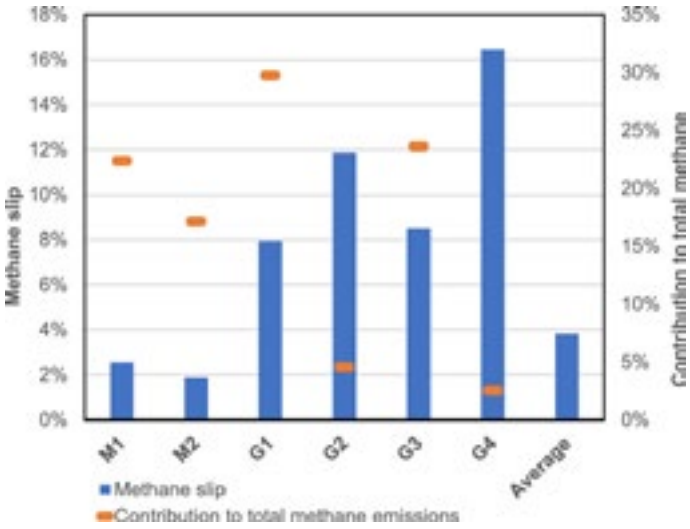


Figure 2. *Methane slip rates (left axis), expressed as a percentage of LNG throughput, and their contribution to total methane emissions (right axis) across each engine.*

and how frequently. The estimate of total venting emissions for testing and maintenance over the duration of the voyage was negligible (<1 kg CH_4).

During loading and unloading, a small amount of venting occurred to connecting/disconnecting the loading arms prior to LNG transfer. This again involved multiple nitrogen purges and back-flowing to the storage. The methane concentrations of gas within the short sections of the isolated pipe were tested via small vents prior and were less than 1 % vol/vol before disconnecting. Estimates of methane emissions were again less than 1 kg CH4, accounting for the volume, pressure, and temperature of LNG. One emission source during unloading that was detected but not possible to be quantified was a contaminated nitrogen vent on the loading arms. Nitrogen from onshore was used to blanket the flexible joints of the loading arms, and there was a slow vent discharging close to the loading arm connection. Investigators detected methane concentrations within this nitrogen purge in two out of the four loading arms, but there was insufficient time to quantify prior to disconnection. Again, this was perceived to be a negligible emission compared to engine slip.

For fugitive emissions, only two leaks were found over the duration of the trip. Both were continuous but negligible leaks.

They were identified using the OGI camera, and then, an attempt to quantify was made using a high flow sampler. One leak was from a flanged pipe connection on the BOG delivery line to the generator engines and the other was from a pressure transmitter on the larger fuel delivery line from the compressor station to the engine room. However, the minimum detection limit for the high flow sampler was not reached for either leak, suggesting that each leak was lower than the stated minimum detection limit of 1.4 L/min. For the purposes of the calculation, 1.4 L/min flow was conservatively assumed for each of these leaks.

Both leaks sources were fixed onsite via the tightening of flanged connections. For emission quantification, it was assumed that these leaks occurred for the duration of the voyage. Though this was not the case (they were fixed in situ), these small emissions would have persisted if the investigators were not onboard, and so, this would have reflected the emissions of the voyage without manipulation from the investigators. Total fugitive emissions across the duration of the voyage were estimated to be 95 kg CH4, equating to 0.14% of total methane emissions computed as part of this study.

3.4. Other Sources of GHG Emissions. Other sources of GHG emissions that were studied represented a low contribution to total GHG emissions of 3%, as shown in Figure 1. These other sources were as follows:

- GCU (both methane and CO_2)
- Auxiliary boiler (CO_2)
- Reliquefaction plant (methane)

Besides the start of the voyage, where the GCU was operating briefly, BOG generation did not reach sufficient levels to require starting up of the reliquefaction plant or the GCU. The GCU is used when

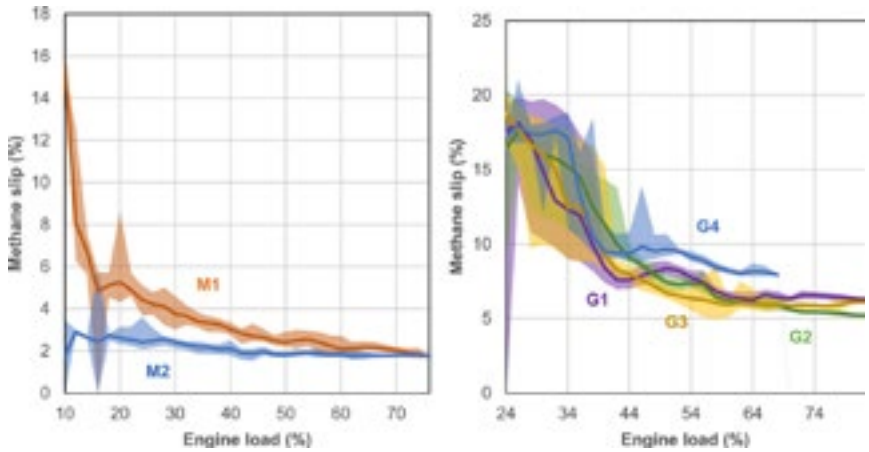


Figure 3. *Methane slip by engine load across different main engines (left) and generator engines (right). Lines represent the mean, and shaded areas represent 5th–95th percentile values across measured data.*

BOG generation is greater than the engine consumption for short periods of time, where the BOG is combusted and the exhaust gases are released to the atmosphere. The reliquefaction facility is operated when there is expected to be excess BOG generation for longer durations, for example, when the ship has stopped moving at the port and the main engines are switched off. It was noted by several engineers onboard that BOG generation is very low with current insulated LNG storage techniques and the ship can operate much more efficiently than with older systems. Earlier generations of LNG carriers, designed and constructed using older technologies for storage and BOG management, may exhibit varying emissions profiles compared to this ship.

4. DISCUSSION

Further analysis of key emission sources is conducted in this section with a focus on the variation in methane slip, a comparison of GHG with other literature sources, identifying potential emission reductions going forward and improving methane measurements on ships.

4.1. Methane Slip versus Engine Load and Temperature.

Methane slip rates are higher across the generator engines than anticipated in a previous research,[12] and high variability was also demonstrated in the results: for example, generator engine G4 produced 16% slip (the uncombusted methane as a percentage of the methane throughput of the engine), double that of G1 (8%, which is the same model and power rating). Across all engines, methane slip changes with different engine loads, as shown in Figure 3.

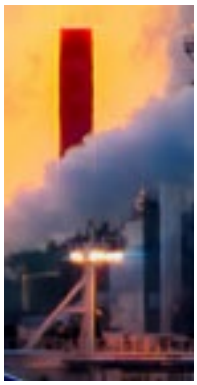
The effect of engine load on slip is more pronounced for the LDPF four-stroke engines (generators) than for the LPDF twostroke (main) engines, which exhibit a flatter load profile. All the generator engines exhibited a relatively similar slip across the load range, as shown in Figure 3, but the two main engines show significantly different slip rates across loads. M2 exhibited lower methane slip across all engine loads, with an average of 2% at higher loads (>50%) compared to 2.3% for M1.

In addition to engine load, methane slip also varied substantially across engine exhaust temperatures, and these correlations are shown in the Supporting Information (Figure S3). Exhaust temperature is governed by the air-to-fuel ratio, where lower methane slip rates were associated with higher exhaust temperatures or lower air-to-fuel ratios. This correlation was substantially stronger with generator engines, which exhibited a higher exhaust temperature than the main engines: main engine exhaust temperatures were typically 200−250 °C compared to those of the generators being 350−450 °C. This relationship between temperature, load, and methane slip is also reflected in the emission model parameters detailed in the Supporting Information (Table S4).

While methane slip across the engines was highly variable, the engines performed similarly to the manufacturer's specifications or pre-engine tests. For the main engines, methane slip rates were broadly in line with the manufacturer's specification, but there appears to be a larger deviation from the specification, particularly for M1 at lower engine loads. For the generator engines, methane slip was very similar to the pre-testing performance. Please see Supporting Information Section 4 for further details.

4.2. Comparison with Other Studies.

To understand the GHG results in context, this study is compared to three recent desk-based studies, Roman-White et al.,[7] NETL,[17] and thinkstep,[18] as shown in Figure 4. All studies assess the life cycleGHG emissions associated with exporting LNG to different locations and included the LNG shipping transport as one part of the supply chain. Roman-White et al. modeled all cargoes delivered from Sabine Pass, USA, in 2018, the results of which this study compares with the average of all XDF ships from the USA to the UK as it closely matches the transport distance and propulsion technologies from this study. The NETL study comparison is for the USA—Rotterdam case study voyage using a DFDE vessel. The thinkstep study uses data from a previous NGVA study[19] using fuel and emission factors for different LNG



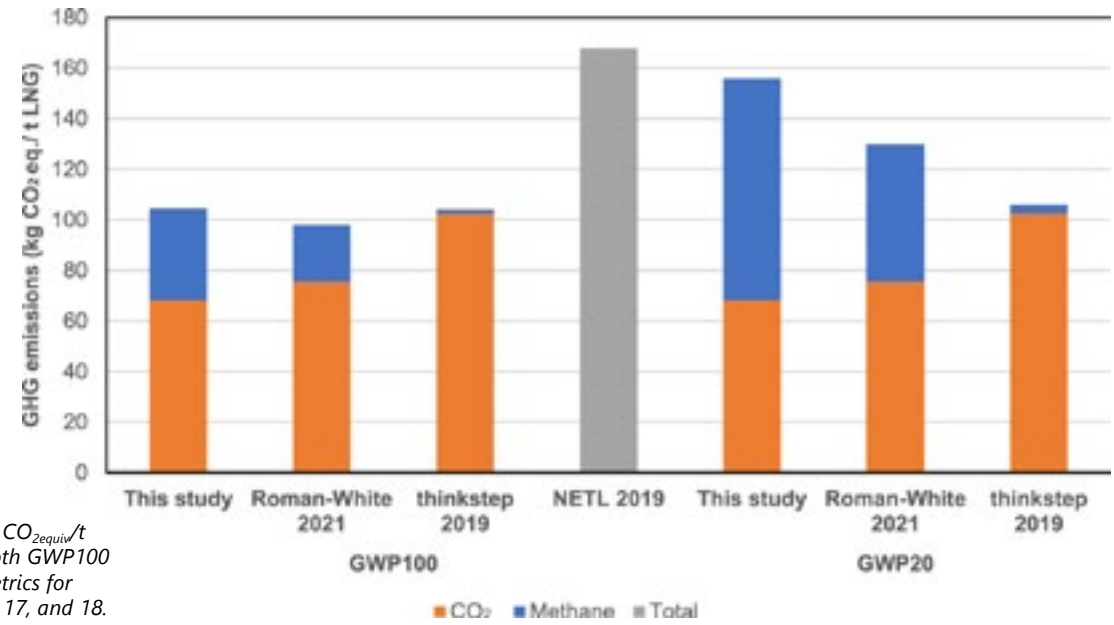


Figure 4. *Comparison of GHG emissions from LNG shipping with other studies, expressed in kg CO_{2equiv}/t LNG delivered, using both GWP100 and GWP20 climate metrics for methane. Source: refs 7 17, and 18.*

carrier types per megajoule kilometer (a megajoule of embodied energy in the LNG transported multiplied by the distance travelled): we took the emission factors for a 174,000 m^3 DFDE vessel and applied our data to the distance and LNG delivered.

On a GWP100 basis, this study has similar GHG emissions to those of Roman-White et al. and thinkstep within a 7% range, but 38% lower than the NETL estimate. On a GWP20 basis, this study is 20–47% higher than the comparators.

The figure indicates the cause of some of this variation: the split between CO_2 and methane emissions. Compared to the Roman-White 2021 and thinkstep studies, CO_2 emissions from this study are 10–33% lower. For the NETL study, there was insufficient information on the split between CO_2 and methane to compare. The lower CO_2 emissions in this study arise from a lower fuel consumption than that assumed in all the studies, perhaps due to more efficient engine operation in modern gas engines and more efficient hull design.BOG consumption in this study was 88 kg/km (47.5 kg/Nm) and diesel consumption was 1.3 kg/km (0.7 kg/Nm), allowing for all uses of gas and diesel. The different engine technologies have varying efficiencies, and the LPDF two-stroke engine measured in this study is one of the most efficient marine gas engines.[12]

However, methane emissions over this voyage were 60% higher than those assumed by Roman-White et al.,7 which can be attributed to the difference in the assumed methane slip. The Roman-White study assumes a methane slip rate of 2.3%, which is comparable to that of our propulsion engines, whereas the average slip rate across all engines (including generators) was 3.8% in this campaign. The thinkstep study includes negligible methane slip rates with little justification and makes no mention of venting or fugitives but includes comparatively higher CO_2 emissions, resulting in little variation across GWP time horizons.

The comparison with other studies has several limitations in terms of comparing "like-for-like", primarily relating to transport distances and the propulsion technology. Similar distances (within 1000 km) were used, but only the Roman-White study7 used a comparable propulsion technology. Note that no other study explicitly modeled generator engine emissions, only the main propulsion or an aggregate (e.g., based on the total fuel consumption as per ref7). Studies also typically have not included emissions from venting or fugitives. This study demonstrates the importance of considering all emission sources to better understand the magnitude of emissions and to determine where the greatest reductions lie.

4.3. Emission Reductions Going Forward.

Total emissions are similar for this ship compared with previous studies, but the contribution from methane is higher, and this represents a significant opportunity for further study and mitigation. Methane slip contributed 99% of methane emissions across the voyage and 35% of total GHG emissions (GWP100).

During this campaign, the average engine load was approximately 40% across both the main and generator engines.

This is lower than what may be considered optimal from an overall fuel use energy efficiency perspective but gives substantially higher methane slip as well. Figure 5 shows the total GHG emissions across different engine loads per unit of engine output for the generator (left) and main (right) engines.

The graph demonstrates the exponential increase in methane emissions and its contribution toward GHG emissions with lower loads. Note that life cycle GHG emissions associated with using marine diesel oil are approximately 700 g CO_{2equiv}/kW h engine output,[12] which would require engine loads of above 75% to match for the generator engines but is improved upon at all engine loads for the XDF main engine.

It is not known whether operating at 40% load for generator engines is a typical mode of operation across the LNG carrier fleet, and discussions with LNG carrier operators suggest that they can, and do, operate at higher loads, which would reduce slip. For context, engine performance testing is conducted over a typical range of engine loads, which is on average 70% for constant-speed propulsion engines (E2 test cycle) and 47% for constant-speed auxiliary engines (D2 test cycle).[20] The ship in this study was new, and this was only the ship's second voyage, and so, operators preferred to have two engines in operation at any one time to avoid any shutdowns in case one engine stopped suddenly. However, if engines were operated closer to ~80% load, methane emissions would have been reduced by over half (see Figure 5). Engine operational practices account for a broad range of safety, reliability, economic, and other environmental constraints, and further work in understanding how methane emission reduction opportunities could fit within these constraints is needed.

There are several additional opportunities to reduce methane slip, from the operational, exhaust treatment, and engine design perspectives. It should be noted that for the main propulsion engines, a new version of this XDF engine is now being offered, and it is suggested to reduce methane slip by approximately half, primarily owing to exhaust gas recirculation. There is an urgent need to identify and implement further feasible methods of methane emission reduction if natural gas is to contribute to meeting maritime GHG reduction targets.[21]

4.4. Improving Methane Measurement on Ships.

A better understanding of methane emissions and their sources/causes on different ships is required to identify the best methods to reduce emissions. Several questions arise from this study, including the following: What are the real-world methane emissions across different LNG ships; how do emissions vary by ship age, cargo tank and insulation technology, size, operator, and engine type; and are venting and fugitive emissions similarly small for other ships? There are two important next steps to better understand and reduce methane emissions: a broader independent measurement study to provide a robust understanding of fleet-wide methane emissions; and increased industrial self-monitoring of methane emissions.

More independent, published measurements of methane emissions from LNG carriers and shipping more broadly are needed to obtain a representative sample and to gain an understanding of how to mitigate

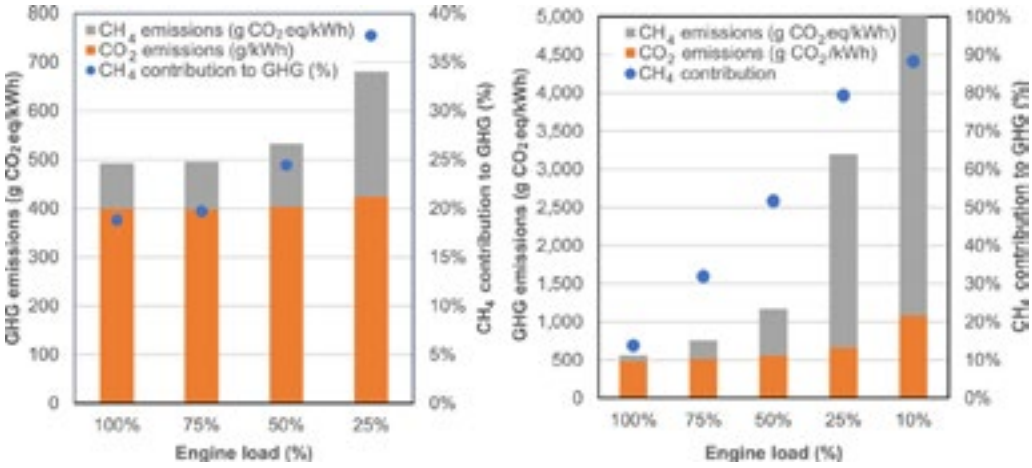


Figure 5. *GHG emissions associated with different engine loads for main engine 1 (left) and generator engine (eight cylinder, right), split by the contribution from methane (GWP100) and CO_2. The proportional contribution to total emissions from methane is indicated via the blue dots and the secondary axis.*

emissions. It is important to emphasize that this single measurement campaign does not constitute a representative sample of the LNG carrier fleet, which constituted 572 active vessels in 2021.[13] Similar to other segments of the natural gas supply chain, methane and CO_2 emissions vary by region, operator, technology, and age of facility among other factors. To understand the climate impact of importing LNG from different regions, we need to understand how methane emissions vary, and a representative sample of measurements is required across the different types of engines, storage technologies, ships, and operators. This will enable a greater understanding of not only emissions but also how they can be reduced most cost effectively and by how much.

This study employed a bottom-up engineering approach to measurement, where we first assessed all potential emitting sources and then attempted to measure/screen every potential source: FTIR continuous emissions monitoring for the stack emissions, OGI camera leak detection for fugitives, and a combination of ship ancillary data, operator expertise, and OGI camera spot checks for venting emissions. This campaign was particularly comprehensive in its scope for fugitive emissions detection, where each unit was reviewed around five times over the course of the voyage: OGI surveys for many other oil and gas facilities may occur only once every year. The advantage of this measurement methodology is that by studying emissions from all known individual sources, we were able to collect sufficient data to understand where the emissions arise from and what their causes were. This is vital in efforts to reduce emissions going forward.

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The experimental design aimed to ensure that there were no unaccounted emission sources by identifying all potential leaks and with regular surveying, but a general disadvantage of bottom-up measurements is that we are unable to confirm the absence of "unknown unknowns", that is, potential emission sources that were not identified during planning or during the measurement campaign. Top-down studies using aircrafts or drones could be useful as a cross-sectional snapshot of emissions across several ships and could help ensure that all emission sources are accounted for via a reconciliation study between topdown and bottom-up methods.[22]

Moving beyond these independent measurement studies that provide a robust emissions baseline, it is important for the industry to self-monitor methane emissions. In the absence of regulation on methane emissions from shipping, increased inhouse monitoring of methane emissions would provide assurance, help further the understanding of emissions, and drive down emissions. There are several CEMSs that are commercially available for methane in engine exhaust. These have been installed on some ships with gas engines (the authors are aware of several ships with installed monitoring), but the extent to which these are used is unknown. Additionally, to assess and reduce fugitive emissions, it is recommended that ship operators are trained in using an OGI camera to monitor emissions periodically during voyage. A best practice guide on effective techniques and methods for monitoring methane emissions in shipping would be a valuable contribution toward greater industry participation, for example, via Methane Guiding Principles.[23] In addition to techniques for measurement, it is important to maintain an inventory of methane emissions that can help us understand how they may be prevented in the future and to feed into continual improvement.

5. IMPLICATIONS

This study has demonstrated a successful bottom-up measurement campaign of an LNG carrier using industry-standard measurement systems that help determine the causes of methane emissions and shed light on how they may be mitigated in future. Variation in methane emissions with different operational profiles are highlighted here. During this voyage, all engines were operated at relatively low loads, averaging 40– 45% across all engines. If the engines were kept at 80%, this would approximately halve methane emissions and result in much more efficient engine operation.

Already much variation in methane emissions has been highlighted, and it is likely that the highly heterogeneous LNG shipping fleet also exhibits variability in methane emissions across the range of ships with different ages, engine technologies, storage technologies, boil-off management, and operators. More studies like this must be conducted to develop a representative sample, to understand current emissions, and more importantly to develop cost-effective mitigation strategies. A further recommendation is for ship operators to install methane emissions monitoring on engine exhausts and to conduct periodic leak detection surveys to feed into methane-minimizing operational practices.

ASSOCIATED CONTENT

Supporting Information
Supporting Information is available free of charge at https://pubs.acs.org/doi/10.1021/acs.est.2c01383.
Additional details on the measurement and modeling methodology; results of total methane and CO2 emissions; methane slip correlation with temperature; and comparison of emissions with the manufacturer's data (PDF)
Raw exhaust concentration data from FTIR CEMS A (XLSX)
Raw exhaust concentration data from FTIR CEMS B (XLSX)

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Notes
The authors declare the following competing financial interest(s): P.B. has acted as consultant for several organisations in the natural gas sector including Cheniere, BP, Shell, Woodside and the Oil and Gas Climate Initiative. P.B. has also been an expert witness or consulted with Friends of the Earth, UK Committee on Climate Change and UK Cheshire Council West.

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Containership 2050:

When the box becomes the customer

By Jan-Olaf Probst, Business Director Container Ships, DNV

What could a sophisticated data- and analytics-driven supply chain in the container segment look like? Jan-Olaf Probst shares a possible future of a fully digitalized and decarbonized market and what it will take to get there.

Let's imagine that one afternoon in 2050, a young woman opens her front door. A couple of minutes earlier, she received an alert that her recent order was about to arrive. She steps out and watches an autonomous electric delivery vehicle pull up. She uses the fingerprint reader to confirm receipt of her parcel and heads back inside.

Digitalization changes the future supply infrastructure

Looking in detail, it's the steps before the parcel arrives that really show how the industry has changed from today. The parcel was unloaded from a container at the local port that morning. The ship it came on sailed 100 nautical miles from a coastal town where the woman's online purchase triggered a production order at the local fabrication plant. There the product was created, boxed and loaded into a container at a nearby harbour. The product's journey from fabrication through to delivery at her home is recorded in a digital log, in addition to the materials that went into its construction.

By 2050, the outbound and inbound ports have become more like airports in the sophistication and speed with which they anticipate, prepare for, handle and dispatch containers. The key is how container boxes, largely 'stupid' in 2022, become 'intelligent' through the addition of microchips, sensors and transmitters.

