

# THE REPORT



MAR 2024 | ISSUE 107

The Magazine of the International Institute of Marine Surveying

## THINGS A SURVEY CAN'T FIND

**TRANSPORTING  
LITHIUM-ION BATTERIES:  
IDENTIFYING AND  
ADDRESSING THE RISKS**



**MARINE INSURANCE  
IN AN INCREASINGLY  
VOLATILE WORLD**

**THE BIRTH AND  
HISTORY OF  
MOTORBOATING**

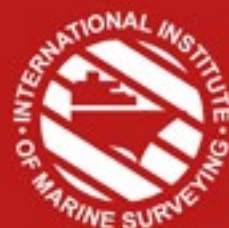
**STCW under review by the IMO Maritime Safety Committee**

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# THE REPORT



The Magazine  
of the International  
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Marine Surveying

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## EDITOR'S LETTER

### Dear Colleague

Welcome to the March 2024 Report Magazine offering another eclectic mix of topical maritime articles, technical features, and industry reports for your learning and enjoyment.

As we emerge into Spring in the northern hemisphere, I am increasingly troubled by things. World geopolitics is gnawing at my mind. Yes, in an increasingly divided world, we are facing serious challenges, some of which are spilling over into the shipping and boating industries, which in turn will inevitably affect the role of the marine surveyor. I am concerned that geopolitics will divert our collective attention from other key objectives that urgently need addressing in the maritime industry. I am also worried about the lowering of standards that I see, and regulation that remains not fit for purpose or is simply unworkable.

Sticking with those serious maritime challenges, (setting aside the armed conflicts and tensions that surround us), one of the most pressing concerns would seem to be the situation with the Panama Canal, which is parlous. This presents a unique problem for world shipping. A series of events beyond our control have crippled this vital waterway. I understand there are no quick solutions either. It will take time and at what cost? The article

entitled *'Saving the Panama Canal will take years and cost billions'* on page 92, whilst not directly related to the surveying profession, is worth reading.

Being a fossil fuel, and with all the current noise around climate change, I had wrongly assumed that the shipping of coal would be trending downwards. But in her article entitled *'Coal cargoes: Avoiding explosion and self-heating'* Gitana Røyset from Arendal asserts that global coal consumption climbed to an all-time high in 2022 and is on track for a record-breaking 2024. Gitana shares some of the potential dangers and case studies associated with coal transportation.

I continue to be engrossed by the ongoing concerns surrounding the transportation of lithium-ion batteries and fires associated with it, which is an issue that remains a constant threat in our everyday lives too, as well as onboard boats, superyachts and ships. The team at Hill Dickinson has authored an authoritative article on this subject entitled *'Transporting lithium-ion batteries: identifying and addressing the risks'* (see page 50). I sense that maritime regulators are slowly catching up in this area, but there is still work to do and no room for complacency.

*'Things a survey cannot find'* by Jean Levine and Jeff Grossman (page 66) is something that should resonate with all small craft marine surveyors. The

authors reinforce the point that trying to uncover everything about a vessel being surveyed in just one day at the dock and a brief sea trial means there are things that cannot be surveyed. This edition's opinion article comes from Gard P&I Club. They have published a vision for the future of marine insurance. As part of their vision in what is becoming an increasingly volatile world, they consider how marine insurance is likely to be impacted. See page 80.

I have taken the unusual step of resting the *'A Day in the Life of'* feature for this edition. Instead, I have chosen to publish an article about Iain Wilson. Following a career that spans four decades across seven countries, Lloyd's Register's (LR) Chief Surveyor, Iain Wilson, has set a date to retire. He talks about his life as a surveyor and how the industry has changed during that time (page 127).

And finally, if you are a history buff and hanker after a little nostalgia, (as I do), I cannot recommend the article on page 120 highly enough. *'The birth and history of motorboating'* by Richard Crowder charts the history of this activity way back to the late 1700s.

Survey well

**Mike Schwarz**  
Chief Executive Officer





# PRESIDENT'S COLUMN

## Dear Members and fellow Marine Professionals

Welcome to the President's Column for March 2024.

We, IIMS, have certainly started 2024 off at a great pace, with the publication of *the Safety and Loss Prevention Briefings Compendium 2023* extending to 172 pages of maritime incidents and accidents that occurred during 2023. It is a sad reflection on our industry that there are still too many accidents occurring which provide the material for such an authoritative publication. Many of these incidents are related to human error or 'the human factor'. It will be interesting to see how marine incidents develop in years to come, as 'we' remove the human factor and allow more and more automation and AI to manage our vessels. Certainly, there are many questions that need to be addressed before more autonomy is allowed for international trading vessels. the Compendium in pdf format at <https://bit.ly/48svS7b> or click to read it online in eReader format at <https://bit.ly/4aOXPb1>.

One recurring incident that continues to claim the lives of seafarers and other personnel employed on, or in shipping are *deaths in enclosed spaces*. This should not be happening! I would say that every seafarer and person working in commercial shipping has at some time or other had training in 'Enclosed Space Entry'. So, why are we still seeing so many fatalities?