How containers turn into an intelligent part of the logistics chain

Even after many decades of progress in standards development, expertise and digital technologies for containers, they are still regarded today simply as cargo. But we are also starting to see how digital technologies will enable a philosophical switch.

In 2050, the box is now a customer, an intelligent and interconnected part of an integrated logistics system, with containers, ships, trucks and trains all communicating with each other through enabling technologies like digital sensors, data analytics, machine learning and artificial intelligence.

In this vision of 2050, the box tells stakeholders along the logistics chain what it contains, whether the cargo is hazardous, where it is coming from and going to, and if it will need repacking at the arrival port because there are multiple customers for its contents. Computer modelling will use location information from the vessel to precisely schedule port operations. The ship arrives precisely on time, unloading and loading begins ten minutes later, and the vessel leaves within a tightly scheduled window.

Reducing waiting times in ports must become a reality

Reducing waiting times in ports will be an important part of decarbonizing containership operations, boosting the availability of vessels, further enabling energy-efficiency measures such as slow steaming, and optimizing port throughput. We must make this vision a reality. Containerized transport is forecast to grow 80% by 2050, which means transport efficiency must improve significantly in terms of both decarbonization and business economics.

It is entirely possible that when the young woman receives her parcel in 2050, the packaging will link back to a digital log to confirm that the

product is zero-carbon across its value chain – from raw material to doorstep. The transportation elements are emissions-free because, this being mid-century, shipping has already decarbonized in line with progressively tighter emissions reduction targets agreed at the International Maritime Organization (IMO).

Alternative fuel options that facilitate zero-carbon deliveries

DNV's classification and advisory work and tracking of market trends shows that containership lines are already ordering vessels whose low operating emissions will already put them ahead of the initial IMO greenhouse gas reduction ambitions today.

For deep-sea shipping, where combustion engines are the most suitable type, our research such as the Maritime Forecast to 2050 indicates synthetic methanol and ammonia as feasible options for large containerships. Synthetic LNG will be an important transition fuel over the coming decades, but its phase-out may have already begun by 2050. Smaller vessels have trended more towards fuel cells or battery-electric where possible.

There will still be big containerships – 24,000 TEU, 15,000 TEU and some at 10,000 TEU – on the long-distance Asia-Pacific, India, Europe, US, Africa and South American trade routes. The age of the Small Feeder, Feeder, Feedermax, Panamax, Post Panamax, New Panamax and Ultra Large Container Vessel categories will not be over anytime soon.

The market for small container vessels will grow

However, we expect to see an increase in smaller 1,000 TEU to 4,000 TEU vessels. Drawing on the lessons from the pilot projects of today, like DNV's ReVolt concept, these fully automated and zero-emission vessels enable 'door-to-door' distribution of locally produced and feeder cargo from longer-distance routes.

Making more use of smaller vessels will remove cargo from roads, a goal of many urban areas seeking to reduce traffic congestion and air pollution, but will also require more ports along coastlines. Cities located on waterfronts will have strategic advantages as container traffic shifts more to the sea.

Improved data quality and sophisticated analytics facilitate increasing efficiency

In summary, more and better-quality data, and increasingly sophisticated analytics, will give containership owners and operators richer, more accurate and timelier insights. This will enable them to maximize operational efficiency and profitability, schedule inspection, repair and maintenance, reduce emissions, plan vessel replacement or refits, and optimize their choice of vessel size, fuels, fuel systems, converters and layout.

The events of the last several years have added impetus to policymakers' interest in localization of production and supply chains. While 2050 seems a distant horizon, the implications of the intelligent container box challenges both the maritime industry and beyond to adopt long-term thinking on infrastructure, incentives and collaboration to enable and maximize the potential economic, environmental and social benefits of a future vision where the box is the customer.

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MADE IN BRITAIN

Carbon Offset – Cows to GRP yachts?

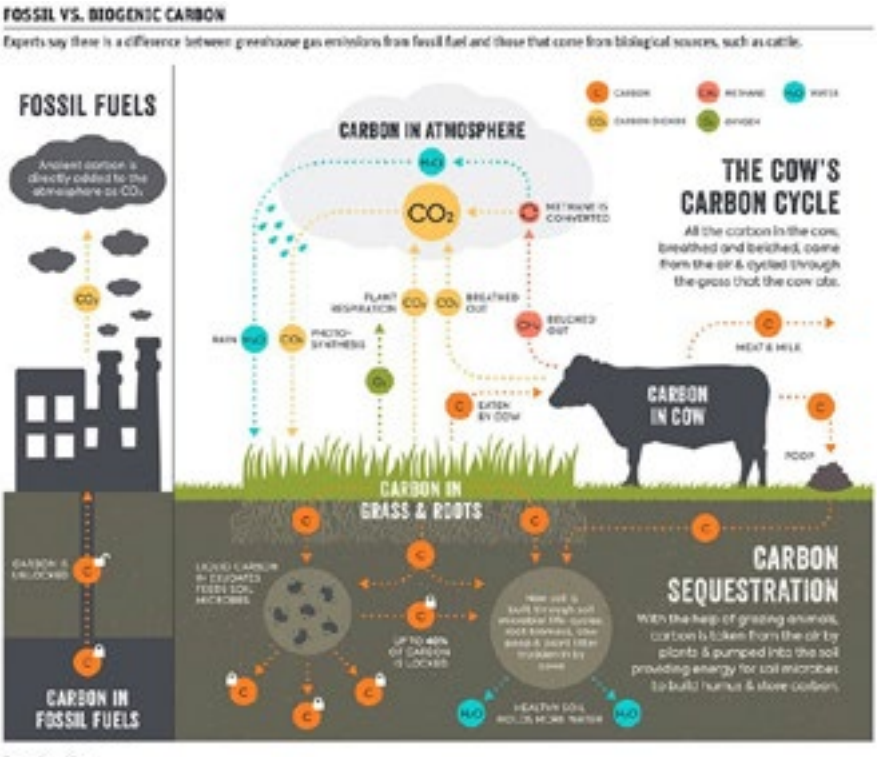
Here's a story to make you think...

By Peter Broad, IIMS President

Whilst I was in the UK, in June, I went to see the old Camper and Nicholson boatyard in Gosport, now called 'Premier Gosport Marina and Boatyard'. I was following up on the history of a vessel that was built there in the 1930's.

Anyway... there was a very large fiberglass boat being outfitted in one of the sheds. I was informed that the Owner was a farmer?

When I enquired how a farmer can afford to build such a large yacht I was told 'Carbon Offset'?



Apparently, a big building firm like 'Wimpy' (as an example) has to provide evidence of carbon offset when they put up a new building. To achieve this they can pay farmers to STOP farming Beef Cattle. I'm sure the Farmers are very happy, but what about the future / strategic independence of UK farming.

So, we don't farm our own beef, but we import it from USA or Australia – this adds a huge environmental impact through the supply chain, not to mention the added costs of transportation which is passed onto the consumer?

Shipping-related greenhouse gas emissions rose by 4.9% in 2021 and were higher than in 2020 and 2019, according to Simpson Spence & Young's annual industry report.

Shipping emissions came in at 833 million metric tons of carbon in 2021, compared with 794 million metric tons in 2020 and 800 million metric tons in 2019.

This rise in emissions comes despite growing climate ambitions and efforts to reduce emissions in the maritime industry. Shippers are experimenting with alternative fuels and striving to comply with increasingly stringent

emissions regulations and pricing. But the industry saw massive increases in demand for consumer goods after the initial shock of the coronavirus pandemic in 2020.

Emissions offsetting schemes have become increasingly popular, they were created to make it possible for companies and individuals to invest in environmental projects around the world to balance their carbon footprint, however, it is believed that many of the carbon offsets don't really offset carbon.

The atmospheric concentration of carbon dioxide has increased considerably due to human activities since the Industrial Revolution. Companies produce millions of tons of emissions per year.

The carbon footprint of a company, family, or individual is marked, among others, by air travel, the plastic bags used while shopping, or the consumption of imported meat and fruit.

In order to reduce the carbon footprint, it is necessary to carry out adequate measurements. They should be based on a good methodology, defined in scope, and both direct and indirect data must be collected and analyzed.

So how does building a GRP yacht, provide Carbon Offset?

Actually, the building firm probably considered that paying a farmer to stop farming beef cattle was the end of their responsibility and got the government credit they needed to go ahead with new homes, but then the farmer decided to build himself a nice big yacht with the profits from not farming his cows.

This is where the offset concept completely falls apart:

The boat is made from Fibres used in composites:

- Glass (GRP or GFRP – glass fibre reinforced polymer/plastic)
- Carbon (CFRP – carbon fibre reinforced polymer/plastic)
- Aramid (AFRP – aramid fibre reinforced polymer/plastic)
- Plant-based fibres such as flax or bamboo – forming biocomposites

The Resins used in composites:

- Polyester
- Vinylester
- Epoxy
- Polyurethane
- Biodegradable 'green' types

These are mainly manufactured from Oil – (Hydrocarbons) in massive chemical works.

The Farmer will enjoy his yacht for a number of years and hopefully, it will last a long time and bring pleasure to him and others. But then how do 'we' dispose of a GRP / Fiberglass yacht when it has come to the end of its useful life. Do we have any 'Inventory of Hazardous Materials' (IHM) protocols for non-commercial / GRP vessels?

Legal Regime to Advance Sustainable Ship Recycling

Existing legal instruments governing more sustainable ship recycling, include the EU Ship Recycling Regulation ***(EUSRR) (1257/2013)*** and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (the Basel Convention). These work in tandem to encourage more sustainable ship recycling and to bring heightened attention to sustainability of ship recycling yards and the end-of-life decisions of shipowners. The Hong Kong Convention may serve as a part of the future legal regime but remains pending more than 13 years after adoption.

The EUSRR requires ships of 500 GT and above and flying the flag of countries in the EU and all other ships regardless of the flag they are flying, when calling at a port or anchorage of a country that is a member of the EU, to carry onboard an Inventory of Hazardous Materials (IHM) from 31 December 2020. The IHM is required to be maintained during the ship's operational life, to support safe and responsible recycling when the ship is taken out of service.

I hope this article has prompted some thought amongst our readers. Please let us know if you are involved in any big yacht building and what the considerations are for environmental impact – cradle to grave sustainability?

Classification societies guide ships to a greener tomorrow...

By Mia Bennett

In the 3rd century BC, Rhodian seafarers sailing the wine-dark waters of the Mediterranean established the foundations of maritime law. Regulating everything from bills of lading to standards of passenger behavior, their guidelines were formalized in the 7th century AD under the Byzantine Empire. Constantinople's role is fitting, for today maritime governance involves a truly byzantine world including national governments, international organizations and classification societies.

Class societies occupy an unusual role in ensuring safety at sea. They're both rule-makers and consultants, helping shipowners determine how to adhere to the standards they set – from construction to operation.

Most of the world's leading societies were established in the nineteenth century when the global shipping industry was quite literally picking up steam. Now, from Korea to Norway, they're looking to the future as they help shipowners navigate a geopolitically and economically fraught world under pressure to decarbonize and digitalize. At the same time, class societies must respond to seafarer welfare and environmental issues like ocean noise and marine mammal health. Although they face a heavy agenda, societies worldwide are rising to the task.

CARBON ECONOMICS

The U.S. has a leading society with Houston-based American Bureau of Shipping (ABS), established in 1862. John McDonald, ABS Executive Vice President & Chief Operating Officer, explains, "ABS has advanced the cause of safety at sea for 160 years, leading the maritime industry with an innovation-based approach and a mindset that focuses on protecting people, property and the environment."

ABS offers industry-leading advice on regulatory compliance and fleet performance with an eye to long-term planning for alternative fuels in what McDonald calls "a new era of carbon economics." The company has set up a network of global sustainability centers headquartered in Athens, Greece with branches in Houston, Singapore, Shanghai and Copenhagen, enabling the company to scale up support at key maritime locations.

ABS is also combining decarbonization and digitalization efforts through its MyDigitalFleet platform, which leverages ship-generated data to improve vessel performance and efficiency and optimize voyages. McDonald explains, "MyDigitalFleet includes tools for access by multiple stakeholders so that owners can work collaboratively with their vendors and charterers, increasing transparency and improving outcomes."

Such tools will help guide shipowners as they modernize their fleets and navigate the energy transition while still pursuing, as McDonald stresses, "the goal of maintaining safety for ships, crews, and the environment."

ABOVE AND BEYOND

On the other side of the Pacific, Japan's ClassNK, established in 1899, firmly believes in going above and beyond. Katsuya Naito, General Manager, Zero Emissions Transition Center at ClassNK, observes, "Meeting minimum requirements has been just a prerequisite, and there's a growing trend to pursue minimizing safety and environmental risks and ensuring sustainability in maritime transportation beyond mandatory requirements."

Among ClassNK's cutting-edge services are new certification frameworks encouraging decarbonization and innovation. Under its Zero Emission Transition Support Services portfolio, ClassNK in April released its ClassNK ZETA (Zero Emission Transition Accelerator) tool, which helps shipowners accurately track CO2 emissions and confirm and simulate carbon intensity indicator ratings.

Another recently developed tool, ClassNK's Innovation Endorsement, provides third-party evaluation and non-mandatory certification services for innovations in shipping. Last year, the scope of class notations under this framework expanded to include Advanced Safety (a-SAFE), Advanced Environmental Awareness (a-EA) and Excellent Living and Working environment (ELW). "As a speed-focused service, Innovation Endorsement has been devised to help solutions overcome the challenges that often face pioneers," Naito explains.

ClassNK is also closely pursuing digitalization. By the end of April, 77 ships had been certified with its Digital Smart Ship notation in recognition of employing advanced digital solutions like energy efficiency, machinery monitoring, and data processing and transmission to shore.

When it comes to digitalization, Korean Register (KR) seeks to be the world's leading digital classification society. Hyung-chul Lee, Chairman & CEO, recounts, "As early as 2017, KR's surveyors were applying new remote inspection technologies such as drones and crawlers or applying virtual reality."

In 2020, the company completed its first hull survey of a bulk carrier using a drone and a crawler, which can climb up and down walls. It's also launched a paperless, 3D model-based system for approving ship designs. Embracing the world of big data, KR is working with shipowners and data analysis companies to install sensors onboard newbuilds and existing vessels to encourage what is called "condition-based maintenance." In support of this effort, KR recently launched its Integrated Survey Center, a digital platform developed in-house to interactively exchange data between shipping companies and KR to monitor ships worldwide and provide systematic, integrated survey services.

Lee sees digitalization and decarbonization becoming increasingly intertwined: "We envisage a transformation from 'traditional hull and machinery-oriented ships' to 'future system-oriented ships.' The advent of decarbonized and digital ships based on these systems will require the transformation of existing ship safety systems, and classification societies' roles and assignments ensuring the safety of ships will become bigger and more complex."

PIONEERS

The world's oldest classification society, Lloyd's Register (LR), has seen maritime powers come and go over its nearly three centuries of existence. Through it all, Mark Daley, Marine & Offshore Director, explains, "Our technical expertise has kept the ocean economy moving safely, efficiently, and sustainably for over 260 years."

Daley reflects on the rapid pace of change of the ocean economy and the urgency of digitalizing and decarbonizing: "We recognize that there has never been a more pressing need for specialist maritime advisers to guide and support clients through the fundamental changes they face in the decade ahead, helping to define the route to compliance, operational efficiency, sustainability and competitive agility."

Apart from its long-established work in classification, compliance, construction and operation, LR has developed a range of new maritime performance services. "From data

insights, advisory, fleet optimization and fleet management to a portfolio of solutions for the maritime energy transition, we can help and support our clients' decisions wherever they sit in the maritime supply chain and enable them to perform at their best," he says.

The company's Maritime Decarbonisation Hub is a leading research center for future maritime fuels and an incubator for industry-wide collaboration. Exemplifying the partnerships it supports, LR, Samsung Heavy Industries and MISC (via its subsidiary AET) signed a memorandum of understanding in April for the development and construction of two very large crude carriers that will be ammonia-propelled with the first delivery scheduled for late 2025.

Over its nearly 200-year existence, Bureau Veritas (BV), a French classification society founded in Belgium in 1828, has transformed into an 80,000-strong company specializing in testing, inspection and certification with over 11,500 ships classed under its auspices.

Ulrik Dan Frørup, Chief Commercial Director of BV Marine & Offshore, says that his division is one of many at BV with others including agriculture, industry, consumer products, buildings and infrastructure. "This gives us the capacity to draw on expertise from across different industrial and economic sectors that span the full length of global supply chains," he explains, "enabling us to transfer knowledge and create meaningful partnerships within and outside shipping."

One area BV Marine & Offshore is advancing is green technologies and sustainability with research into existing energy options like biofuels and wind power and future fuels such as ammonia and hydrogen. Frørup underscores BV's interest in "de-risking ambitious new projects" by supporting, for example, pathbreaking collaboration in wind propulsion solutions and fuel cells as well as a concept combining LNG conversion and vessel jumboization.

"We're enormously proud to be leading in segments where innovation is the norm," he says. "This expertise across all types of ships, especially very specialized ones, is another key differentiator for BV, spanning Arctic-capable LNG carriers and electric ferries, hybrid-powered crew transfer vessels and the latest standards and requirements in the tug sector."

Across the North Sea, Norway's DNV remains driven by its 158-year-old purpose to safeguard life, property and the environment while continuously advancing into new sectors. "DNV brings to customers a broad range of expertise spanning six business areas including Maritime, Energy Systems, Digital Solutions, Business Assurance, Supply Chain and Product Assurance as well as the Accelerator business area," states Knut Ørbeck-Nilssen, CEO of DNV Maritime, "focusing on services related to inspection, cybersecurity and digital health."

Among its newest products is the Veracity cloud platform, which enables customers to verify, validate and control their data to support confident decision-making. Veracity has been used to accurately predict vessel emissions and improve sustainable ship financing to helping banks and financial institutions comply with the Poseidon Principles, a global framework for assessing whether ship finance portfolios align with the IMO's greenhouse gas targets.

Moving from the cloud to below the seas, DNV is addressing growing levels of ship noise with its SILENT class notations, a first-of-its-kind initiative launched in 2010. A range of survey vessels and sophisticated hydro-acoustic equipment also enables DNV to measure underwater noise levels to help make the oceans calmer for marine life.

BLUE PLANET

Around the world, class societies have a common goal: to keep people, ships and the sea safe, now and for posterity. Capturing this sentiment, BV's Frørup affirms, "The sea has now become a stakeholder in its own right. Now it's our role not just to protect life at sea, ships and assets or help prevent pollution, but to also more actively preserve and protect our blue planet for future generations and deliver a better maritime world."

Whether it comes to decarbonizing the atmosphere, quieting the riotous seas or ensuring that the seafarers operating the world's 90,000 commercial vessels are sain et sauf, class societies have their work cut out for them. They'll also need to ensure they can attract talent, which Frørup insists is the heart of shipping's transition to sustainability: "It's people, and their passion and dedication, who will drive progress."

People must also work together, especially in these uncertain times. "Collaboration is vital for all participants to prosper," says LR's Daley, "whether between charterers and shipowners, class and shipowners and shipyards, or finance, shipowners and original equipment manufacturers."

Ultimately, if classification societies are as successful as their Rhodian predecessors over two millennia ago, their standards should persist for the next millennium. As with all things, time will tell.

Article originally published in The Maritime Executive magazine and republished here with our thanks.

Parsing the BIMCO emission trading scheme allowances clause

By Adam Świerczewski, Senior Lawyer and Louis Shepherd, Senior Claims Adviser and Lawyer, both from Gard AS.

Adam Świerczewski *Louis Shepherd*

The BIMCO Emission Trading Scheme Allowances Clause has been published with the aim of allowing owners and charterers to allocate responsibility for vessels complying with, inter alia, the EU's emissions trading scheme (ETS). The application of the EU ETS to shipping is still under discussion but expected to take effect from either 1 January 2023 or 2024.

Further to our update of 31 May 2022, BIMCO's Emission Trading Scheme Allowances Clause for Time Charter Parties 2022 has been published (the ETSA Clause). It is set out in full below and is available from BIMCO's website along with its guidance notes.

The ETSA Clause has been drafted with the EU's ETS specifically in mind, as it will likely be the first scheme that will apply to shipping. The clause will also be applicable to other schemes that take effect. There are several such schemes under development, for example, in China, Japan and the UK.

In this article, we build on our previous general commentary, outline the scope of the ETSA Clause and mention briefly some practical considerations for owners and charterers.

Scope

The ETSA Clause governs parties' rights and obligations in relation to any applicable "Emission Scheme", which is defined as a "greenhouse gas emissions trading scheme … imposed by applicable lawful authorities that regulate the issuance, allocation, trading or surrendering of Emission Allowances."

The broad scope of the clause ought to ensure that it remains relevant as more schemes are implemented to target carbon emissions, but also any other greenhouses gases.

Rights and obligations

The application of an ETS to shipping will vary, and there are many different ways in which the compliance obligations could be imposed. Variables include – who is to report emissions to the ETS authority, how the reported data is to be verified, and who is responsible for purchasing and surrendering allowances. As an example, under some schemes a vessel manager may be responsible for measuring and reporting, in others it may be owners, and in another it may be the party making commercial decisions about the vessel's employment, which, depending on definitions, could be owners, a pool manager, or the Charterer.

As there is no one solution to these questions, and the ETSA Clause is intended to be capable of broad application, it contains no general provision stating how the parties ought to comply with their individual obligations. Thus, it is likely that each party will have to comply with the regulations as imposed on them. Some parties may wish to include appropriate wording and expressly address circumstances where all or some of a party's compliance may be outsourced to third parties.

Cooperation

Sub-clause (a) obliges the owner and charterer to "co-operate and exchange all relevant data and information in a timely manner to facilitate compliance with any applicable Emission Scheme and enable the Parties to calculate the amount of Emission Allowances in respect of the Vessel…". The aim here is to ensure that no matter how an ETS is applied, one or the other party can comply.

Although "soft" types of obligations, such as a duty to "co-operate", and "in a timely manner", do not always help dispute resolution, their flexibility is necessary given the broad scope of the clause. As emissions trading schemes and reporting systems mature, and where perhaps a vessel is agreed to be traded only within certain known ETS areas, the parties may wish to include more specific annexes defining precise documentation and timeframes that may be required within those trading areas.

Monitor and report emissions

Sub-clause (b) obliges owners to monitor and report the relevant data to an "independent verifier". This assumes there will be an obligation on Owners to do this, which, as suggested by the BIMCO guidance notes, is likely influenced by the EU and the UK models. However, it may not be, in fact, applicable to all emissions trading schemes around the world. The parties may wish to consider revising the wording to a more general obligation to monitor and report the relevant data "as required by, and in accordance with, the applicable Emission Scheme." with, potentially, a right to appoint jointly a neutral party to verify the data and/or the calculations.

Allowances

As BIMCO's guidance notes explain, sub-clause (c) is the main provision concerning accounting for the emission allowances between the parties. There is an obligation on charterers to "provide and pay for the Emission Allowances…". This is to be done by charterers making the transfer within 7 days of owners notifying charterers of the quantity of emission allowances for the previous month. The parties will therefore have to maintain their own separate accounts for the allowances. As expected, charterers are entitled to set-off in respect of any off-hire periods which, in the case of disputed off-hire periods, adds to owners' overall credit risk.

Suspension for breaches

If Charterers fail to transfer "any of the Emission Allowances…" [emphasis added – noting lack of any express de minimis] as required by the clause, sub-clause (d) gives owners "the right to suspend the performance of any or all of their obligations…until such time as the Emission Allowances are received in full by the Owners…". A safety mechanism against a wrongful suspension of service appears to be built into the 5 days' notice that needs to be served on charterers prior to suspending. Nonetheless, in practice, suspending service of a vessel comes with risks – including potential claims under bills of lading and further exposure by owners to credit risk.

Some owners may wish to explore additional wordings where the emission allowances are to be put into an escrow account by charterers in advance based on reasonable pre-estimates or the quantity of Charterers' bunkers on board. The escrow account could also be used to hold the emission allowances in the event of disputed off-hire periods, pending settlement, a judgment, or an arbitration award.

Conflicting provisions

Starting with the words "[n]otwithstanding any other provision in this Charter Party…", the clause is designed to take priority over any other conflicting provisions.

In recent months, we have seen amendments being made to standard form charters and inclusion of references to reimbursement of charges, costs and/or fees that owners may incur in relation to compliance with environmental regulations as a result of charterers' instructions. We can understand the aim of such clauses, particularly when charterparties were being agreed at a time with no standard published clauses to cover environmental costs. When using an ETS allowance clause, parties should ensure that the intended priority of any negotiated terms is made clear to avoid arguments over conflicting provisions.

ETS – Emission trading scheme allowances clause for time charter parties 2022

Notwithstanding any other provision in this Charter Party, the Owners and the Charterers (the "Parties" and each individually a "Party") agree as follows:

"Emission Allowances" means an allowance, credit, quota, permit or equivalent, representing a right of a vessel to emit a specified quantity of greenhouse gas emissions recognised by the Emission Scheme.

"Emission Scheme" means a greenhouse gas emissions trading scheme which for the purposes of this Clause shall include the European Union Emissions Trading System and any other similar systems imposed by applicable lawful authorities that regulate the issuance, allocation, trading or surrendering of Emission Allowances.

(a) The Owners and the Charterers shall co-operate and exchange all relevant data and information in a timely manner to facilitate compliance with any applicable Emission Scheme and enable the Parties to calculate the amount of Emission Allowances in respect of the Vessel that must be surrendered to the authorities of the applicable Emission Scheme for the period of the Charter Party.

(b) The Owners shall monitor and report the relevant greenhouse gas emissions of the Vessel for verification by an independent verifier in accordance with the applicable Emission Scheme.

(c) (i) Throughout the Charter Party period the Charterers shall provide and pay for the Emission Allowances corresponding to the Vessel's emissions under the scope of the applicable Emission Scheme:

(1) Within the first seven (7) days of each month, the Owners shall notify the Charterers in writing of the quantity of Emission Allowances for the previous month; and

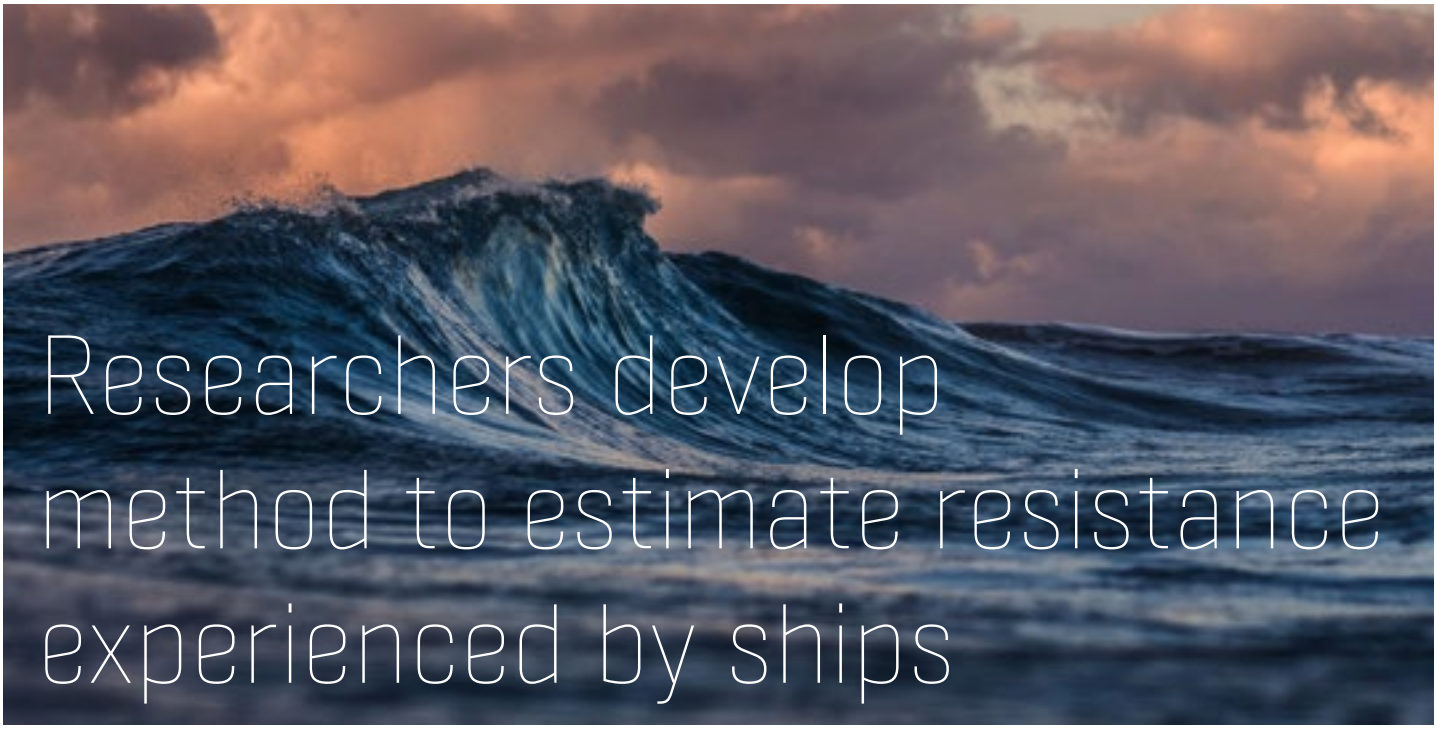
(2) No later than fourteen (14) days prior to the expected date of redelivery the Owners shall notify the Charterers in writing of the estimated quantity of Emission Allowances for the final month or part thereof.

(ii) The Owners' notifications in subclause (c)(i) shall include the relevant calculations and the data used to establish the quantities.

(iii) Within seven (7) days of notification under subclause (c)(i), the quantity of Emission Allowances notified by the Owners above shall be transferred by the Charterers and received into the Owners' nominated Emission Scheme account. If the estimated quantity of Emission Allowances for the final month or part thereof is higher or lower than the actual quantity calculated by the Owners as at the time and date of redelivery, any difference in Emission Allowances shall be transferred by the Charterers or returned by the Owners, as the case may be, and received into the nominated account of the receiving Party within seven (7) days of written notification from that Party.

(iv) During any period of off-hire, the Charterers shall have the right to offset against any Emission Allowances due or require the Owners to return a quantity of Emission Allowances equivalent to the emissions that the Charterers would otherwise have been responsible for, had the Vessel remained on hire.

(d) If the Charterers fail to transfer any of the Emission Allowances in accordance with subclause (c), the Owners shall, by giving the Charterers' five (5) days' notice, have the right to suspend the performance of any or all of their obligations under this Charter Party until such time as the Emission Allowances are received in full by the Owners. Throughout any period of suspended performance under this subclause, the Vessel shall remain on hire and the Owners shall have no responsibility whatsoever for any consequences arising out of the valid exercise of this right. The Owners' right to suspend performance under this Clause shall be without prejudice to any other rights or claims they may have against the Charterers under this Charter Party.



Researchers develop method to estimate resistance experienced by ships

Sea waves can impede the speed and performance, as well as increase the fuel consumption of ships travelling on the ocean, which then adds to maritime greenhouse gas emissions. Measuring this impact however has been difficult. Now, researchers from Nanyang Technological University, Singapore and National Technical University of Athens have developed a new method that can estimate this wave effect more accurately and easily, so that ship operators can account for it in their planning.

The team also reports that the Marine Design and Research Institute of China (MARIC) is in the midst of using the new method, as part of a broader revision, to update an existing International Organization for Standardization (ISO) standard. The institute has been involved in the work to revise the standard.

The Singapore and Greece researchers report that they developed the method to support a strategy by the United Nation's maritime agency - the International Maritime Organisation (IMO) - to improve the energy efficiency of ships and to reduce emissions from maritime operations. Based on the researchers' estimates, they report that the new method has the potential to reduce fuel consumption and GHG emissions of a ship by 5 to 10 percent. This reduction may be higher, depending on the ship's design and shipping operations.

Called the SHOPERA-NTUA-NTU-MARIC (SNNM) method, it has been adopted by the International Towing Tank Conference (ITTC), an association of worldwide organizations that has observer status with IMO, in its recommended procedure for analyzing a ship's speed and power performance. The method has also been included in IMO's official guidelines for assessing minimum propulsion power.

ITTC is responsible for predicting the hydrodynamic performance of

ships and marine installations. It is currently working with ISO to revise the ISO 15016 standard to introduce the new method for determining a ship's speed and power performance. The revision is expected to be completed in 2023.

Referring to sea trials to determine a ship's speed and power performance, Professor Gerhard Strasser, Chairman of the ITTC's Advisory Council, says: "The SNNM method is deemed to be an improved method for the correction of added wave resistance to be used worldwide, especially for the confirmation of the Energy Efficient Design Index (EEDI) of a ship. ITTC plans to continue its effort to improve all the correction methods used in speed trials."

The EEDI for new ships aims to encourage innovation and technical development of the components that affect the fuel efficiency of ships when they are being designed. On the importance of the new method's accuracy, Prof Strasser adds: "The significance of the accuracy of determining a ship's speed-power relation in a speed trial is obvious with regard to the reduction of GHGs."

The method was developed by Dr Liu Shukui of NTU Singapore's School of Mechanical and Aerospace Engineering and Prof Apostolos Papanikolaou from NTUA. It is the culmination of a decade of research, which first began during the EU funded Energy Efficient Safe Ship Operation (SHOPERA) research project that focussed on improving the safety of energy-efficient ships. With the support of MARIC, the SNNM method has been validated and promoted internationally by ITTC.

While existing software tools calculate the added resistance from waves based on the design of a ship's hull, the new method uses eight parameters to estimate it. These include the length and width of a ship, as well as the loading condition of a vessel. This means that ship operators can accurately estimate this additional resistance even if detailed information about the design of a ship's hull is not available. Such hull details are often proprietary and may be difficult to obtain.

"Accurately accounting for this resistance enables operators to estimate the fuel requirements, associated GHG emissions, as well as voyage time of a shipping route more precisely, and therefore to make the most out of each shipping operation," says Dr Liu.

"Our research lowers the technical bar for designers, operators and service providers in performing these analyses."

Greener shipping operations

To develop the formula, the researchers created a database of the additional resistance experienced by ships of different types and sizes. From over 5,000 experimental datapoints, they identified the most important parameters determining the additional resistance from waves. Independent validation tests performed by an ITTC specialist committee showed that the new method is highly accurate at predicting the resistance experienced by ships from waves.

"Our method can be applied to make various shipping applications more environmentally sustainable and economically competitive," adds Dr Liu.

"For example, it can be used to develop new energy-efficient ships and optimize just-in-time shipping operations, as well as to help autonomous ships chart a course to manoeuvre safely and efficiently in seaways."

The researchers are now working with industry partners to put the new method into practice. IMO plans to reduce GHG emissions from shipping by 50 per cent by 2050.

With this in mind, Dr. Chen Haoliang, technology leader at International Paint Singapore, a subsidiary of Dutch paints and coatings maker AkzoNobel, says: "The SNNM method is a timely breakthrough which can support the global shipping industry in achieving this target, if widely and correctly adopted."

"Its scientific creativity and significance have been exemplified by the adoption or recommendation in ITTC's and IMO's related documents," he adds

Guidance for the shipment of project and equipment cargoes

By Jia Hong Liu, Assistant Vice President, Technical Manager, Skuld

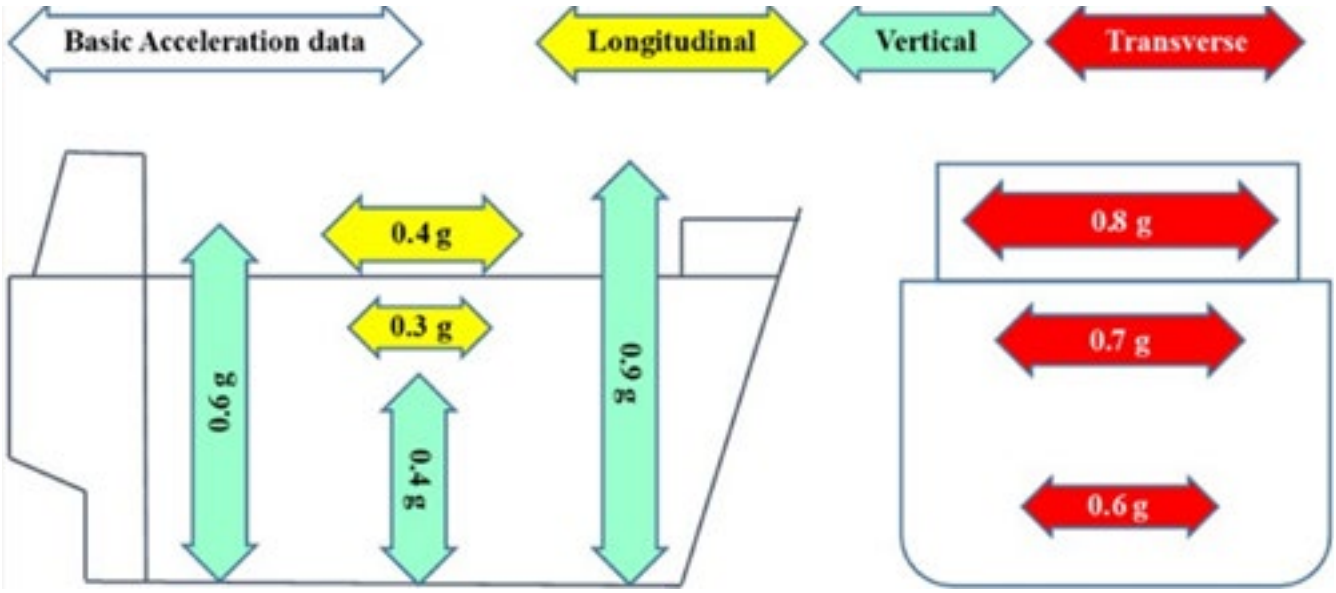
Project and equipment are sensitive and high-value cargoes and can easily be damaged if handled improperly. The damage and loss to such cargoes are mostly caused by improper operations and insufficient supervision. Therefore, from a loss-prevention perspective, applying best practices as well as fully understanding and controlling the various key phases in the process of stowage, loading, securing and discharging operations play an important role in safe transportation.

This guide is a supplement to the loss prevention article on shipment of project and equipment cargoes, published on skuld.com on 28 June 2021. It provides member's managers, masters, and preloading surveyors with insight to correct methods of project and equipment shipment on bulk carriers. It offers recommendations of best practices for loading, stowing, lashing, securing, monitoring and discharging of project and equipment cargoes.

Best practices and considerations in operations

STOWAGE

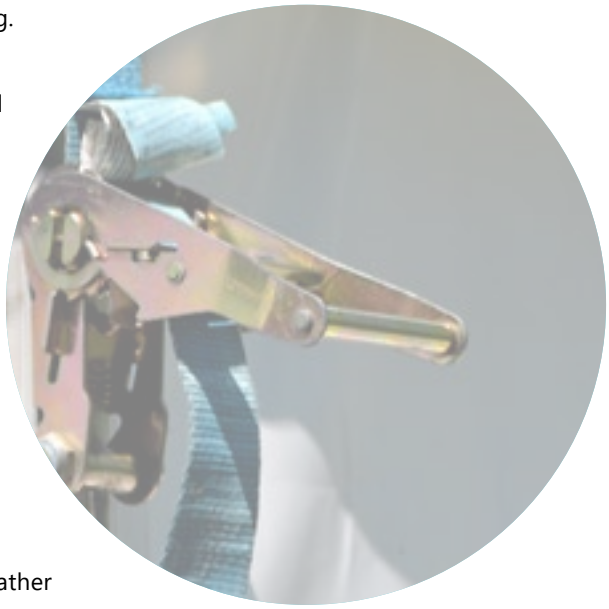
- Ensure that the parties' agreed stowage plan is readily available upon berthing and followed during loading operations.
- Endeavour to stow heavy project cargoes close to the centre of the ship's motion, as the more it deviates from the centre, the more acceleration forces will be generated from the vessel's motion during a voyage. The below sketch shows the distribution of acceleration forces due to a ship's movement.



- Obtain satisfactory results on the calculations of the strength and stability for all critical stages of the loading/discharging, departure and arrival etc.
- Cargo to be laid without breaching the limit of permissible load on tank tops, tween-decks, decks, or hatch covers.
- Stacking of the cargo, if allowable, should not exceed the limit provided by shippers or specified in cargo documents.
- Try to avoid stowage of the project cargo at the most forward part on deck, which is more prone to sloshing seas during the ship's pitch motion.
- If possible, achieve a GM that allows vessel to avoid violent or heavy rolling.
- If possible, plan the stowage such that the heavy project cargoes can be lifted with the crane(s) working at an angle that avoids excessive strain or potential overload.
- Leave sufficient space to facilitate proper lashing and securing as well as regular checking and necessary re-tightening during the voyage.
- If there is more than one discharge port, ensure that the remaining voyage is still safe after part of the cargoes have been discharged at an earlier port.

LOADING

- Establish a good and efficient communication with all parties during operations, e.g. Chief Officer, Duty Officers, Supercargo, Foreman, Shipper's Representative and Surveyors.
- Hold tool-box meetings amongst the operation team members to brief on the requirements and key phases of the loading operation.
- Discuss the plan and procedures of loading and securing with attending MWS (Marine Warranty Surveyor), if any, and obtain their approval prior to loading.
- Monitor and observe the weather conditions to avoid weather effects on the cargoes and loading operation; loading operation in daylight hours is recommended.
- Prior and during loading, inspect and test the loading gear and devices to ensure all slings, spreaders, and beams as well as connections are in good working order.
- Use well-trained and experienced crane operators to handle cranes, especially when lifting heavy cargoes with cranes working in tandem.
- Closely monitor and follow the planned loading sequence and ballasting/de-ballasting operation to maintain stability criteria.
- Coordinate with Vessel Traffic Services (VTS) obtaining information on passing vessels in the vicinity. This to avoid wave damage by passing vessels, especially during loading from barges.
- The heavy-lift project cargo may be vulnerable to move or shift on deck or in the hold where loading occurs without proper securing in advance and in the absence of a considerable heeling.
- Gently land the cargoes after the dunnage and cradles have been properly positioned.
- Cooperate with attending preloading surveyors and get their guidance; notify P&I club if there are any significant issues during loading operation.



LASHING AND SECURING

- Keep in mind the guidance in CSS (Cargo Stowing and Securing) Code that "the application of the methods described in Annex 13 is supplementary to the principles of good seamanship and shall not replace experience in stowage and securing practice".
- A plan of sufficient lashing and securing is made to comply with the ship's CSM (Cargo Securing Manual) and the Rule-of-Thumb in CSS Code Annex 13 section 5, which specifies that "the total of the MSL values of the securing devices on each side of a unit of cargo (port as well as starboard) should equal the weight of the unit".
- Ensure that materials including size, construction and arrangement of the sea fastening elements are in line with the plan.
- The condition of the lashing equipment with valid certificates are in good condition and suitable for use, and that the Maximum Securing Load (MSL), which is calculated from the certificates of the lashing materials, is available.
- Select and use suitable types of lashing materials according to plan and nature of the cargo unit, e.g. wire ropes, chains, web lashing or solid-sea fastening. Note the following:
  - Wire ropes are easy to arrange, but re-tensioning during the voyage is needed.
  - Chains have higher strength capacity, but tension will be lost once loosened.
  - Web lashing is easy to handle, but it is suitable for smaller or lighter cargo only.
  - Solid sea fastening which is often fabricated with steel plates or beams is normally applied to large and heavy units, but proper design and qualified welding operators are necessary.
- Properly arrange sufficient dunnage to distribute the weight on tank tops, decks and hatch covers and provide adequate friction. Steel beams or grillages under toes/bottom of heavy units are necessary.

- The optimum angle between lashing and deck is 25° to 45° to prevent slippage. When the angle is greater than 60°, the lashing can prevent tipping, but will do little to prevent sliding.
- Same lashing materials are used at one side or direction, avoiding using mixed types of lashing materials in the same direction.
- Weld D-rings, stoppers or braces to distribute dynamic loads in a correct position by a qualified welder and use these devices in a correct manner. Non-Destructive-Tests (NDT) to check the welding quality should be carried out.
- Lashing effectiveness depends on the weakest part of the lashing line and links of a rigid nature. Note the following:
  - Inter links include shackles, turnbuckles, wire grommets, web lashing hooks, lashing wires and chains as well as webs etc.
  - Lashing materials are in good condition with available associated certificates of the products.;
  - Correct manner of lashing, equipment connections and ending are very important.
  - Pay attention to the dead end securing of wire ropes, engagement and securing of chain lever tensioner or web lashing ratchet.
  - Arrange proper sheathing material at passing sharp edge of cargo and lashing points to prevent chafing damage to lashing wires and web.
- Consider stress and bending impact to the cargo and ship as a result of rigid sea fastening of large size project cargo.
- Verify strength of lashing and securing of heavy project cargo on loading and lashing completion in order to assess any changes or deviation of stability from the initial plan.
- Confirm that the forces introduced by the lashing/securing are enough to withstand the forces leading to the movement of cargo by tipping and sliding (transverse and longitudinal).
- Properly assess and evaluate circumstances the vessel may encounter during the voyage to prepare necessary spare lashing materials.
- Prepare a contingency plan in case lashing force is out of control and cargo jettison is required for heavy project cargoes stowed on deck.

MONITORING DURING VOYAGE

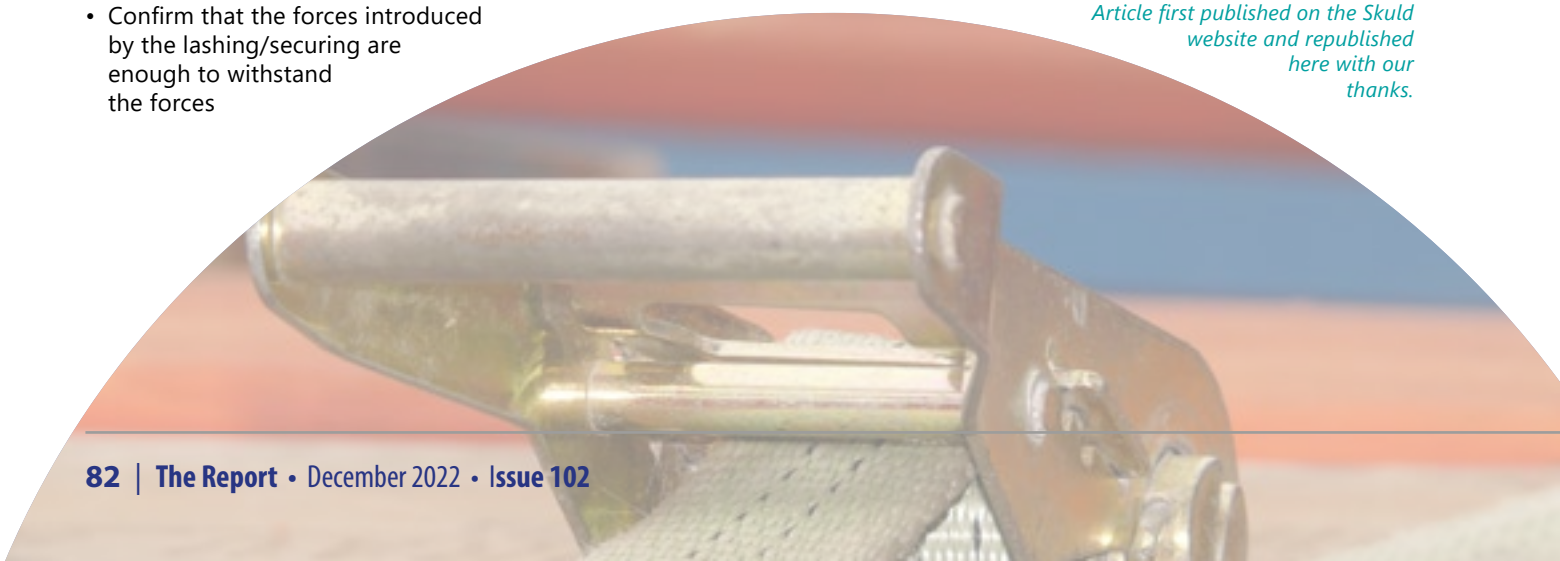
- Chief Officer inspects the cargoes within 24 hours after departure so that the vessel can return or deviate in time for re-stowing/ re-lashing. Advise the P&I club immediately if such return or deviation is required.
- Evaluate and consult available weather information or use ocean route services to make a good passage plan.
- Use good seamanship to steer and steam the ship and adjust heading during bad weather to avoid violent rolling and pitching which may put strain on the lashing and securing.
- Check the cargo and re-secure the lashings after experiencing heavy weather; in the case of any damage, make all efforts to rearrange and re-wrap the shifted cargo as well as to re-lash and re-tighten the slack lashing.
- Maintain good records of inspections, damages, cargo shifting, re-lashing and retightening etc. during the voyage. Photographs and videos are good evidence to defend claims and assist with the investigation.
- Conduct further verification of the remaining lashing and securing if the vessel stability varies along with the change of ballast, consumption of fuel or discharge/load at an intermediate port until satisfaction before resuming the voyage.

DISCHARGING

- Appointment of surveyor is necessary to monitor the discharge operation and to ensure the project cargoes being smoothly discharged.
- Maintain the lashings and securing for the project cargoes which are not being discharged.
- Heavy project cargo discharged into barge holds shall be lashed/ secured properly to avoid shifting and moving due to barge rolling during discharge.
- Monitor the operation to ensure the cargo is smoothly landed ashore as cargo damage often occur during cargo landing operation.
- Check and ensure that no loose part of the lashing/securing devices is attached to the cargo unit before being lifted from the stowage position.
- Remove the sea fastening fittings smoothly to avoid damage to the cargo unit, ensuring no cutting sparks spreading to cargoes nearby and underneath.
- Take photographs and video during the course of heavy and sensitive project cargoes discharge operation and their landing on barge, truck or ashore.
- Issue letter of protest for stevedore rough handling and stevedore damages etc. Notify P&I club if any damage is significant.

Skuld is grateful to Mr. Lin Hong of Beacon Marine Consultant Co., Ltd for contributing to this article.

Article first published on the Skuld website and republished here with our thanks.



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How much do you know about VDR and what it does?

When an airplane incident occurs, all the vital information surrounding the incident can be found in the plane's black box, but have you ever wondered what is the case for ships? The black box of a ship is in the Voyage Data Recorder, more widely known as VDR. Under SOLAS, passenger ships and other vessels over 300 gt must carry voyage data recorders (VDRs) to assist in accident investigations.

What is VDR?

VDR is a complete system, part of the ship's bridge equipment, intended to continuously record vital data onboard, which can then be used for identifying and reconstructing any voyage details during a maritime accident investigation. This data is stored in a secure and retrievable form and can provide vital details regarding the ship's position and movement, as well as crew command of a ship in the moments proceeding an incident. The VDR contains information regarding the following:

- the date, time, and ship's position;
- the ship's speed, heading;
- bridge audio and radio audio;
- radar and ECDIS data;
- echo sounder;
- main alarms;
- rudder order and response;
- hull opening status;
- watertight and fire door status;
- hull stresses, and;
- wind speed and direction.

Why is a VDR important?

Human memory is biased and dynamic. The moments surrounding an incident are typically affected by confusion and disarray. This means that any crew statements during post-incident investigations may reflect the person's impression of what happened, rather than what actually happened. This is why the recording of a factual version of events is required for investigators to determine the exact circumstances that led up to the incident. And this the purpose of a VDR onboard.

In the same way that the black boxes function on aircraft, VDRs enable accident investigators to review procedures and actions in the moments leading to a maritime incident and help them to identify probable causes. For example, a VDR can provide:

- A timeline of the incident.
- VHF communications.
- Bridge discussions.

Except for its vital contribution to incident investigations, a VDR can also help with preventive maintenance, heavy weather damage analysis, and performance efficiency monitoring, as well as crew training. For instance, VDR data can be used in drills and exercises for the bridge team to identify best practices employed onboard that are worthy of replication.

The VDR regulatory requirements

Adopted in 2000 and put into force on 1 July 2002, the regulatory requirements for a VDR to be carried onboard are included in Regulation 20 (Safety of Navigation) of SOLAS 1974, Chapter V and cover the following ship types:

- all passenger ships constructed on or after 1 July 2002;
- ships other than passenger ships of 3000 gross tonnage and upwards constructed on or after 1 July 2002;
- ro-ro passenger ships constructed before 1 July 2002 not later than the first survey on or after 1 July 2002, and;
- passenger ships other than ro-ro passenger ships constructed before 1 July 2002 not later than 1 January 2004.

The MSC 79 in December 2004 adopted amendments to Regulation 20 of SOLAS chapter V on a phased-in carriage requirement for a shipborne simplified voyage data recorder (S-VDR). The amendment entered into force on 1 July 2006. The regulation requires a VDR, which may be an S-VDR, to be fitted on existing cargo ships of 3,000 gt and upwards, phasing in the requirement for cargo ships of 20,000 gt and upwards first, to be followed by cargo ships of 3,000 gt and upwards.

According to the IMO, administrations may exempt ships, other than ro-ro passenger ships constructed before 1 July 2002 from being fitted with a VDR, if it can be demonstrated that interfacing a VDR with the existing equipment on the ship is unreasonable and impracticable. The S-VDR is more cost-effective but is not required to store the same level of detailed data as a standard VDR.

Is VDR always effective?

The VDR is not a stand-alone system preserving evidence on its own, but it requires proper crew training to serve its purposes. For example, the VDR will not be useful unless the crew presses the save button after an incident to ensure that the evidence of the events is preserved. It is also noted that the voice recording system on the VDR is covering a period of the last 12 hours. This means that, in case of a ship grounding, for example, the bridge team must save the VDR recordings as soon as possible after the incident.

So, what must the crew know and be able to do with the VDR during an incident? The West P&I Club advises that the VDR training should enable the crew to know the following:

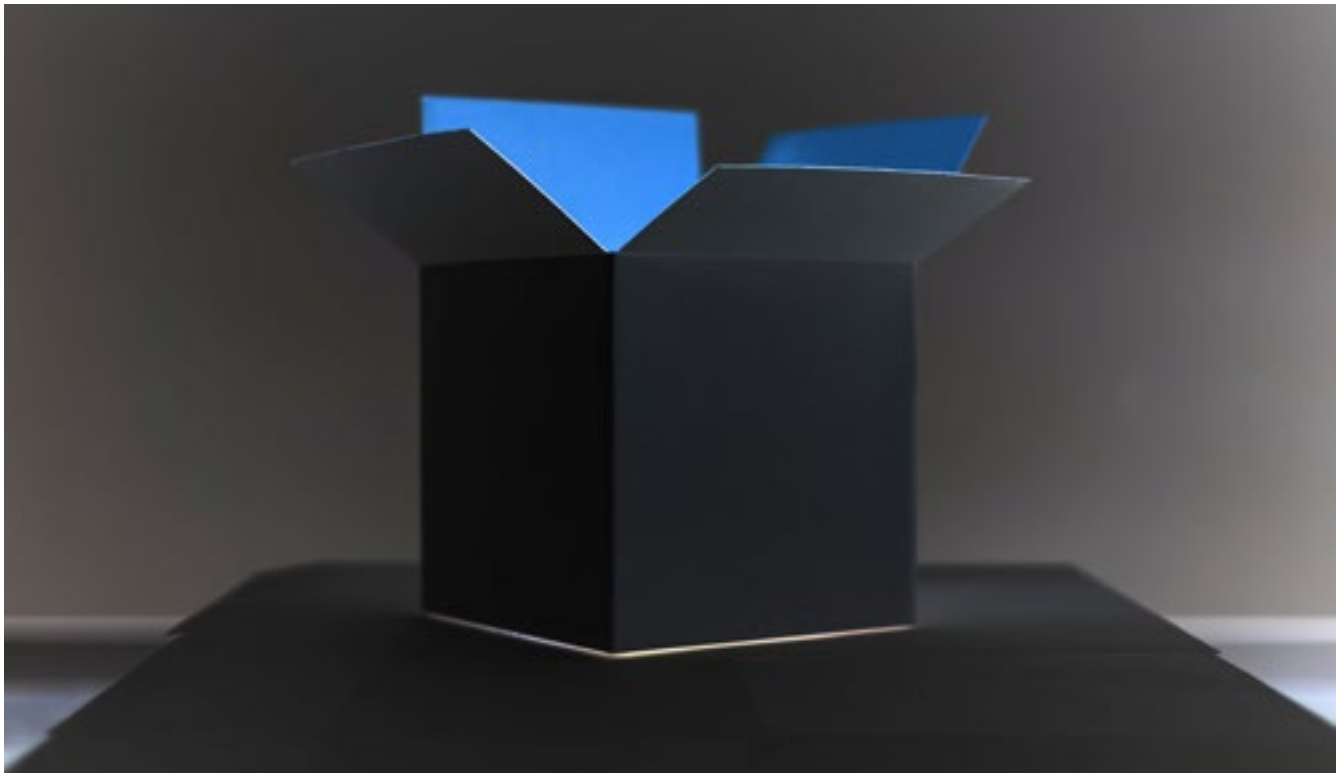
- How to save a recording manually.
- How long the overwrite period is.
- How many saves are available in case of a long incident enabling the crew to save each period.
- The onboard maintenance requirements between servicing.
- The fault indicators and their meanings.
- Common issues and possible faults with VDRs.

Reviewing VDR policy

Based on the above, operators are advised to consider the following points when reviewing their VDR policy:

- Initiate regular checks on VDR operation.
- Upgrade systems with additional ports/sensors.
- Regularly assess downloaded information so that best practices are identified.
- Use these best practices to ensure that the bridge team is familiar with VDR operation.
- Extend recording time beyond minimum 12 hours.
- Transfer data to central, remote location so that further analysis can be undertaken.

Article author unknown. This article first appeared on the Safety4Seas website and is reprinted here with our thanks.



Sustainability Whitepaper
LNG as marine fuel

by ABS

Overview

The adoption of the "Initial International Maritime Organization (IMO) Strategy on Reduction of Greenhouse Gas (GHG) Emissions from Ships" by IMO Resolution MEPC.304(72) in April 2018 demonstrates IMO's commitment to support the Paris Agreement. The IMO strategy includes initial targets to reduce (as compared to 2008 levels) the average carbon dioxide (CO2) emissions per "transport work" by at least 40 percent by 2030, aiming to pursue 70 percent reduction by 2050; and an ambition to reduce the total annual GHG emissions from shipping by at least 50 percent by 2050. Technical approaches, operational approaches and alternative fuels may be used to achieve these goals.

The near-term regulatory changes and the future impact of the IMO's GHG targets for 2030 and 2050 should be considered when making the long-term decision on fuel selection. Liquefied natural gas (LNG) is a relatively mature low-carbon fuel, comprised primarily of methane. Its carbon to hydrogen (C/H) ratio offers a reduction in CO2 emissions of up to 20 percent compared to baseline heavy fuel oil (HFO). In combination with latest technological improvements and/or operational measures, LNG may be a viable option to meet the 2030 emission reduction goals.

This paper focuses on selected practical considerations for LNG as a marine fuel and summarizes the relevant vessel design and operational aspects with reference also made to relevant technological advancements.

The information provided can support the decision-making process for future ship designs, propulsion systems, and fuelling strategies. It is an overview of the key aspects considered for LNG as fuel, addressing bunkering, vessel arrangements, fuel containment, fuel gas supply systems, single gas and dual-fuel (DF) main engines. The adaptation of LNG as fuel depends on case-specific requirements and therefore the information provided in this paper concentrates on the areas that apply broadly to LNG as fuel installations.

This document provides practical pointers in the use of LNG as marine fuel and is intended to supplement the ABS Advisory on Gas and Other Low Flashpoint Fuels. Information provided in this document is generic in nature. For specific guidance on LNG as marine fuel the local ABS office may be contacted.

LNG as fuel for the reduction of greenhouse gas

LNG as a fuel is one of the options that an owner might use in combination with technological and operational improvements to meet IMO 2030 CO2 reduction targets.

In a comprehensive approach, the first step would be to benchmark where an owner's fleet is currently in its emissions reduction plans. Then look at the intended operating profile of the vessel/s and determine how an LNG fuelled vessel would fit into the company's plans and what savings they could expect.

The operating profile impact is not to be underestimated, as depending on the fuel system selected a vessel may not get the expected 20 percent reduction. Burning of natural gas in boilers to control tank pressure has been used as a convenient means of controlling LNG tank pressures and temperatures and maintain them within acceptable limits. However, this excess consumption simply to control and maintain pressures affects the overall carbon footprint.

Type of containment system used, boil-off gas (BOG) management system in place and combustion process adopted have an impact on total GHG emissions.

Initial LNG considerations – impact of operational profiles and routes on vessel designs

Most vessels are designed based on a defined operating profile. Hull form has also typically been a significant influencer on vessel design. For liquefied natural gas (LNG) fuelled ships, the design of the LNG fuel containment system needs to consider both the optimal operating profile while the vessel is in transit and the undesirable conditions such as when the vessel stops, loads, awaits orders, etc.

For example, a sample aframax tanker in the European sector spends 30 percent of its time idle with no main propulsion power with an average speed of only 10 knots compared to a design speed of 14.5 knots. Very large ore carriers/bulk carriers often spend about three weeks in port waiting to load and about another three weeks in a destination port waiting to discharge. Along with operating profiles, designs are to consider the dynamic characteristics of LNG fuel properties and that the associated fuel containment system can cope with these extended periods with low rates of gas consumption.

This change in thinking may mean that the first fuel system proposed may not be the one that is best suited to everyday operations. The design is to be flexible enough and well suited to meet normal trading patterns.

In-depth voyage and vessel operations profile analysis is required to establish likely parameters and guide system design and equipment specifications (for example, matching tank maximum allowable relief valve setting of a cargo tank [MARVS] to meet likely fuel supply saturated pressure).

Ownership cost considerations during conceptualization

Actual operating profile and fuel to be used for each part of the journey needs to be considered during cost analysis.

There are multiple different configurations that could be utilized between propulsion power and electrical power supply by auxiliary generators such as single gas fuel generators coupled with dual-fuel (DF) or conventional liquid fuel generators. In certain cases, it might be better to fit LNG fuel to the main engine and have the auxiliary generators on liquid fuel.

Reliquification plants are an option, but a life-cycle cost analysis might be necessary to justify the capital expenditure (capex), operational expenditure (opex) and environmental costs.

For redundancy, having a means of replacing a pump or valve in service may be cheaper than having two pumps or valves. However, redundancy replacements might not be as straightforward in many cases. Careful attention needs to be paid towards the redundancy requirements. With regards to the International Code of Safety for Ships Using Gases or other Low-Flashpoint Fuels (IGF Code), essential services are to be provided by DF gas consumers since single point failure of a gas component will revert to diesel operation. For single gas fuel consumers redundancy is required for essential services.

Characteristics of LNG

LNG is a mixture of several gases, in liquid form, principally composed of methane (CH4), with a concentration that can vary from 70 to 99 percent by mass, depending on the origin of the natural gas. Other hydrocarbon constituents commonly found in LNG are ethane (C2H5), propane (C3H8), and butane (C4H10). Small amounts of other gases, such as nitrogen (N2), may also be present. Natural gas reserves are significant; with the International Energy Agency (IEA) estimating reserves at current usage rates (January 2011) are over 250 years.

When liquefied at approximately -162° C, the volume required for natural gas is reduced to about 1/600th of that required when in the gaseous state. In this condition, LNG is stored in tanks where the heat ingress leads to the generation of boil-off gas (BOG). The BOG is consumed by the engines or is re-liquified in order to maintain the LNG tank pressure within acceptable limits. The LNG saturation vapor curve and its effect on bunkering is to be fully comprehended to improve bunkering.

Both marine slow-speed two-stroke engine manufacturers, MAN Energy Solutions and Winterthur Gas & Diesel (WinGD), offer DF internal combustion engines. However, each manufacturer has selected a completely different combustion process for when the engine operates in gas mode. The two different gas mode combustion concepts are low-pressure (LP) gas engines using the Otto cycle and high-pressure (HP) gas engines using the Diesel cycle.

The WinGD LP DF engines (X-DF) utilize the Otto process in gas mode and the conventional Diesel process when in oil mode. The MAN HP DF engines (ME-GI) use the Diesel combustion process in both oil and gas modes. For both concepts, the gas is ignited by a pilot injection of liquid fuel from the conventional fuel injection system, or a dedicated pilot fuel system. The point during the combustion cycle where the gas is injected dictates the required gas supply pressure.

The WinGD X-DF is designed to operate at a gas supply pressure of up to 13 bar, and the high-

	WinGD X-DF	MAN ME-GI
Cycle Type (in Gas Mode)	Otto	Diesel
Gas Supply Pressure [bar]	< 13	300
BMEP [bar]	17.3	19.0-21.5
IMO NOx Compliance (in Gas Mode)	Tier III	Tier II
Liquid pilot % @ 30% MCR	~1.0	3.0-5.0
Methane Number Sensitive	< 80	No
Knock/Misfire Sensitive	Yes	No
Methane Slip	Yes	Not significant
Development Status [Type (Year)]	XDF 2.0 (2020)	Mk 2.0 (2019)

Table 1: Otto vs Diesel Slow Speed 2-Stroke DF Engine Comparison

pressure MAN ME-GI uses gas delivered by a direct injection system at approximately 300 bar. The two different designs lead to different combustion concepts, Otto cycle for the X-DF and Diesel cycle for the ME-GI, and therefore have different performance and emissions characteristics. A recent announcement by MAN involved the development of their low-pressure DF engine, ME-GA.

Table 2 highlights some of the key similarities and differences between the slow speed DF concepts. The similarities are limited to, the pilot fuel oil quantities required to start the gas combustion process, the minimum engine load that the engine can achieve when operating in gas mode, and the fact that both concepts are sulfur oxides (SOx) compliant when using sulfur compliant fuel for the pilot fuel. Overall, the suitability of a specific concept, or engine type, to a ship is very much a case-specific decision. For some, it may simply be that they are not comfortable with HP gas or the increased complexity and cost associated with HP fuel gas supply systems. For others, it may be the concerns with Otto cycle being sensitive to a number of operating parameters (Methane Number, Ambient Conditions), or the GHG impact of methane slip.

Regulatory compliance

Regulatory and classification requirements are in place for the use of natural gas fuel in marine applications.

The specific gas fuelled ship (GFS) arrangements depend on the fuel containment, the fuel gas supply system (FGSS), and selected prime mover technologies. The link between fuel storage, fuel preparation and gas consumer is much more interdependent as compared to conventional fuels. Critical equipment and system design decisions cannot be made in isolation. The following sections are to be considered for the use of liquefied natural gas (LNG) as a marine fuel.

IMO regulations

The adoption of the Initial International Maritime Organization Strategy on Reduction of Greenhouse Gas Emissions from Ships by the Resolution MEPC.304(72) in April 2018 demonstrates the IMO's commitment to support the Paris Agreement. It includes a vision to phase out GHG emissions from international shipping within the century and may be an active driver for member States to initiate decarbonization and reduction of GHGs using policies and procedures.

The IMO's International Code of Safety for Ships Using Gases or other Low-Flashpoint Fuels (IGF Code) applies to ships to which the SOLAS Part G Chapter II-1 applies and contains only detailed prescriptive requirements for LNG under Part A-1 of the Code. Other low-flashpoint fuels may also be used as marine fuels on ships falling under the scope of the IGF Code, provided they meet the intent of the goals and functional requirements of the IGF Code and provide an equivalent level of safety. This equivalency is to be demonstrated by applying the Alternative Design risk assessment process and SOLAS novel concepts approval procedure of SOLAS regulationII-1/55, and as required by 2.3 of the IGF Code.

Risk Assessment

The following basic operations and routing items are to be considered:

- Type of vessel and associated cargo operations (e.g., offshore support vessel (OSV), tug, container carrier, bulk carrier).
- Expected trade route (including roundtrip or one way).
- Where to bunker the vessel, how often to bunker, bunker providers, bunkering time duration.
- Vessel bunker tank sizes have increased considerably. Larger tank sizes require careful planning for cargo transfer operations as the operation might take weeks in port.
- Vessel build location and maintenance/ repair locations which might influence scheduled and unscheduled delays. Choice of fuel between these locations and plan to manage operating expenditure (opex) costs.

These basic considerations can impact on choices and selections for a vessel and in determining engine choice, gas fuel handling system and amount of redundancy needed. Contingency planning is necessary to account for unexpected vessel repairs (emergency drydocking, hull inspection, engine repair, major damage) to accommodate tank emptying, gas freeing and subsequent return to service. Extensive prior planning for integration of LNG fuel, methods and procedures with crews, fuel suppliers, transporters, port authorities and regulators is necessary.

ITEM	TYPE B	MEMBRANE	TYPE C
Secondary Barrier	Partial secondary barrier required	Complete secondary barrier required	No secondary barrier required
Volume Efficiency	Medium as it can follow the compartment shape, however space for inspection to be provided around the tank	Maximum effectiveness as the whole hold is utilized	Least space efficient. Independent tanks, simple cylindrical shape, frequently located on deck. Bi-lobe and tri-lobe give improved space efficiency
Fabrication	Similar to ship normal structures (skilled welders)	Requires high skills and accuracy (special licenses provided by the designer)	Pressure vessel construction (skilled welders)
Inerting Requirements	Hold can be filled with dry air, but sufficient inert system should be available onboard	Additional systems for pressurizing and inerting the interbarrier spaces are necessary	Hold can be filled with dry air if condensation and icing is an issue (non-vacuum tanks)
Sloshing	In general, it is not an issue due to tank internal structure	May be a serious issue, in particular for large tanks, but specially designed reinforcements are used	In general, it is not an issue
Capability to Retain Boil-off Inside the Tank	Design pressure not higher than 0.7 bar according to the Codes, therefore they cannot withstand the pressure developed by the boil-off for a long time	Design pressure not higher than 0.7 bar according to the Codes, therefore they cannot withstand the pressure developed by the boil-off for a long time	High pressure accumulation capability; e.g. LNG tanks 10 bar and LPG 18 bar
Inspections	Inspection relatively easy as the tanks are fully accessible on both sides	Inspections may be difficult as certain parts are not accessible and require special testing or inspection procedures	Inspection relatively easy as the tanks are fully accessible on both sides, smaller tanks through man or remote access holes
Maintenance and Repairs	Similar to normal ship structures, though insulation can restrict access	Specialized workers required and usually time-consuming	Similar to normal ship structures, though insulation can restrict access

Table 2: IMO LNG Fuel Containment System Comparison

If the containers fit, they ship?

Ian Short

Cecilie Rezutka

By Ian Short, Director and Cecilie Rezutka, Associate, Campbell Johnston Clark

The unprecedented demand for container slots fuelled by an increase in consumer spending and port congestion has caused containership rates to rocket in 2021. With the industry resorting to alternatives to satisfy global demand, Ian Short, Director, and Cecilie Rezutka, Associate in Campbell Johnston Clark's (CJC) shipping dispute resolution department, consider key legal issues arising from the carriage of containers on bulk carriers.

Background

There is more demand in the market for containers to be moved than there are containerships. The industry has responded to this imbalance by employing alternatives for the shipment of containers and especially more reasonably priced bulk carriers.

The carriage of containers on bulk carriers is of itself not new as containers can be and are from time to time carried on a variety of non-cellular vessels including general cargo, multi-purpose ships and ro-ro vessels. Bulk carriers are a particularly attractive option, where commonly empty ballast return voyages can be monetised if containers are loaded.

Unlike container ships, non-cellular vessels do not have strong vertical metal frames into which the containers are easily stowed. Leaving technical considerations1 aside, however, the carriage of containers on bulk carriers brings with it several important legal considerations which we discuss in this article.

Contractual considerations

Charterers wishing to carry containers on non-cellular vessels need to satisfy themselves that the carriage of containers is not expressly excluded under the time charter or is permitted under the terms of a voyage charter. Breach of such a provision might entitle the carrier to refuse to load containers and/or claim damages for breach of contract.

Conversely, where the carriage of containers is intended, the carrier may want to insist on the inclusion of terms which put the responsibility for the loading and stowing of the containers on to the charterers, including ensuring that the vessel is properly fitted to stow containers. The parties also need to consider whether containers are to be stowed on or below deck. Carrying deck cargo on bulkers is often prohibited under the terms of the contract, just as it can be under insurance policies, and the parties will need to ensure that they are adequately protected if indeed it is the intention to stow containers on deck at any stage. A carrier may also want to ensure that charterers are expressly responsible for the shipment of dangerous goods – contents of containers can be misdescribed and contain hazardous goods. Unlike bulk cargoes where the Master usually has an opportunity to carry out a visual inspection of the cargo, there is usually no such opportunity for containerised cargo. Whilst a term can be implied into charterparties that charterers have an absolute obligation not to ship dangerous goods, an express term will put this beyond doubt and can, if necessary, expressly refer to the carriage of containerised cargo.

In terms of passing on cargo claims arising out of the carriage of containerised cargo, there is no reason why the Inter Club Agreement (the "ICA") should not apply where applicable. However, an apportionment is only available under the ICA where the cargo claim was made under a contract of carriage that was authorised under the terms of the charterparty and,

as such, if the bills of lading refer to containerised and/or deck cargo, it ought to have been permitted under the terms of the charterparty for bills of lading to be issued allowing for the carriage of cargo in this way.

Seaworthiness

The carrier must ensure that the vessel is seaworthy, that it is reasonably fit for the intended purpose – in this case for the carriage of containers. At common law this obligation is absolute and non-delegable. If the Hague-(Visby-)Rules or equivalent (the "Rules") apply, then the obligation is reduced to one of due diligence and the carrier will need to show that they took reasonable steps before or at the commencement of the voyage to ensure the vessel's seaworthiness. Likewise, whilst a carrier can contract out of responsibility for cargo operations such as loading and stowing as discussed below, if a Clause Paramount is incorporated into to the charterparty incorporating the Rules, a carrier will be unable to contract out of its overriding seaworthiness obligations.

When carrying containers on a bulk carrier, this task is more onerous for the carrier. They will be under an obligation to show that the bulk carrier was seaworthy for the intended voyage carrying containerised and/or deck cargo. Where they have not contracted out such requirements, the carrier and owner will have to ensure that the ship is suitable to load, handle, stow, carry, keep, care for and discharge containers. Technical alterations to the bulker such as the installation of container securing arrangements as well as obtaining relevant consents including from the Flag State, Class, H&M and P&I etc will be necessary. The crew should be suitably trained for handling containers.

Responsibility for stowage of containers

Given their non-standardised nature, stowage and lashing obligations can be more extensive in the carriage of containers on bulk carriers. As discussed above, the default position is that the carrier or owner is responsible for cargo operations unless the contract contains an express provision to the contrary.

Under a time charterparty, it is not uncommon for charterers to take on the risk and expense of the cargo handling operations under the supervision of the Master – see clause 8 of the NYPE 1993 as an example. Similarly, clause 7 of the NYPE provides that "the Charterers shall provide and pay for necessary dunnage and also any extra fittings requisite for a special trade or unusual cargo…" and the carriage of containers on board a bulker may fall into this category. Nevertheless, should it be the parties' intention that charterers are to take responsibility for the loading and stowing of containerised cargo, including the appropriate lashings, securing arrangements and dunnaging, it would be prudent for the parties to expressly agree this if the prospect of carrying containerised cargo is contemplated. Disputes can arise, for example, as to which party is responsible for the technical adaptations to the bulk carrier for the carriage of containers. As above, it would also be prudent to agree that bills of lading are authorised in connection with containerised and/or deck cargo.

Under a voyage charterparty, it is also common to find that charterers have taken on risk, liability and expense of the cargo operations and that owners have contracted out of such responsibility – see, for example, clause 5 of Gencon 1994. The Gencon also provides that the shipment of deck cargo is to be at charterers' risk and responsibility (clause 1). If it is the intention that the owners are not to be responsible for the loading and stowing of containers, these clauses cover the position but again there is no harm in agreeing a bespoke clause dealing with the parties' intention when the vessel carries containerised or deck cargoes.

Under bills of lading that incorporate the terms of a voyage charter, such as the one described above, in circumstances where the carrier is contracting themselves out of the loading, stowing and discharging operations, the responsibility for such cargo handling contractually falls on the shippers and receivers as the case may be2. However, not all jurisdictions would look to incorporate the terms of the charterparty and cargo claims can be dealt with in local jurisdictions which in practice exposes the carrier to claims for damage to containerised cargoes even if under English law the carrier may be afforded defences. From the carrier's perspective, it is important that it has adequate recourse actions against charterers under the charterparty discussed above.

Carriage of containers above deck

The carrier's considerations

From an insurance perspective, it is not uncommon for owners' P&I policy to exclude cover for deck cargo. It is therefore important for an owner of bulk carriers who anticipates shipping containers above deck to discuss this with their P&I Clubs. Otherwise, an owner can essentially be left uninsured in respect of cargo and third-party liabilities occurring as a result of shipping containerised cargo above deck if the carrier has not suitably protected itself against such claims.

As discussed above, it is equally important for an owner to ensure that carriage of deck cargo is permitted under the terms of the charterparty and, from its point of view, that as much responsibility for such carriage can be passed to the charterers. Likewise, it is important that bills of lading are authorised for deck cargo carriage such that bills of lading are issued which specifically set out the cargo that is to be carried on deck.

The Rules will apply to the carriage of a container on deck unless (i) the B/L states that the container is going to be carried on deck, and (ii) it is in fact carried on deck3. Only if these two criteria are fulfilled can the carrier contractually reduce its obligation to care for the cargo to a lesser duty than that which is provided by the Rules or exclude its liability for damage or loss to deck cargo altogether. Otherwise they would breach Article III.8 of the Rules. Therefore, there is an opportunity for a carrier/owner to exclude liability for deck cargo provided that the contract of carriage (bill of lading or charterparty) provides for the carriage of cargo on deck and the cargo is so carried.

As a result of this, depending on whether containers are carried below or above deck, different standards of care and liability might apply in respect of the cargo.

Since cargo carried on deck is more prone to damage arising from an exposure to the elements such as bad weather, swell or loss at sea, carriers commonly seek to exclude their liability. B/Ls used in the dry bulk trade (e.g. the Congenbill) will therefore need to be amended to state clearly what or how much or that all cargo is to be carried on deck to ensure that the carriage falls outside the Rules and the carrier can set its own standards. Such cargo will then also need to be actually carried above deck as otherwise the Rules will apply.

Where the Rules do not apply, it becomes key for the carrier to ensure that liability for deck cargo is fully excluded. The best way to do this in relation to defeating underlying cargo claims is that the appropriate exclusion is incorporated into the bills of lading issued for deck cargo. It may be more difficult for a carrier to have direct control over what clauses are incorporated into a sub-voyage charter that in turn may be deemed to be incorporated into the bill of lading terms and, as above, not all jurisdictions where cargo claims are brought recognise the concept of incorporating charter terms into the bill of lading. The best way to protect the carrier's position therefore is to have clear wording on the face of the bill of lading that the carrier's liability for deck cargo is excluded.

In the recent High Court case The Elin4 the scope of a deck cargo exclusion clause came before the Court which related to deck cargo "loaded on deck at shipper's and/or consignee's and/or receiver's risk; the carrier and/or Owners and/or Vessel being not responsible for loss or damage howsoever arising". Fortunately for the owners the Court held the clause to be sufficiently clear as to exclude any claim, including any loss or damage caused by the vessel's unseaworthiness or the carrier's negligence.

From a bulk carrier owners' perspective if the carriage of containerised above deck cargo is contemplated, it would be prudent to agree a term in the charterparty with charterers that any bills of lading that are authorised to be issued must contain suitable wording on their face clearly excluding liability for the carriage on deck cargo.

Cargo interests' considerations

Cargo interests should be aware of how a deck cargo exclusion clause affects any potential claims for loss or damage to containerised cargo. Where a deck cargo exclusion clause is properly incorporated into a bill of lading, a cargo interest may lose any right to recover from the carrier for loss and damage to the cargo so carried. Depending on how widely the exclusion clause is worded, it might not only exclude the carrier's liability for any damage or loss that might naturally occur from the carriage of cargo on deck but also that which is caused by the carrier's negligence or its failure to exercise due diligence to make the vessel seaworthy.

It is for cargo interests to bring themselves outside the scope of the exclusion clause which, if widely worded, cargo interests might struggle to do. Cargo interests ought to ensure that adequate insurance is in place that would cover cargo losses in such circumstances.

IIMS would like to thank Campbell Johnston Clark, the originators of this feature article.

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THE USE OF DRONE TECHNOLOGY IN MARINE SURVEYING

By Tony Small

The use of Drones or Unmanned Ariel Vehicles (UAV's) has been well publicised for many years - from radio-controlled bombers used during WW2, to more recently when multi rotor drones were developed for recreational use. It is during this period that their operational potential was recognized, and subsequent developments led us to where we are today. This article will consider the potential use not only for marine surveyors, but for the wider marine industry.

We will take a closer look at the uses of Drones, the current legislation regarding their capabilities, developments, and their future potential.

Tony has been in the marine industry for 40+ years. During that time he has been involved in civil engineering projects, salvage, wreck removal and marine towage. He has had his own business for some time and became interested in the development and use of Drones and UAVs in marine surveying.

So, what is a Drone?

Sometimes known as UAVs they are ariel vehicles which may be flown with or without human guidance. Since their development they are now used in a range of applications – not only in the marine industry but also in areas such as surveillance, modern warfare, photography, land survey and for recreational purposes. To use one of the phrases associated with UAV's – they are excellent for operations that are too "Dull, Dangerous or Dirty" for human involvement. However, in this article we will consider the use of UAVs in the field of marine operations. These can include:

- Damage assessments;
- Monitoring of exhaust emissions;
- Internal and external structural surveys - utilizing photography, LIDAR and photogrammetry;
- Towing line surveys;
- Pollution control;
- Surveys of offshore structures;
- Thickness measurements utilizing UT.

Given the wide range of applications that UAVs are used for, we will consider just two of them - LIDAR (light detection and ranging) and UT thickness readings. Before we start on the uses, we should consider the current legislation surrounding pilot qualifications, use and regulations for a UAV. The UK Civil Aviation Authority (CAA) and European Union Aviation Safety Agency (ESAS) have regulations governing the use of UAV's. Regulations will differ in other parts of the world. In some instances,

the regulations overlap, and many are in the process of being revised and updated. Before commencing any operations involving Drones or UAV's, reference should be made to the regulations that are in existence in the area of proposed operation and any sensitivities that may exist, examples being: restricted air space, local restrictions etc. Current regulations in the UK and Europe are outlined at the following web sites:

- CAA (UK) - go to **https://bit.ly/3EwJUsJ**.
- ESAS (Europe) Easy Access Rules for Unmanned Aircraft Systems (Regulations EU 2019/947, 2019/945 and 2022/425 (regulation 425 comes into force September 2022) - go to **https://bit.ly/3Ct9qMB**.

Apart from the current regulations as issued by the CAA and ESAS it is good operational and working practice to have the following in place before commencing operations with UAV's:

1. A comprehensive method statement and risk assessment for UAV operation and use.
2. Site specific risk assessment - this may be required by some clients for using UAVs on their property or vessels.
3. Permission or authority from local administration prior to use of a UAV - if used in or near to a sensitive area.

Insurance requirements

"This is the responsibility of every UAS operator to ensure they have appropriate insurance coverage. This is a condition of each operational authorisation that is issued by the CAA. Regulation (EC) 785/2004, which came into force on 30 April 2005, requires most operators of aircraft, irrespective of the purposes for which they fly, to hold adequate levels of insurance in order to meet their liabilities in the event of an accident. This EC Regulation specifies, amongst other things, the minimum levels of third-party accident and war risk insurance for aircraft operating into, over or within the EU (including UAS) depending on their Maximum Take-Off Mass (MTOM). Details of the insurance requirements can be found on the CAA website3 under "Mandatory Insurance Requirements". UK legislation which details insurance requirements is set out in Civil Aviation (Insurance) Regulations 20054." (Reference: UK CAA cap 722)

ESAS rules have been updated as of September 2022:

- the extended transition dates for using certain UAS in the 'open' category and the new dates of application for some standard scenarios, as introduced by Regulation (EU) 2022/425; see - **https://bit.ly/3yzVD5Y**, and;
- the new and revised acceptable means of compliance and guidance material (AMC & GM) on 'geographical zones', various forms and procedures, standard scenarios, training modules, and a new predefined risk assessment, as issued by ED Decision 2022/002/R – see **https://bit.ly/3yyzWTM**.

As mentioned, the applications that UAV's can be used for are many and varied, and accessibility to this technology has led to more widespread use of UAV's. Many of the Classification societies have taken full advantage of this and now using this technology on an increasing scale. As the developments and uptake in usage have increased, so the number of academic studies on the topic of UAV's to investigate the potential benefits have increased. The majority of these are based on University studies, however a number of the important projects have evolved such as the EU funded ***"Robotics technology for the inspection of ships"*** - known as the Robins project (an EU Horizon 2020 project). The following is taken from the promotional material from the project and illustrates the importance given to the use of UAV's and the potential for future developments, illustrating the potential benefits of cost savings and efficiency. But there are still regulatory issues that need to be overcome before UAVs and the associate technology are fully accepted.

Robins project 2020

"The ROBINS project aims at filling the technology and regulatory gaps that today still represent a barrier to the adoption of Robotics and Autonomous Systems (RAS) in activities related to inspection of ships, understanding end user's actual needs and expectations and analysing how existing or near-future technology can meet them.

"ROBINS aims to improve the ability of RAS in sensing and probing, in navigation and positioning in confined spaces, as well as the capability to access and move safely within hazardous spaces.

"ROBINS also aims to provide new software tools for image and data processing, e.g., for production of 3D models and virtual/augmented reality environments, to provide the surveyor with the same level of information as obtained by direct human observation."

Apart from the Robins project another EU funded programme is currently underway. Known as the H2020 project "Bug Wright 2" this ongoing project is investigating the potential to offer robotic services on or around hulls of commercial vessels and aims to combine the survey

capabilities of what are described as "micro air vehicles" (MAV) and small autonomous underwater vehicles (AUV) with teams of magnetic wheeled crawlers working directly on the hull of the vessel. One of the final paragraphs of the Bug Wright 2 introduction closes with the following phrase changing the "European landscape of robotics" which is in essence a forerunner of developments that are currently underway and will happen in the future.

"This H2020 project aims at changing the European landscape of robotics for infrastructure inspection and maintenance and will lead to important economic and ecologic break-through in this sector"

For the moment some of the main uses of UAVs in the marine industry are the following:

A. Cameras - as a UAV is being flown for inspection purposes, the use of high-quality digital images can be viewed in real time and areas of special interest can be retained and scrutinised in greater detail a later opportunity. These can be uploaded as the survey is underway or via a data link to other users or technical experts for comment on an area or topic, or on completion for inclusion in a subsequent report. The use of multi over lapping images may be used for "photogrammetry" purposes.

B. LIDAR - (light detection and ranging). This system has been in use for some time for terrestrial surveys. Forestry, land surveys and buildings are some of the applications which come to mind; however, it is starting to gain acceptance in the maritime industry too. Based on pulsed laser light to measure variable distances, the UAV in the photograph below shows a multi rotor craft with a "GeoSLAM ZEB Horizon scanner" Lidar unit attached underneath. This unit is capable of emitting pulsed laser light at the rate of 300,000 per second, measuring the time for the reflected pulsed light to be returned to the unit, thus calculating the distance from the target to the receiver in the unit. Recent interesting academic studies are considering the use of LIDAR for corrosion detection on vessel hulls and structures. Apart from that this type of information gathering system has potential for structural surveys - when the data received can be compared with original "as built" data - to ascertain if there have been any distortions or other structural defects since building or the last survey. This could be particularly useful if the data received was retained and analysed against future survey findings, thus providing an accurate picture of any defects or issue with the hull or internal structure. Another potential use for this type of survey and data collection method is in combination with a UAV following collision damage or fire - again surveying the damaged areas against original design or as built drawings.

Also, apart from the developments in UAVs and technological advances, we only need to look in the field of Artificial intelligence (AI) and the rapid growth of acceptance and development in the marine industry. It is only a matter of time before we have fully autonomous vehicle operations. Recent studies by Oxford University have trialled the use of fully autonomous vehicles. These have been used in a tunnel system and have "walked" though the passages without GPS or human intervention, but wholly based on AI. It will not be long before fully autonomous vehicles are working both inside and outside vessels. The technology already exists, however the issues with regulation and liability have yet to resolved.

What we are witnessing is the gradual acceptance of technological advances in the maritime industry. The widely accepted used of UAVs and specialist underwater craft is evidence of this change and, looking forward, the use of Artificial Intelligence will be become common place in the industry.

Above: A multi rotor UAV fitted with a GeoSLAM LIDAR System.

Above: The "Skygauge" UT which combines a UAV (multi directional rotors for greater accuracy and directional control) with an ultra-sonic probe and an inbuilt LIDAR to allow for accurate positioning and distance measuring from the host material.

The photograph above is taken from Skygauge's promotional material showing one of their units working inside the hold of a vessel utilizing the inbuilt UT thickness gauge system. It's interesting to note that when used inside a vessel or in areas with "minimal" wind the unit can be used without the need for GPS.

In conclusion, the technology already exists for UAVs to be capable of autonomous operation and to be utilized with artificial intelligence, with the potential of reducing the onsite workload of the marine surveyor and ultimately increasing the efficiency and safety. However, I would stress that the "human" input is far from over.

Are those hatch covers weathertight?

By Per Haveland, Senior Marine Surveyor, Arendal and Siddharth Mahajan, Senior Loss Prevention Executive, Gard AS, Singapore.

A ship's crew uses emergency pump to open hatch cover for testing

Per Haveland

Siddharth Mahajan

Cargo damage due to wetting represents a significant percentage of the claims presented to Gard every year. One of the leading causes is defective hatch covers which in their experience remains a recurring problem. Many hatch cover related defects are also found during condition surveys carried out within the scope of their inspection program.

The purpose of this article is to increase awareness of the issue and provide guidance on the importance of correct maintenance and testing of hatch covers. We will first touch upon some of the more frequently occurring problems with hatch cover systems. Then we will discuss the different methods of testing the weathertightness of hatch covers followed by the issues concerning the use of extra sealants and finally provide some recommendations to Gard members and other interested parties.

COMMON PROBLEMS WITH HATCH COVERS

Experience from Gard's condition survey programme: During P&I condition surveys of bulk carriers, Gard instructs the appointed surveyors to pay particular attention to the weather tightness of hatch covers and, in many cases, ultrasonic tests are also required to be carried out. Based on our experience, the following three items from the survey questionnaire result in most observations:

- Are rubber gaskets in apparent satisfactory condition? Are any repairs correctly performed (paying particular attention to corner pieces)?
- Is the chain pull / hydraulic system in apparent satisfactory condition?
- Are hatch covers without any signs or remnants of Ramnek tape, foam, or use of other extra sealants?

We will now look at some of these defects which we notice both in relation to the above-mentioned survey questions and from wet damage cargo claims. It must be stressed that below is not an exhaustive list of damages or defects.

RUBBER PACKING

This is by far the most commonly noted defect. Whilst physical damage to packing rubbers, e.g. as a result from contact with stevedore's gear etc., is generally easily identified as damage during routine inspections, the equally important ageing and steady deterioration of packing rubbers, caused by abrasion and over compression can get overlooked.

Other practices impacting hatch covers' sealing and performance are inserting new rubber sections adjacent to old rubber, use of a backing strip on top of the sealing surface of a packing rubber, off-centre imprints, and short inserts to fill gaps.

It is also important to keep in mind the design compression of the rubber packing. This will be stated in the manufacturer's manual. Too little compression may create leaks when the ship is in motion, and over-compression will, within a short period of time, damage the rubber packing and affect the elastic and flexible properties of the rubber.

One of things that often gets overlooked is the permanent set or imprint on the rubber packings in excess of the limits mentioned by the manufacturer caused by over compression, over tightness of cleats or worn-out landing pads. This can adversely impact the resilience of the packing rubber. In general. the discard criteria for rubber packing is when the permanent set has exceeded 50% of the design compression, but reference should always be made to the manufacturer's manual.

LANDING PAD

Also known as support pads, chocks, resting pads, or bearing pads are often noted to be thinned down or wasted beyond the limits specified in the maker's manual. The pads are also noted to be missing sometimes. This can result in the following:

- Over compression of the rubber packing leading to deterioration;
- Steel to steel contact between coaming table and hatch cover side plating which can result in fretting damage; and
- Relative movement between the covers and coaming can be restricted during hull flexing in seaway.

COMPRESSION BARS

These bars compress the rubber packing to provide weathertight sealing. Sometimes it is noted that the bar is wavy, bent, wasted or corroded thereby leading to an uneven or inadequate compression of the rubber packing.

OPERATING SYSTEMS

There are a variety of hatch cover operating systems and each system has its peculiarities and areas prone to failure or damage. The systems most commonly found are hydraulic and chain drive systems.

HYDRAULIC SYSTEMS

Overpainted or cracked hoses, leaks in the system (pipework, valves, actuating cylinders or motor), damaged hydraulic cylinders, impurities in the hydraulic oil and leaks from the jacking system due to lack of lubrication, and lack of maintenance or spares are defects commonly noted. Any defect in the hydraulic system can result in the hatch cover not closing properly.

CHAIN DRIVE

This could either be electric, manual or even hydraulic. One of the defects we see often is that the chains are heavily corroded and wasted. The gypsy wheel assembly is another area which can be affected by corrosion.

DRAIN CHANNEL AND VALVES

The drain channel is a crucial barrier to prevent water seeping into the hold. If the drain channel and associated non-return valves are clogged or not functioning as intended, then water will accumulate and ultimately spill over the drain channel and into the cargo hold. While this may not immediately affect the safety of the ship, it is generally enough to wet the cargo and cause substantial cargo claims. Some commonly noted defects in relation to the drain systems are:

- Drainpipe or valve cracked or holed. It has also been noted on a few occasions that the holes are covered by paint or masking tape;
- Flexible hoses attached to drain openings in the underside of the hatch coamings;
- Presence of debris, remnants of previous cargo and rust / scale in coaming drain channel blocking the flow of water to the drain valves; and
- Drain channel holed or corroded.

SECURING DEVICES

Cleats play an important role in holding the hatch covers in place when the ship is moving and flexing at sea. There are many different designs of securing systems available, such as quick acting cleats, wedge cleats, shoe type cleats and hydraulically operated cleats. Common observations are:

- Overtightening of cleats;
- Corroded or thinned down cleats;
- Damaged, cracked or dented cleats;
- Cleats not properly positioned;
- Damaged or missing washers; and
- In a few wet damage cargo claims the surveyors had highlighted that the cleats had come loose in heavy weather and this resulted in the hatch covers losing their weathertight integrity.

There is a common misconception that overtightening of cleats will help achieve better compression of the rubber packing. Such overtightening is in fact counterproductive and can lead to conditions such as:

- Restricting the flexibility of the hatch cover system, i.e. the relative movement between the hatches and coamings;
- Damage to the rubber packing because of over compression.
- Quicker wearing down of the landing pads; and
- Reducing the life of the rubber washers.

OTHER AREAS

It is worth highlighting that while the focus has to be on hatch cover systems, crew and managers should not overlook openings to the cargo holds such as the vents and booby / access hatches. Defects or damage to their packing or securing system can lead to water ingress into the holds. It is also important that maintenance checks in the planned maintenance system (PMS) are comprehensive enough to cover all the requirements of the manufacturer. Maintenance checks should be recorded because without evidence that checks have been performed according to the manufacturer's instructions, it can be difficult for the owner to show that due diligence had been exercised should there be a cargo claim.

TESTING FOR WEATHER-TIGHTNESS OF HATCHES

The three most commonly used testing methods are the chalk test, hose test and the ultrasonic test. Ultrasonic testing is considered the preferred way of testing hatch covers from a loss prevention point of view when compared to other two for reasons discussed below.

CHALK TEST

It is the most rudimentary of the three tests and checks only for contact between the rubber packing and compression bar but gives no indication on the compression.

HOSE TEST

It involves directing water under pressure (typically 2-3 kg/cm2) from a hose at the hatch cover joints. Any ingress of water is an indication of defective sealing arrangements. The conditions to be met for a hose test are listed in IACS document 'Rec 14 Hatch cover securing and tightness'. If water enters the hold during a test whilst the ship is in static condition, it can be expected that larger volumes of water will be able to enter the holds when the ship is bending and flexing in a seaway dynamic condition. Some of the shortcomings with such a test are:

- The water jet from the hoses sometimes may not be powerful enough to penetrate defective areas;
- The person testing may not cover all the joints;
- Does not provide information on the degree of compression of the packing rubber; and
- Cannot be carried out if water sensitive cargo is in the holds, or in sub-zero temperatures.

ULTRASONIC TEST (UST)

It involves placing a sound emitter inside the cargo hold and a trained operator then checks for leakages by comparing the 'open hatch value' (the value that is measured with open holds and reflects the highest ultrasound level that can be measured on a particular hold/hatch) and the readings obtained with the hatches / other openings closed. Any reading greater than 10% of the open hatch value (or as indicated by the equipment manufacturer) is indicative of leaking hatch covers. Some of the main advantages with UST are:

- A weather tightness test with ultrasonic equipment can be carried out with cargo in the holds, and regardless of the prevailing atmospheric temperature;
- Position of leak can be identified accurately; and
- Gives an indication about compression.

Gaps between insert repairs

Deteriorated rubber packing near the edges

Permanent set in the rubber packing

Corroded / wasted & uneven compression bar

Drain pipe blocked

Corroded pulling chains for hatch covers

Some images of defects related to hatch covers from our condition surveys

Ramnek tape

Evidence of ramnek tape form previous voyages

Foam between hatch covers

Whilst this is the most accurate way to test the weathertightness of the hatch cover system, there are a few things to keep in mind when doing this test. Some of which are:

- Only a certified and trained operator should be engaged. Ship's crew is normally not competent to conduct such testing.
- The equipment must be type approved and be properly calibrated.

USE OF SEALING TAPE AND FOAM

From a P&I Club's perspective, the use of Ramnek /sealing tape and foam is generally not recommended as properly maintained hatch covers are designed to withstand the rigours of sea. Any evidence of Ramnek tape or foam can be construed as an indication of defective hatch covers by the cargo receivers to support a cargo claim for wet cargo damage. If a charterer however requires the use of sealing tape or foam, it is recommended that owners have the hatch covers tested (preferably by ultrasonic test) and inspected by an independent surveyor to confirm that the hatch covers are weathertight prior departing the load port. The test and inspection results should be properly documented to show that the Ramnek tape or expansion foam was only used as an extra precaution upon charterer's request.

Ramnek tape or foam must be properly applied in order to be effective. Some things to watch out for are:

- If the hatch covers are inadvertently opened before the expansion foam is removed, foam particles can fall into the cargo hold and cause contamination.
- Foam can also block the drain channels and inter-panel void spaces and not allow the water to drain out.
- Ramnek tape and expansion foam are also difficult to remove and may prevent covers from closing properly after completion of the voyage in question.
- When removing Ramnek tape the paint in way of the hatch cover edges will be damaged and can lead to corrosion.
- Expansion foam could cause physical damage to the rubber packing.

RECOMMENDATIONS

To comply with the requirements in the Load Line Convention and to ensure that the ship is safe, cargo is delivered in the same condition as loaded, and that due diligence can be demonstrated in the event of a cargo claim, the following are our recommendations for owners, managers and their crew to consider:

- Maintenance and record-keeping.
  - Maintenance and repairs for the hatch cover system and associated components must be in line with manufacturer's guidelines and only original spare parts should be used.
  - All inspections, maintenance and repair carried out on any component should be recorded preferably along with images or videos as evidence for the work done. In case of a wet damage cargo claim, such evidence can help protect owners.
  - Sufficient spares should be carried onboard to replace defective or damaged parts. Identification of such has to be based on a risk analysis done by the owner/ manager and the crew. Their experience will play a key part here.
- Operation
  - Ship specific procedures should be in place to guide the crew on things such as the operation and tightening of the hatch covers.
- Testing
  - Regular testing of the hatch covers is advisable. The frequency should be defined in the safety management procedures.
- Use of extra sealants
  - When using sealing tapes and foams, it is advised that weathertightness of hatch covers is first ensured without the use of extra sealants.

Links to reference documents

IACS document on hatch cover securing and tightness (Rec 14). Go to **https://bit.ly/3cQJr9o**. Or scan the QR code.

IACS requirements for service suppliers engaged in tightness testing of hatch covers using ultrasonic equipment (Z17). Go to **https://bit.ly/3etAq6C**. Or scan the QR code.

This article was first published on the Gard AS website and is republished here with our thanks.

Loss prevention measures for the carriage of electrically powered refrigerated containers in cargo holds

Written by Capt. Jatinder Singh Chada (Jatin) MIIMS

This article has been written, as a brief introductory guide to loss prevention, specifically for carriage of electrically powered refrigerated containers inside cargo holds (under deck). With the increase in transportation of refrigerated commodities and containerization, container vessels are being designed to accommodate more and more refrigerated containers under deck, in addition to the customary practice of loading reefer containers on deck, as operators want to cash in the extra freight.

Based on statistics of incidents handled by the author, it has been noted that most of the incidents involving high temperatures (and related malfunctions) on containers loaded under deck have generally been associated with cooled/chilled cargoes {those maintained between (-)30C and (+)160C}.

Meticulous planning can however minimize and avoid the chances of such incidents. It needs to be mentioned that the cooled/chilled cargoes (generally consisting of fresh fruits) have lesser range of tolerance for temperature variation and demand more attention, as compared to frozen cargoes.

Systematic planning and additional care from carrier(s) are required prior designating the containers for carrying cooled/chilled cargoes. The containers should be carefully inspected, PTI carried out and precooling undertaken prior to releasing the container to the shipper. As a loss prevention measure, the carrier may consider advising the shipper to arrange proper pre-cooling of the cargo, prior to vanning into a container.

These are normal practices and do not relate to the location of container carried on board. The concerns are however raised when the high temperatures and related malfunctions are noted during carriage, particularly in under deck spaces. These are hence directed towards the design of vessel and/or carriage/care on board. Effective planning to avoid carriage of containers with cooled/chilled cargoes in under deck spaces and preferably loading these on exposed decks may result in minimizing these unwanted occurrences. Due to various constraints, at times, the planners are however pressed, and the containers need to be stowed in under deck spaces.

The writer of this article is a Master Mariner, with extensive experience as a Senior Surveyor/Consultant and Manager. He has extensively dealt with numerous cargo claim cases and carried out plentiful investigations. He is also a member of the prestigious organization, the International Institute of Marine Surveying (IIMS), which has been extensively supporting the marine surveying industry.

An understanding of the design and structure of the vessel, in general, and cargo holds in particular, plays an important role in preventing such losses. During the stage of designing and classification of vessel, the number of reefer receptacles and the ventilation system of cargo holds are taken into consideration along with calculations of capacities. Hence, the vessels may not be able to carry refrigerated containers in excess of certified/allowed capacity. The hold ventilation system has to be in working order prior to shipment. But still, there have been incidents, which have led to malfunction of refrigerated containers and/or incapacity to reach the desired temperatures.

Bear in mind that the refrigerated containers give out hot exhaust air and require copious supply of colder fresh air. Also, it has to be kept in mind, that in addition to normal refrigerated cargoes, the fresh fruits themselves give out heat, which requires continuous replacement. Some of the fruits (such as Durian) are known for giving out extensive heat. The other perishable cargoes, for instance poultry and dairy products and other frozen commodities, however, do not give out that much heat. The point to note here is that a refrigerated container can properly cool the cargo and contents only if the air supplied is of lower temperature than the exhaust air. If the air supplied is at a higher temperature, the cooling system may be adversely affected and shall lead to losses.

In view of the above scenarios, proper planning involving stowage of containers according to the vessel's ventilation system/plan is paramount, especially when reefer containers are being loaded under deck. It needs mindful planning so that the hot exhaust gases, which are vented out from ship's hold ventilators are not re-circulated back through the inlets of hold ventilators. The vessels may have fixed ventilation ducts or, there may be a changeable/adjustable system. There may be times when both the exhaust(s) and the inlet(s) are positioned along the same cross deck. This arrangement needs to be borne in mind by the ship's staff to assure proper ventilation of cargo holds. The refrigerated containers, carrying cooled/chilled cargoes should be positioned closer to the ventilation ducts to enable effective air exchange. Also, the subject containers should avoid being stowed closer to hot areas, like the engine room, heated bunker or tanks as heat from these sources shall adversely affect the air temperature around the inlets of containers.

The ambient temperature also plays a part in this story. When a vessel is trading in summertime and carrying cooled / chilled cargoes, extra caution needs to be taken. If necessary, arrangements for additional cooling of the air inside holds may be considered to ensure effective recirculation and exchange of air.

As a good practice, the ship's staff may consider monitoring the container temperatures and readings more frequently, especially if automated continuous monitoring is not a feature on the vessel. If an abnormal rise or variation in temperature is observed, the contingency planning should be immediately initiated.

To conclude, loss prevention is feasible only if the planning and implementation are effectively done keeping in mind various factors. In regard to the subject matter of claims about high temperatures and related malfunctions with reefer containers carried under decks, the ventilation of cargo holds and proper exhaust and inlet planning is of vital importance.

It is hoped that in addition to guiding the concerned parties, this paper shall act as a reminder to recall various issues, which might have become dormant over time because of various regular operations.

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2012 Cape Town Agreement must be ratified as soon as possible

Photo credit: IMO

The 11th of October 2022 marked the 10th anniversary since the adoption of the 2012 Cape Town Agreement, the key international treaty applicable to large industrial fishing vessels aimed at providing safety standards. IMO Secretary-General, Kitack Lim, has urged for it to be ratified by Member States.

Despite extensive efforts by IMO Member States, other UN agencies, observers and the IMO Secretariat, the Agreement is not yet in force. As a result, there are, as yet, no globally mandatory requirements for the design, construction and equipment of fishing vessels, including life-saving, fire protection and radio-communications equipment to be carried on board. The work being done to promote the ratification and implementation of the Agreement on the safety of fishing vessels and other activities to improve safety and sustainability in the fishing sector and fight IUU fishing is also being supported by international governmental and non-governmental organizations.

The total number of fishing vessels in the world is estimated at around 4.6 million. Most of these are small vessels. Some 64,000 fishing vessels of 24 metres in length and over operate in marine waters.

Kitack Lim has once again urged States, which have not yet done so, to become a party to the treaty as soon as possible. He said, "We cannot afford to be complacent when it comes to addressing the safety of fishers and fishing vessels. To bring this voyage that started over 45 years ago to a successful conclusion, IMO Member States are strongly encouraged to consider ratifying the Agreement as soon as possible."

The journey to bringing a mandatory regulatory framework for fishing vessels into force began some 45 years ago with the adoption of the Torremolinos International Convention for the Safety of Fishing Vessels in 1977. Due mainly to the complexity of its implementation, the Convention failed to attract the number of ratifications necessary for it to enter into force. In 1993, the Torremolinos Protocol relating to the Convention was adopted to improve its provisions, but faced the same challenges.

The 2012 Cape Town Agreement was prepared and adopted under the auspices of IMO following intensive discussions over a five-year period and replaces both the 1977 Torremolinos Convention and the 1993 Protocol with updated provisions that address previously encountered technical and legal difficulties. It paves the way for facilitating the entry into force.

Photo by Maël Balland on Pexels

To read the easy guide which explains the Cape Town Agreement in more detail, go to **https://bit.ly/3RYhrin**. Or scan the QR code.

For entry into force, the Agreement needs to be ratified by 22 Member States with an aggregate number of 3,600 fishing vessels operating on the high seas. The current number of ratifications stands at 17 Member States with a total of around 1,925 eligible fishing vessels. There has been an accelerated trend towards ratification in the past few years, escalating hopes for its entry into force in the not-too-distant future. This trend change has been driven by the efforts of the IMO to actively promote the Agreement. As part of these efforts, the Torremolinos Ministerial Conference on Fishing Vessel Safety and IUU Fishing, the largest fishing vessel conference held in the history of IMO, took place in October 2019. It was attended by some 125 States, 70 ministerial-level representatives, 30 international organizations and over 500 delegates.

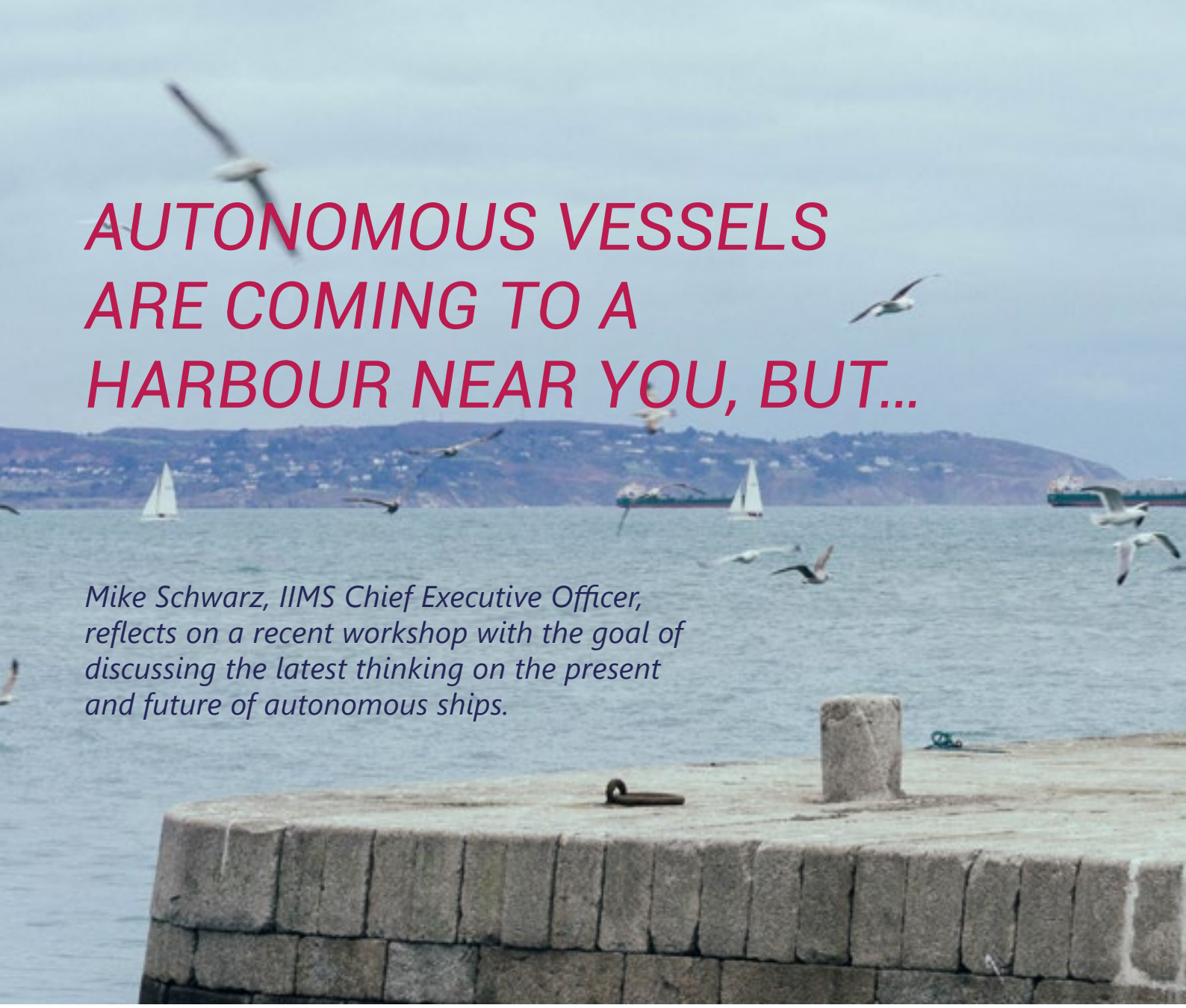
During the Conference, the Torremolinos Declaration was signed by 48 Member States (now risen to 51 Member States), publicly indicating their determination to ratify the Agreement by 11 October 2022 – the 10th anniversary of its adoption – to enable its entry into force one year later. Since the 2019 Conference, four more Member States have ratified the Agreement with several others currently in the process of completing the ratification process.

IMO has also launched an easy guide to the Cape Town Agreement on fishing vessel safety, which provides a plethora of valuable information resources, materials to download, including informative videos.

Among other benefits, the Agreement once in force will allow for the establishment of a port State mechanism to monitor illegal fishing activities and modern slavery by targeting sub-standard vessels. This, in turn, will protect markets from being flooded with illegally caught fish, increase transparency of fishing activities, contribute to the conservation of marine environment and resources, avoid depletion of world fish stocks and protect fishers from human rights abuse.

The Agreement would also protect search and rescue services from being called to rescue fishers - (since incidents should decrease) - and contribute to better employment and working conditions onboard fishing vessels for both men and women. It will also enhance the competitiveness of a nation's fishing fleet on markets by improved safety standards and contribute to the ship construction and equipment industry, in particular for new built vessels, and provide the basis for tackling abandoned, lost or otherwise discarded fishing gear.

Photo by NOAA on Unsplash



AUTONOMOUS VESSELS ARE COMING TO A HARBOUR NEAR YOU, BUT...

Mike Schwarz, IIMS Chief Executive Officer, reflects on a recent workshop with the goal of discussing the latest thinking on the present and future of autonomous ships.

On the last day of September, I found myself surrounded by about 40 learned industry professionals, most of them experts in the field of researching and developing autonomous ship technology and regulation. I had been invited to co-chair and moderate one of the morning sessions at the workshop, organized by Dr Alexandros Ntovas of the Institute of Maritime Law in Southampton, and entitled ***Advancing Ship Technology: Autonomy – moving the discourse from disruption to enablement and the upgrade of human capabilities in the digital era***.

Let's face it, hardly a day goes by these days when the shipping media does not carry another story about the sector development or launch of another autonomous vessel. So, whilst I have been exposed to the development of this technology along with many others, my level of engagement thus far could best be described as superficial.

This event, surely one of the most influential gatherings of those currently researching and exploring the challenges and opportunities presented by autonomous ship technology outside IMO, really captivated my imagination and left me feeling somewhat reassured too. It is clear that although the technology for fully autonomous ships exists today, other significant hurdles lie in the path and will limit progress. I left sensing that fully autonomous vessels will not become a reality in my lifetime and, perhaps, not in yours either.

In the first presentation, Ørnulf Jan Rødseth, Senior Research Scientist, SINTEF, drew a thought-provoking comparison with automated cars, already a highly developed technology. In his opinion, full automation in that arena was not viable given there are billions of cars on the road, and it is impractical. However, he was very much in favour of automated ships as there are currently no more than 100,000 vessels on the high seas - an entirely different proposition he argued.

Much reference was made to the four classes of autonomous ships. For information, they are 1) a smart ship where the crew is assisted by automation; 2) a periodically unattended bridge where the crew is still on the ship; 3) uncrewed ships where human operators are

in a remote location, and 4) fully autonomous ships not having human operators at all. The overwhelming consensus is that scenarios 2 and 3 are the most likely where responsibility for the safe control of the vessel is shared between humans and automation.

So, the encouraging news is that there is no doubt that humans have a key role and will need to be trained accordingly to enable them to play their part fully.

It was agreed that changing the laws of the seas (UNCLOS - United Nations Convention on the Law of the Sea) will not happen. It is more about fitting the new technology into the existing parameters and laws. The consensus was that automated vessels will sail side by side with the existing 'traditional' ships and that the two genres will need to find a way to co-exist as the slow evolution takes place.

The bigger challenges that autonomous technology must grapple with were summed up as a) the cost of investment to shipowners; b) the length of time necessary to make new regulations; c) how the insurance sector will risk assess and underwrite autonomous vessels; d) how maritime law evaluates and responds to the new technology, and e) public perception.

Indeed, public perception was a theme raised by several speakers and is a concern. It seems that until the public embrace and accept- or have a better understanding - the concept of autonomy in general, be it cars, airplanes and/or ships, moving towards fully autonomous vessels will remain a process of slow evolution and only with considerable and ongoing input from humans!

I came to the workshop with two burning questions. Firstly, how important is it to develop a communications strategy to inform and bring the public along with the concept of autonomous ships, especially given what is called 'ship blindness' by those who do not understand what happens at sea? After all, just one disaster making major news and media headlines would set the sector back considerably. And secondly, how will the insurance industry embrace this technology? Point one was answered, but many unanswered questions remain for the insurance industry to ponder and resolve.

The deadly history of the St Lawrence Seaway – discovering the three largest shipwrecks in the river's history

Looking back over history at serious accidents teaches us things. There are lessons to be learned and a greater understanding can be gained of the dangers that lurk for seafarers, in this particular case the challenges of navigating the St Lawrence Seaway. Sébastien takes up the story.

By Sébastien Pelletier, Université Laval, Québec

Of all the rivers in the world, the St. Lawrence River is undeniably one of the most challenging for mariners. This water highway is at some spots as narrow as a large river and, at others, as wide as a small sea. It has played a vital role over the last three centuries as an important artery for trade, communication, transportation and settlement. And since 1959, the year the St. Lawrence Seaway was inaugurated, it has been a gateway to the heart of the continent.

The first European explorers who sailed the St. Lawrence discovered it was not easy to master. It was long, but never calm. After crossing the Gulf, mariners would face many difficulties navigating up the river to Québec City, including narrow, sinuous channels, shallow waters, shoal deposits, and strong tides. Currents are sometimes unpredictable, there can be very dense fog, and, of course, the river is impossible to navigate in winter. No one ventured on its waters from the end of November to the beginning of May.

On June 26, 1959 Canada and the United States inaugurated the St. Lawrence Seaway with great fanfare.

Qualified maritime pilots are a must on the capricious and indomitable St. Lawrence, which has the reputation of being one of the most difficult rivers to navigate in the world. The risk of collisions, groundings and shipwrecks is high, which led to tightened navigation safety regulations, particularly in response to the accidents involving large ships that occurred in the 1960s. It is estimated that there are several thousand wrecks below the surface of the river.

As a doctoral student in geographic sciences at Laval University and president of the Technical Wreck Divers of Québec (PETQ), I propose introducing you to the three most important shipwrecks in terms of size that took place in the river. Our diving activities push the very limits of exploration. Notably, we use diving techniques adapted to the particularly restrictive underwater context of the St. Lawrence, with its strong currents, often reduced visibility and cold, black water, among other hazards.

Our expeditions allow us to share the passion of diving by exposing the results of our research and discoveries, while making the public aware of the history and hidden relics that are just a few steps from the shore of the river.

The tragedy of the Empress of Ireland (1906-1914)

Because of its magnitude, one shipwreck in the St. Lawrence River cannot be overlooked. The Royal Mail Ship (RMS) Empress of Ireland. With its 1,012 victims, there is no question this disaster strikes the popular imagination.

This tragedy was the result of the ship colliding with the Norwegian coal carrier Storstad during the night of May 29, 1914, off Sainte-Luce, east of Rimouski, during foggy weather. In as little as 14 minutes, the liner sank in the cold and inhospitable waters of the St. Lawrence. Unlike the much-publicized sinking of the RMS Titanic two years earlier, the worst tragedy in Canadian maritime history was quickly overshadowed by the outbreak of World War I.

It was only 50 years later, in 1964, that the wreck was discovered by a group of divers. Although gigantic, at 173.8 metres in length, this Edwardian liner, built in 1906, was not the largest to have sunk in the waters of the St. Lawrence.

The RMS Empress of Ireland. Its sinking caused the death of over a thousand people. Author provided

SS Leecliffe Hall sailing upstream over a lock. (Boatnerd.com, Bob Graham collection). Author provided

SS Bulk Carrier Leecliffe Hall (1961-1964)

At 222.5 metres long and 23 metres wide, the Leecliffe Hall ranks first among the largest wrecks in the St. Lawrence River.

Built by the Scottish shipyard Fairfield Shipbuilding and Engineering Ltd. and launched in Port Glasgow on May 18, 1961, this colossus was an impressive 18,071 gross registered tons (GRT). The ship's length from stern to bow is the equivalent of two American football fields glued together.

On September 5, 1964, in the middle of a foggy day, the ship, loaded with 24,500 tons of iron ore, collided with the Greek freighter MV Apollonia off Île aux Coudres, in Québec's Charlevoix region. The ships remained stuck together and did not sink.

The crew members were evacuated, safe and sound. But some of them, a few hours later, voluntarily returned to the ship, which was drifting alone, to attempt a rescue in extremis. While the men were in the midst of trying to regain control of the ship, the hull suddenly broke apart, killing three brave sailors. Two of the three bodies were never recovered. The Apollonia escaped with a badly damaged bow but was able to sail again.

On September 9, 2017, a little less than two years after our divers first visited the wreck, a commemorative ceremony was held at the Charlevoix Maritime Museum. In the presence of the widow of one of the missing sailors and some descendants of the other two victims, the ship's bell and the builder's plate, which had been recovered the previous year by our team and declared to the Receiver of Wreckage (a federal official whose key role is to act as the custodian of a wreck in the absence of the rightful owners, were handed over to the museum in an effort to maintain the collective memory of Charlevoix's subaquatic heritage.

The bell and builder's plate belonging to the bulk carrier SS Leecliffe Hall by Sébastien Pelletier

The ore carrier MV Tritonica (1956-1963)

MV Tritonica. (René Beauchamp via shipspotting.com). Author provided

At 161 metres long and 12,863 GRT, the MV Tritonica, built at the English shipyard Laing James & Sons Ltd. was the first ore carrier to use the St. Lawrence Seaway.

Sunk on July 20, 1963, off Petite-Rivière-Saint-François, in Charlevoix, following a collision in foggy weather with the SS Roonagh Head, the ship is the third-largest wreck on the St. Lawrence River in Québec waters.

In the silence of the night, locals in the village of Petite-Rivière-Saint-François heard the sounds of engines and sirens, and many, the metallic crash of the two ships colliding. The sinking cost the lives of 33 sailors, mostly Chinese. This was the greatest civilian maritime tragedy of the 20th century on the St. Lawrence since that of the Empress of Ireland.

In the days following the disaster, bodies were recovered from the sea, from the banks of the river and from Île aux Coudres, located a little downstream from the site of the sinking. The wreck posed a danger to navigation, so it was subsequently dynamited and moved to a trench dug on the bottom of the river to provide the necessary clearance for the passage of deep draft ships. The Tritonica only received its first visitors in 2016, aside from the hard-hat divers involved at the time in the post-sinking work. Despite the very limited visibility, exploring the wreck allowed our team to note the absence of its central superstructure, a section removed because it was too high and close to the surface.

A duty to remember

Exploring the remains of ships involved in such disasters is particularly exhilarating. But alongside these tons of rusty steel that fascinate divers so much, there are often human tragedies. We must never forget this. The privilege of visiting the relics of our past and bringing their stories to the surface must always be carried out with great respect.

Article by Sébastien Pelletier, Doctorant en sciences géographiques, Université Laval. Republished from The Conversation under a Creative Commons license. Web site ***https://theconversation.com/uk***

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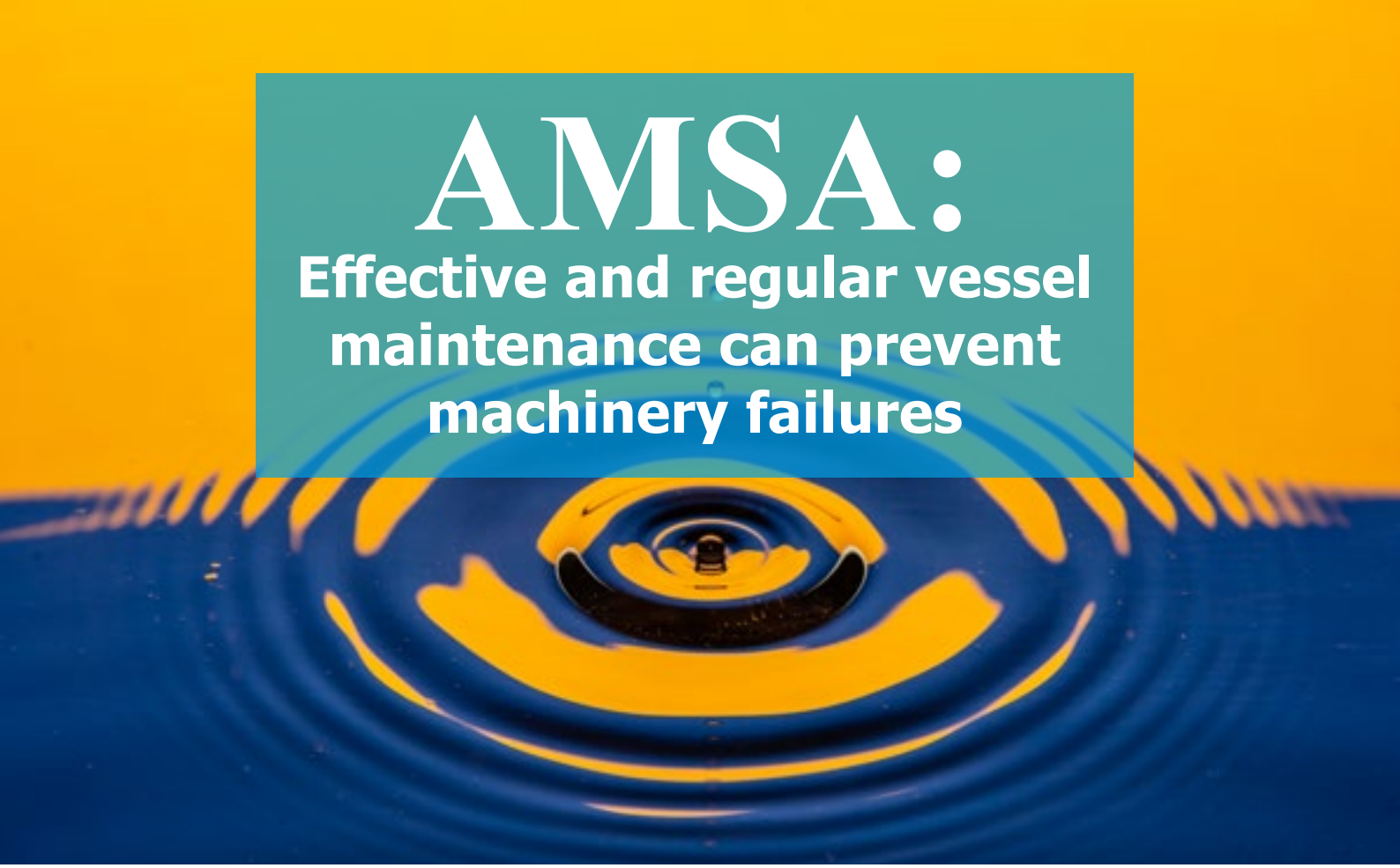


AMSA:
Effective and regular vessel maintenance can prevent machinery failures

The Australian Maritime Safety Authority (AMSA) has published a Maritime Safety Awareness Bulletin to highlight that a lack of planned maintenance can have a significant impact on the safety of the vessel, the people, and the marine environment.

Maintenance related issues do not always receive the attention they deserve, as these are often difficult to detect and can be regarded as entirely technical matters, unrelated to safety and pollution prevention. As a result, maintenance matters may not be reported or addressed as part of the organisation's safety management system. This increases risks to safety and can result in substantial costs arising from repairs and operational delays.

Nearly three quarters of all marine incident reports received by AMSA between 2019 and 2021 involved deficiencies or failures with onboard equipment, systems, or structure. Between January and February 2022, AMSA conducted focused inspections on planned maintenance which continued to highlight systemic problems with vessel maintenance.

CASE STUDY

A bulk carrier experienced an electrical blackout resulting in loss of propulsion and steering. The vessel subsequently ran aground. The electrical blackout occurred because the auxiliary diesel generator shut down after the cooling water temperature controller malfunctioned, resulting in overheated cooling water.

The investigation concluded the vessel had been sailing with an emergency generator that was unserviceable and would not operate as required. When the blackout occurred, the generator started but shut down shortly after, due to overheating. The radiator fan belt had failed several months prior but had not been replaced. The operator did not have adequate procedures to ensure that critical spares were identified, and their inventory level maintained, to guarantee availability when required on board.

The operator should have ensured that systems, machinery, and equipment, critical to the continued safe operation of the vessel, are thoroughly understood, maintained, and tested. This reduces the likelihood of an emergency event relating to these items developing and provide a defence against adverse outcomes, should such a situation arise.

Port State control (PSC) deficiencies

In 2020, AMSA recorded 24 detentions attributed to defects relating to maintenance of the vessel and equipment. Six vessels were detained for not maintaining the vessel after survey. On average AMSA recorded 14 maintenance related deficiencies per detention in 2020.

As a result, a focused inspection campaign (FIC) was conducted between January and February 2022. During the inspection period a total of 271 inspections were recorded. 41% of vessels were detained highlighting a continued problem of inappropriate or ineffective maintenance.

Safety of Life at Sea Convention (SOLAS)

SOLAS requires the condition of the ship and its equipment is maintained to conform with the regulations to ensure that the ship remains fit to proceed to sea (SOLAS Chapter I, Reg 11).

SOLAS Chapter II-1, Reg 3-1 additionally requires that ships are maintained in compliance with the structural, mechanical, and electrical requirements of a classification society.

An effective maintenance management system will be the result of an assessment of the associated risks. When conducting the assessment, the operator should consider the following:

- the maintenance recommendations and specifications of the equipment manufacturer;
- the history of the equipment, including failures, defects and damage, and the corresponding remedial action;
- the results of third-party inspections;
- the age of the ship;
- identified critical equipment or systems;
- the consequences of the failure of the equipment on the safe operation of the ship.

International Safety Management (ISM) Code

Maintenance of the vessel and equipment is a requirement of the ISM Code (Clause 10.1). The ISM Code (Clause 10.2) also outlines that the Company/operator should ensure non-conformities are reported, and appropriate actions are taken. Non-conformity includes technical deficiency, which is a defect in, or failure in the operation of, a part of the vessel's structure or its machinery, equipment or fittings.

It is important that the operator rectifies the deficiency as soon as reasonably practicable, but also address the underlying maintenance management system failures (non-conformities) that led to the problem in the first place.

Importance of Planned Maintenance

Due to the complex nature of the maritime working environment, maintenance-related issues are often a result of interactions between organisational factors and latent conditions.

Fast turnaround times in ports put crew under immense pressure, leaving little or no time to complete critical checks and verifications. This can lead to gaps in maintenance due to time constraints.

Scarce resources mean crew and operators frequently have to make a trade-off between the time and effort taken to prepare for a task, and the time and effort expended doing it. Trade-offs involving shortcuts may allow the ship to be operational more quickly, but at the expense of thoroughness and safety.

It is widely recognised that during the COVID-19 pandemic there have been difficulties ensuring effective maintenance of vessels. However, travel restrictions and quarantine requirements have largely been removed and any related issues are well known now for operators to plan for effective maintenance.

Poorly designed procedures that are unclear, out of date, inaccessible, not written for the task or are difficult to follow will likely result in deviation or non-compliance. It is important to align procedures with the way tasks are undertaken and to involve seafarers in their development whenever possible.

A well-designed planned maintenance system that includes regular and thorough maintenance, visual inspections and operational tests, will reduce the risk of machinery failure. Specific requirements and instructions, including any manufacturer's recommendations should be incorporated in the testing and maintenance plans.

Download the safety bulletin at **https://bit.ly/3C453HH**. Or scan the QR code.

Bitoon hydrofoil system

Marine designer and yacht builder, Morrelli & Melvin, has launched a new hydrofoil system engineered specifically for twin pontoon boats. Designed to carry 40% of the weight of the boat, the award-winning Hydrofin Super Fly produces lift and reduces drag, giving fuel savings of between 20% and 40% for a smoother, more efficient ride.

Winner of a 2021 IBEX Innovation Award, the Hydrofin is the brainchild of founder Jason Minor, a lifetime boater who came up with the idea whilst on an offshore fishing trip. Originally looking to extend the range of offshore vessels, he quickly saw an opportunity in the pontoon market.

The system comes in three versions to fit almost any bitoon. It is designed for boats with round or U-shaped logs with diameters of between 23 and 27 inches and is suitable for both newbuilds and retrofits. The pressure-casted aluminium foils are heat-treated for extra hardness and anodised to resist corrosion and the system adjusted for different boat sizes, weights and speed ranges, before being fixed after installation.

Photo: Morrelli & Melvin

Bringing hydrogen power to market

Volvo Penta and CMB.TECH have partnered to accelerate the development of dual-fuel hydrogen-powered solutions for both on land and at sea applications. Building on an already successful collaboration, the two parties will now work together on joint projects ranging from pilots to small scale industrialisation, providing increased access to hydrogen technology.

"The development in this area is moving fast and with this partnership we see a great opportunity to further explore and be part of increasing the use and availability of hydrogen solutions," said Heléne Mellquist, president of Volvo Penta.

"I believe that this dual-fuel approach will appeal to many of our customers by its ease of installation, maintenance and use. In addition, it will help accelerate our customers' transition to more sustainable operations."

Elco Motor Yachts unveils new motor line

New York based electric boat and motor manufacturer Elco Motor Yachts has announced smaller, lighter weight redesigns of its popular EP-6, EP-12 and EP-20 inboard motors.

Featuring a new casing with a patented airflow design said to allow improved cooling while reducing the volume of internal copper winding, the new generation EP-6, EP-12 and EP-20 motors are half the weight, and one-third smaller in length and height of the previous generation models they replace.

Taking the stress out of electric boating

VETUS's latest range of monitoring systems can be fully integrated with their electric propulsion systems to deliver high levels of connectivity and control for boat owners. The company's E-DRIVE electric propulsion systems, E-POD and E-LINE can integrate with NMEA2000 solutions via the VETUS CANV2N CANverter and modular digital CAN bus communication system VETUS V-CAN.

This connectivity means the user has crucial visibility of remaining battery charge and runtime when installing the CANNS500 battery monitoring shunt and the CANNME7 multifunction display.

"Making some of the intelligent monitoring that electric car drivers have available to electric boaters is a key enabler in the more widespread adoption of electric boats – an aim we wholeheartedly support at VETUS. It has been very heartening to see, in our testing, how skippers modify their throttle behaviour when in possession of real-time range information," said Arthur Roeling, director R&D and service at VETUS.

EnergyMatic propeller announced by Ewol

Ewol has announced its new patent pending EnergyMatic propeller, which has an automatic return to the feathered variable-pitch mechanism and electric charging.

EnergyMatic is a propeller for sailing yachts, specifically to facilitate putting the propeller (blades) in the feathered variable-pitch and is designed to provide minimal resistance under sail on boats with hydraulic or electric propulsion.

According to Ewol, thanks to its internal automatic return to the feathered variable-pitch mechanism, EnergyMatic positions itself with minimal resistance even without the need to stop the shaft. This means that it is no longer necessary to switch off the engine and engage reverse gear to significantly increase sailing speed, with a range of 0.5 to 1.5 knots.

New repairable battery

The Essential 2.0 battery by Aceleron can be taken apart for maintenance, repair and upgrade over time, giving it a potentially infinite lifespan. The battery has also been built with the aim of eliminating any unnecessary waste of the raw materials used to build batteries.

"Aceleron's design is a truly forward-thinking approach that more businesses will hopefully adopt as the world evaluates what can be done to reduce our harmful impact on the environment," said Bruce Macpherson, Aceleron chief commercial officer.

A day in the life of...

Mike Proudlove

FIIMS, Deputy Vice President

Earlier this year, Mike Proudlove FIIMS was elected at the Annual General Meeting as the Institute's new Deputy Vice President. Mike's association with IIMS goes back over many years. Mike Schwarz tracked him down during his busy schedule to get his opinion and views on a series of questions relating to his own personal experiences as both a marine surveyor and vessel operator.

Question 1

Your situation is different to many IIMS members who started life at sea and then came ashore to begin life as a marine surveyor. You have gone from some years in a surveying role to become a vessel operator. Please explain how you got into the surveying profession and how easy it was to transition to the 'other side'.

I grew up messing about on boats of all types in west Wales and in my early twenties took my first paid position as a sailing instructor and charter skipper in Turkey. From there I moved to skippering a large ketch on the west coast of Scotland doing private charters. After a season of rain and midges, wanderlust struck and I headed off across the Atlantic and did blue water deliveries for a large, charter fleet operator. After time ashore in the mainland US, I moved to the Hawaiian island of Kaua'i, undertaking yacht repairs and surveys of small craft. I worked as a surveyor in the US and Europe until 2012 and I also taught at MITEC, the boatbuilding school in Milford Haven. About this time, the growth in the offshore renewable sector caught my attention and I was keen to return to vessel operations and be a part of this exciting new industry. I worked as a master initially and then took an operations management position, where I am today.

Question 2

Would you say that having a significant amount of marine surveying knowledge and experience is a help in your current role? Do you just let the surveyor get on with his/her work unhindered or do you hanker to be involved?

The company I work for operates to the ISM Code, so my background in surveying comes in useful daily, managing the vessels and in cooperation with my colleagues and our crew, maintaining our safety management system. I also get involved with the port state inspections in Europe if specific vessel and safety standards are required. When it comes to UK audits and Certifying Authority inspections we are fortunate to work with some very experienced and knowledgeable surveyors, so every inspection is an opportunity to share information and we always see the benefit of using the external examiner as an extra pair of eyes who is working to improve our vessels' safety. I always stress to our masters and crew the need for transparency with surveyors, as we all benefit most from this approach.

Photo courtesy of OTS

Question 3

From a vessel operator's perspective, is there any advice you would like to pass on to less experienced marine surveyors about what you particularly want or need to know from the survey?

As a commercial vessel operator, most of our recurring surveys are annual inspections for the Workboat Code, IMCA eMISW and charterers' in-surveys or suitability surveys. From our perspective, the most important part of any survey is the wash-up meeting with the master or manager. Surveyors should always leave plenty of time for this element and ensure they cover every finding they are going to report. It is very easy to miss something when surveying under pressure, particularly if the boat is working and stopping only for the inspection. The wash-up meeting is the opportunity for the vessel crew to show the surveyor the item they missed, or to address small findings or misunderstandings. The finding should still be reported, but much better and quicker for all stakeholders if the report reads, 'the operator corrected or replaced the item at the time of the survey – this finding is now closed.' Likewise, it is very frustrating if the auditor states that an item was not present, when it is was either not applicable or the surveyor had simply missed it. In the IMCA eMISW, the options of yes / no / not applicable often cause problems for less experienced inspectors. It is imperative to know when 'not applicable' applies, as 'no' can cause the operator lots of wasted time.

Question 4

In your earlier days, I know you were heavily involved in the IIMS education programme, which has gone from strength to strength built on those solid foundations you were involved in laying. How important is it for those entering the profession to gain a good and in depth learning of the subject?

Surveyors come from many different backgrounds, with different areas of expertise. As well as directly imparting knowledge, the IIMS education programme sets a standard so surveyors can identify their own strengths and weaknesses and become self-critical. In addition to the Diploma programme, the short courses and training days help to fill gaps and expand the surveyor's knowledge. With the rapid advancement in the types of technology on board all vessels, surveyors need to stay current with both the regulations and the equipment and designs being employed.

When undertaking pre-purchase or condition surveys, report writing is probably the most important skill to develop and the IIMS continues to lead in this area, thanks to yourself and Paul Homer. Although report writing is not as important in Workboat Code inspections or IMCA audits, it is still easy to report a finding inaccurately by using incorrect terminology. Education and continual professional development (CPD) are clearly the key to a successful and trouble-free career in surveying. Training and CPD also provide the perfect forum to network with other surveyors, naval architects and stakeholders and often lead to business development, as well as professional development.

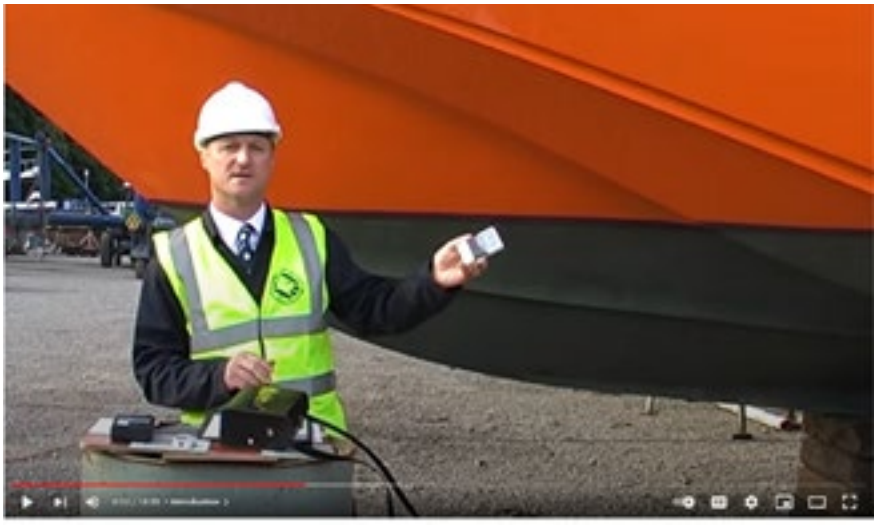
Question 5

Some years ago, you made a video about how to use moisture meters. It was loaded on to the IIMS YouTube channel and has been watched multiple thousands of times. How do you feel about being a 'social media sensation' and how important is it for experienced surveyors to share their knowledge with others in this way?

I am not sure the term 'social media' had been coined when I made that video, but I hope it has dispelled some myths and mystery about moisture meters.

In my opinion, a person who is skilled and competent in a particular area should be prepared to share their knowledge and experience with others with no expectation of gain. In reality, both parties

Mike's video on using moisture meters from 8 years ago has had over 20,000 views



do gain, as we all learn when we share information, as the act of explaining something further enhances our knowledge of that subject. We are very fortunate in the IIMS to have many experienced members and education module lecturers who think and act in this way, giving their time for the benefit of others. I think we can still do more as an Institute to foster mentoring, which has always been underdeveloped in the surveying profession, but it should also be stressed, it is a two-way relationship and new surveyors do not always grasp the opportunity of being mentored when offered.

Question 6

I know how honoured you were to be elected as IIMS Deputy Vice President at the AGM earlier in the year. Can you please put into words how you felt about this?

Whilst there are many trade organizations that represent surveyors and other companies that provide training, only the IIMS is involved in all aspects of surveying across all vessel types. The IIMS has maintained its aim of raising standards in surveying for the benefit of all stakeholders for more than thirty years and the recognition that the IIMS receives from national, maritime regulators around the world confirms that the Institute is the leader in promoting, improving and verifying surveying standards. As well as being honoured to be elected as Deputy Vice President of such a highly respected organisation, I am also excited to be working more closely with the board, IIMS officials and head office team as we look to new technologies such as alternative fuels and remotely operated, unmanned vessels to decarbonise our industry and increase efficiencies.

Multi-purpose workboat Cardinal P, Photo courtesy of Offshore Turbine Services

Question 7

I suspect many people will have no idea that you are a non-executive director of the IIMS subsidiary company, the Marine Surveying Academy Ltd. The work we do there to accredit eCMID vessel inspectors on behalf of IMCA and to deliver an internationally recognised standard for superyacht coatings inspectors is highly regarded. How important do you think it is for IIMS to be involved in such work and to be taking a lead in these niche areas?

The Marine Surveying Academy (MSA) embodies the values of the IIMS perfectly and it is not surprising that at the heart of both the eCMID inspector accreditation and the Registered Marine Coatings Inspector (RMCI) scheme is the idea that higher and more consistent standards benefit all stakeholders, whether you are the inspector, the vessel owner, the charterer, or any other interested party. The global maritime sector is often accused of being too traditional and not embracing change, but the MSA is agile enough to identify future needs and the ongoing success of many developing technologies rely on there being sufficient numbers of properly trained and qualified personnel to support these new areas.

Question 8

What would you say are the key issues for marine surveyors in a world that is becoming increasingly challenging as decarbonization and emerging technologies take hold?

The regulations are not currently keeping pace with emerging technologies, or even the nature of modern vessel operations. This is not necessarily a bad thing, as strict, prescriptive regulations will stifle innovation. However, this also means that the marine surveyor will have to make more decisions using their own, risk-based analysis of the situation, rather than being able to refer to existing standards. Marine surveyors will have to stay abreast of the emerging, competing technologies and collaborate with other maritime and technology specialists to ensure that their analysis and conclusions can be fully supported and justified. The IIMS will play an important role in this exchange of ideas and information.

Question 9

I know you are heavily involved in the workboat sector and have an allegiance to the Workboat Association. In brief, what are the key challenges and opportunities facing those who, like you, are involved with surveying or operating vessels in the renewables sector which is set to boom internationally?

Offshore renewables and marine civils are very exciting areas to be working in at the moment. As well as the ongoing maintenance of existing wind farms, there is the enormous scale of the new wind farm developments, emerging tidal energy projects and significant investment in nuclear energy and related infrastructure, such as subsea cables. This growth has resulted in plenty of opportunities for vessel builders, naval architects, operators, surveyors and marine crew and with that rapid growth comes all the usual challenges of staff recruitment and training, not to mention building enough new vessels that are fit for purpose.

Crew transfer vessels and workboats working daily from shore are being asked to work longer days and as vessel size increases there is less 'weather downtime'. With small teams, this can result in fatigue and poor bridge management, as well as crew simply burning out and leaving the sector prematurely. The vessels are also becoming more complex and therefore a higher degree of crew training and familiarization is required. As a seafarer, I would like to see the renewable sector focus more on crew welfare and to recognise the importance of the seafarer. Perhaps surprisingly to people not directly involved in the sector, the marine crew, of all the different vessel types involved, often go unnoticed in renewables projects. They are usually the unsung heroes in the safe and timely completion of new offshore renewable projects and maintenance campaigns. As we all know, changes to legislation (ILO or IMO) do not happen easily or quickly, but changes to hours of rest and minimum safe manning could be initiated within the industry sector without waiting for an incident to occur or for crew morale to fall further. As well as a simple lack of new seafarers entering the industry,

there are powerful commercial and financial forces at work in the attempt to lower the cost of offshore wind further. I welcome the arrival of remotely operated, unmanned vessels as a way of reducing some of the workload on traditional crew, particularly in routine, repetitive tasks such as bathymetric surveying.

Of course, the complexity of the new vessels working in offshore renewables also pose a problem for engineers and surveyors. As well as technically advanced bridge and vessel control systems, new technologies such as hybrid power systems and alternative fuels are already being utilised in offshore wind. The new, UK Workboat Code, currently in the consultation phase, does a lot to support these advances, but surveyors and the surveying organisations will need to refocus their efforts on keeping up with the technology through education and CPD.

Question 10

I would like to ask you how you feel about the new phenomenon that is emerging post Covid – remote surveys. What are your views on this topic and as an operator, do you have concerns about the depth and validity of the survey?

We experienced a lot of remote surveys during Covid and we understood the need. We have continued to experience a few, although they are becoming less common and I am hopeful it is a dying form of inspection. Good surveyors use their sense of smell, their hearing and the vibration through their feet, to get an overall picture of a vessel's health and condition. When working your way around even a small boat you get a chance to talk to crew and you soon learn if the crew are happy with the way a vessel is operating and if it is properly supported by the shoreside team. None of these important insights are possible when surveying a vessel remotely and I don't believe any of the stakeholders are getting value for money.

Question 11

What are your main hobbies and how do you like to spend your valuable leisure time?

Commercial vessel operations do have a habit of taking over your life, particularly in the European summer. I enjoy the simplicity of hiking and camping and whenever I can. I like to walk in the English Lakes, the Alps, or any other remote mountain or coastal environment.

Question 12

If there is one place in the world you would recommend people to visit, where is it and why?

I sailed my own boat from Portland, Oregon to Alaska following the Inside Passage before heading to Hawaii. The route takes you into the Strait of Juan de Fuca and up the east coast of Vancouver Island before reaching southeast Alaska. I am a fan of the west coast of Scotland and the Pacific Northwest has lots of similarities in its remoteness and the need for self-sufficiency, plus huge mountains and glaciers. If you can visit in June or July, you will probably meet orcas in Johnstone Strait, see bald eagles and totem poles on the islands and be accompanied on the final part of the route by large pods of gray whales. You may even find yourself using binoculars to check if the small figures on the beach are humans or bears before rowing ashore!

Future IIMS President, Mike Proudlove (left), current President, Peter Broad (centre) and past President Adam Brancher (right) are pictured on the IIMS stand at Seawork 2022.

To end 2022, here is a compilation of the best of 'What caught my eye' - a roundup of maritime trivia that has been published in the monthly IIMS news bulletins.

Published in the January 2022 news bulletin

Edith Piaf's 'love boat' up for grabs at auction

French singer Edith Piaf's 'love boat', which she was rumoured to use for secret trysts, is up for sale at Sotheby's International Realty for just shy of £1.5million. According to the Daily Mail, the 100ft Flamant Rose, or 'Pink Flamingo' in English, supposedly served as a love nest for Piaf and French-Algerian boxer Marcel Cerdan.

The current owner is celebrity hypnotist and author Valerie Austin, whose husband James Pool, bought the boat for her as gift 25 years ago.

"Edith Piaf had the boat when it was her happy time, before her boyfriend was killed," Austin told the Evening Standard. "She used to do séances there because it has an iron hull, which is supposed to be spiritually electric. I've had quite a few top psychics on board, and they all love the feeling of it."

Guy Bradshaw, who is handling the sale, says: "The Flamant Rose is not just a houseboat, you are owning a unique piece of history with arguably one of the world's most romantic stories."

Published in the February 2022 news bulletin

Indonesian Navy releases rescued turtles

Authorities on the Indonesian tropical island Bali have released 33 endangered green sea turtles into the ocean in an effort to boost a population threatened by poachers and illegal traders.

The turtles, from the Chelonia mydas species that is protected in Indonesia, were released on Kuta beach after they being rescued during a Navy operation against poachers in December. Tourists gathered to watch and film the release on their mobile phones, cheering the turtles on as they trudged across on the beach.

Photo credit: NOAA Pacific Islands Fisheries Science Center

"It's a great idea for the conservation effort," said Australian tourist Briant Firth. "They were getting some of the poachers and they were saving the turtles."

So, it is certainly hats off to the Indonesian Navy for their efforts and for ensuring these mystical creatures have been returned to their natural habitat. Well done to the Indonesian Navy for doing something which frankly restores faith In humanity!

Published in the February 2022 news bulletin

Announcing Roy McFarlane as Britain's new Canal Laureate 2022

I found this annoucement rather endearing for it struck me as a peculiarly British thing. I had no idea that we even had a Canal Laureate in this country, so my warm congratulations to Roy on his new appointment.

The Poetry Society and the Canal & River Trust have announed that Roy McFarlane is the next Canal Laureate.

Poet Roy grew up in Birmingham and the Black Country, surrounded by canals. He says: "I lived, played and loved by canals and rivers and am looking forward to recapturing those stories; tales of diverse communities in urban settings who lived with canals in their backyard."

During his Laureateship, Roy is interested to explore how people feel about their local canals currently, and how our national and global history can be read in the story of the canal network's development.

Established in 2013 by The Poetry Society and the Canal & River Trust, the Canal Laureateship aims to encourage exciting new writing about the Britain's historic canal network.

Published in the March 2022 news bulletin

Century-old "Koningshavenbrug" to be partly dismantled to allow the world's largest sailing yacht to pass

Of course, on any level, this is an absurd, but true story about a forthcoming event allegedly involving Jeff Bezos' new superyacht (the soon to be largest sailing yacht in the world).

One can imagine the phone calls made between the builder Oceanco and Mr Bezos might have gone along the lines of: Oceanco: *"Mr Bezos your superyacht is too big to go beneath the century old bridge in Rotterdam."*

Image courtesy Reuters

Mr Bezos: *"Sure, so ask them nicely to remove the top of the bridge."*

It is reported that the city of Rotterdam has agreed to remove a section of the historic bridge to make way for the superyacht. A spokesperson for the city of Rotterdam said the mid-section of the century old "Koningshavenbrug," will be removed this summer to make way for a yacht with 40-metre (131-ft) masts.

To get from Oceanco's inland dock in Alblasserdam to the North Sea, the superyacht must pass under the old bridge, the first landmark to be restored in post-war Rotterdam. Undisclosed costs for the bridge operation will be covered by the ship builder, the city said.

Published in the May 2022 news bulletin

Daring thieves pinch over £250,000 of diesel fuel from the Royal Navy!

Picture: LA(Phot) Shaun Barlow, Crown Copyright/MOD 2009

How, just how can this possibly have happened? When I read this story, I was simply aghast at [a] the audacity of the thieves and [b] the ineptitude of the security function.

We learn from newspaper reports that more than £250,000 of diesel was stolen from a Royal Navy warship under the noses of UK defence chiefs. A gang of thieves drove off with tankers intended to power HMS Bulwark over a period of weeks at HMNP Devonport in Plymouth. It is thought to be one of Britain's biggest fuel thefts.

They were able to get away with the daring raid despite a high security presence at the naval base and were only caught when suspicious guards stopped a tanker trying to leave the site. However, it is believed most of the fuel was sold on the black market before the scheme was uncovered.

Published in the June 2022 news bulletin

Found beneath an Estonian street: One 700 year old cargo ship!

Image courtesy of Patrik Tamm/ERR/Mihkel Tammet

Now this story really captured my imagination, for it is truly remarkable. That a ship could have lain five feet under an Estonian street for 700 years seemingly undetected and in a well preserved state is astonishing.

I read that construction workers have uncovered the preserved ruins of a cargo ship under the streets of the Estonian capital of Tallinn. The ship is thought to be a Hanseatic cog once owned by the Hanseatic League, a powerful merchant alliance, and was discovered in an area of the capital that used to be completely underwater. The incredible remains of the medieval cargo ship are located at the former mouth of the Härjapea River, a waterway that no longer exists.

According to ERR, Estonia's public broadcasting news agency, the wreck is around 24.5 metres long by 9.5 metres wide. Work has halted at the site as the ship is combed by archeologists and the shipwreck raised.

Published in the July 2022 news bulletin

Yacht once owned by David Bowie is up for sale

The name David Bowie requires no introduction to most. His legacy and contribution to pop music in the 1970s (when I first started to listen to his music) is legendary. His music was an inspiration for many. So, I am envious to see that the vessel he commissioned in 1977, the 39-metre (127-foot) El Caran classic Benetti motor yacht, is up for sale.

The late singer-songwriter's yacht has been listed for sale by Giulio Riggio at Fraser's Palma office, with an asking price of €4,850,000 – sadly out of my price range. A classic steel displacement hull, El Caran has just completed a refit including a full paint job and a new teak deck. A classic superyacht with a modern layout, the yacht has six staterooms offering accommodation for up to 12 guests, with an on-deck master stateroom. El Caran's sky lounge and outside deck spaces are amongst her key features, enhanced by her canoe stern design.

Published in the September 2022 news bulletin

Royal Navy helps 74-year-old adventurer visit every UK island

A 74-year man from Birmingham has finally achieved his dream of visiting every inhabited UK island. Climate change consultant John Chatterton has travelled mainly by rowing boat and ferry during his five-year mission, with the odd plane and even a cable car for good measure.

The journey has led him to step foot on 220 islands across the length and breadth of the UK, including those that are privately owned.

Image credit: John Chatterton

Last month, Chatterton gained permission from the Royal Navy to enter 84-acre Whale Island — a semi-man-made island that is home to a restricted naval base near Portsmouth Harbour. It was the last remaining location on his UK list.

Chatterton says one of the most unusual experiences he had on his adventure was during a trip to Dry Island in Loch Gairloch, Scotland, where he was "welcomed by the owner who offered to stamp our passports as he's proclaimed his own country, Islonia."

Published in the August 2022 news bulletin

Giant cruise ship's maiden voyage may be to a scrapyard

If you ever thought the world had gone mad, here is the irrefutable proof that you may well be right. So, the story goes that an unfinished mega-liner that was to be one of the world's biggest cruise ships by capacity is sitting in a German shipyard. It is waiting to be scrapped, because bankruptcy administrators can't find a buyer, according to cruise industry magazine An Bord.

The lower hull of a liner known as Global Dream II, the second global class vessel from insolvent MV Werften shipyard , is to be disposed of at scrap price, An Bord reported, citing insolvency administrator Christoph Morgen.

Come on world. There must be many potential uses for such a vessel from a floating hospital to unique university campus. In my view, to see such a vessel go to scrap is an outrage, a waste and frankly a disgrace.

Published in the October 2022 news bulletin

The perfect gift for the person who has everything ...

Photo credit: Dom Pérignon

I read that earlier this year Dom Pérignon had raised the bar on yacht charters out New York City way. They arranged for people to charter the brand's custom-designed, 88-foot Sanlorenzo luxury yacht and to be treated to dinner prepared by Masa Takayama, chef of the three Michelin starred sushi restaurant Masa in New York City.

Guests who reserved the cruise (if any did) will have enjoyed four hours aboard the yacht. A chauffeur, glasses of Dom Pérignon, an onboard butler and DJ, and a unique omakase menu created by the Masa mastermind were all included. The cost? A cool $30,000 for the experience – and that makes this the perfect gift for the person who already has everything!

An obsession with speed

Just what is it about speed on the water that some are obsessed with? I am old enough (just) to remember the death of Donald Malcolm Campbell, CBE who was a British water speed record breaker. He broke numerous world speed records on water in the 1950s and 1960s. Sadly his endeavours ultimately cost him his life in 1967 aged just 45 during a record attempt at Coniston Water in the Lake District, England.

However, it seems, that the thirst for water speed records is still not quenched. By the time you read this article, Vision Marine Technologies will have attempted to break their own production electric boat speed record at the Lake of the Ozarks Shootout in Canada. Their goal? To pass the 100 mile per hour mark.

At last year's Shootout, Vision Marine Technologies co-founder, Patrick Bobby, piloted the company's all-electric Bruce 22 powered by an 180E electric outboard and powertrain system to a speed of 49mph, shattering its previous record of 31mph set at the 2019 Shootout.

And I can reveal that their goal was successfully achieved when the electric watercraft reached 109mph.

'What caught my eye' is a column by Mike Schwarz each month. If you enjoyed this eclectic collection of marine trivia and news from 2022, be sure to read the news bulletin each month for more of the same!

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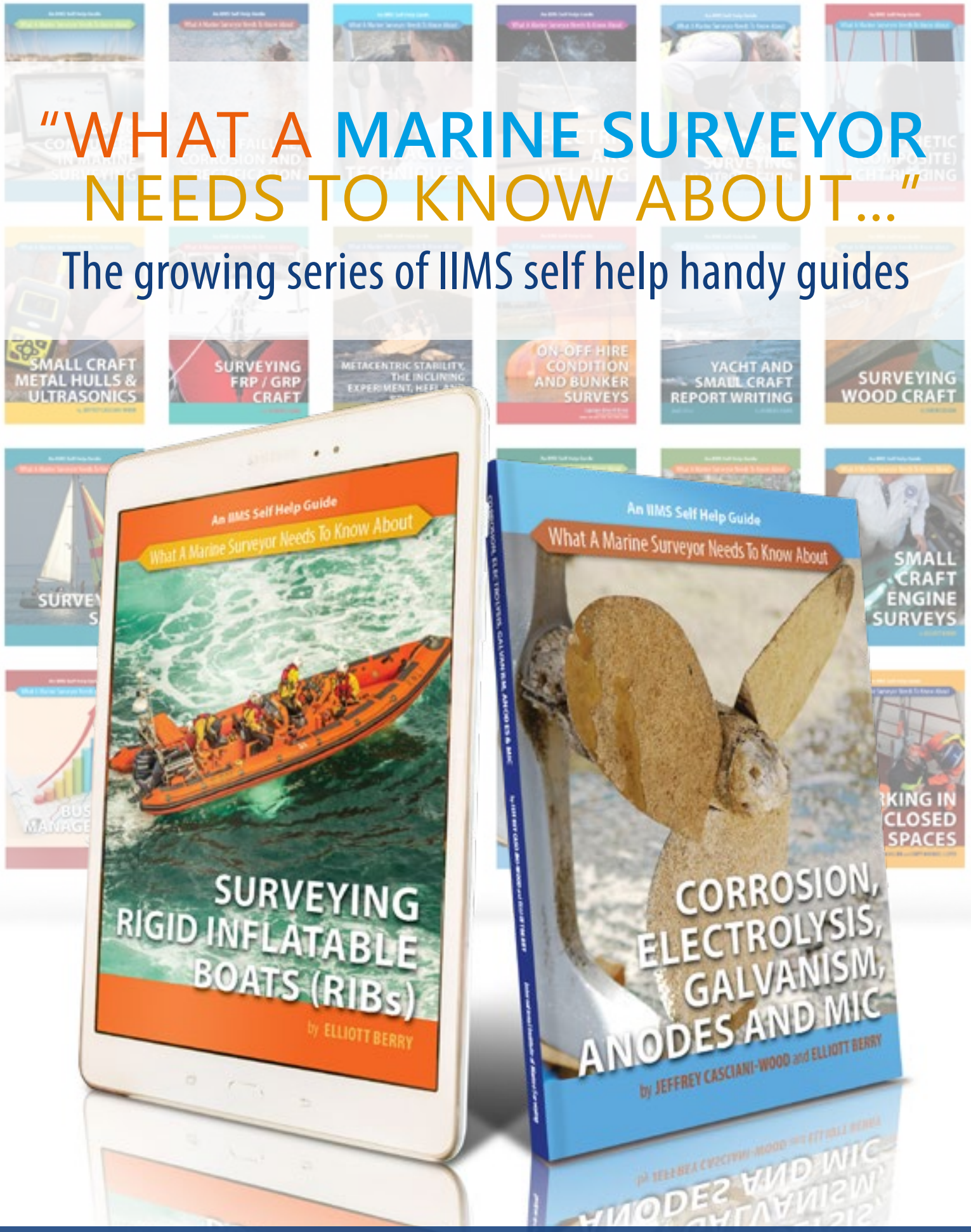

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