As marine surveyors we always need to consider our safety first. I have attended many vessels and needed to enter tanks, but the crew has not been prepared and the tanks have not been opened or vented. The scope of survey has clearly been provided to the operator/technical managers and their agents in advance of attendance on board, but for 'commercial or operational reasons' the Master has not wanted to open the tanks.

There is very little 'we' can do in this case other than report to our client that the tanks were not prepared for safe entry and therefore have not been inspected. Remember to state clearly in your survey report the reason why you did not inspect the tanks and which ones they were. You cannot comment on the internal condition of the tanks' structure or coatings that you did not see yourself.

Please always carry your own multi-gas detector and do not rely on the ship's equipment. The ship 'must' prepare the tank for safe entry with their own gas detector and permit to work procedure, but we all know that these may not be in such good condition.

Even entering a cargo hold has its risks, depending on what cargo is being or has been carried. Many cargos are not necessarily toxic but may be oxygen depleting. It is better to 'reject a survey' on the grounds that it is not safe, than to become a new statistic in the next issue of the *Safety and Loss Prevention Briefings Compendium*. We all have a right to go home safely at the end of the working day.

In our endeavor to reach out to more of our membership and the wider general marine industry, IIMS is redeveloping its existing regional websites in Canada, India, Australia, New Zealand, Nigeria and the UAE - and opening two new ones for Asia and America. These will publish up to date local content as well as linking to the IIMS main site. These websites and our IIMS publications are our shop window to the industry. They are there for the benefit of all in the marine industry and not just IIMS members; and they are FREE, with the exception of the 28 specialist handy guides.

IIMS has opened up another method for delivering our popular and well-read monthly News Bulletins and information via audio podcasts. These became available from February and offer two separate streams, one for small craft and the other for commercial shipping.

Our monthly publications have a sizeable, growing readership and outreach with over 9,500 opens for the January News Bulletin emailer alone. Now they are available as podcasts I am sure this engagement will rise even further.

We are always keen to hear from anyone in the marine industry who might have an interesting story to tell. Please contact Mike Schwarz at IIMS head office if you have a suggestion for an article for The Report Magazine.

Don't forget that it is never too late, and you are not too old to learn something new. We should all keep up to date with evolving technologies, so please consider your 'continued professional development' (CPD). IIMS has many courses, regional seminars, training material and handy guides that will help you in your endeavours to enhance your skills and become an even better marine surveyor. Through the Marine Surveying Academy Ltd (MSA), a wholly owned subsidiary of the IIMS, we develop and deliver leading industry courses online and around the world in the areas of offshore inspections and superyacht coatings. Check out the material that is available on the MSA site at [www.marinesurveyingacademy.com](http://www.marinesurveyingacademy.com)

We are looking forward to our hybrid AGM and Conference in June 2024 to be held in Southampton, UK. We are open for any interesting topics for the Conference and are now calling for papers. If you have anything that you would like to tell us about from your specialisation in the marine industry, that is topical, or about advancing technologies, please contact us with a subject title and synopsis. The morning session will be for topics that are of a general nature, related to all disciplines of marine surveying. We will then divide our Conference into two sessions in the afternoon, one for small craft and the other for commercial craft, please use this opportunity to share your knowledge with a wider audience and enjoy the networking experience.

I will close my column by mentioning again the President's Charity for 2023 and 2024.

The Tall Ships Youth Trust ([www.tallships.org](http://www.tallships.org))

We are all talking about continuity planning and where the next generation of marine surveyors are coming from. There are great opportunities presented for a 'career pathway' through the Tall Ships Youth Trust. Please consider supporting our charity by donating through this link: [www.tallships.org/make-a-donation/](http://www.tallships.org/make-a-donation/).

You may have seen in the press at the end of last year that the Jubilee Sailing Trust in the UK has ceased to trade (put into administration). This organisation was a marvellous charity that provided sailing experiences for both the disabled and able bodied, alongside each other, onboard their STS *Lord Nelson* and STS *Tenacious*. Sadly, they have had to close due to lack of funding.

Let's each please help the Tall Ships Sailing Trust with a small donation to continue to provide safe and empowering life experiences for young people, who may become the next generation of seafarers and ultimately marine surveyors, and who will never forget their transformational voyage of discovery on their fleet of four ex round the world 72 feet Challenger racing yachts and their 55 feet ketch.

I, and the Tall Ship Youth Trust, thank you for your support in advance.

Stay safe.



**Peter Broad**  
CEng, CMarEng,  
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## Marine craft construction a national priority in Australia



*Photo credit: Boating Industry Association*

Boating Industry Association (BIA) has successfully secured recognition by the Federal Government of the ongoing value and demand for boat builders and shipwrights across Australia. When BIA heard these trades were not on the national priority list in 2023, it set in train a series of direct engagements with the Federal Departments of Employment and Workplace Relations, and Jobs and Skills.

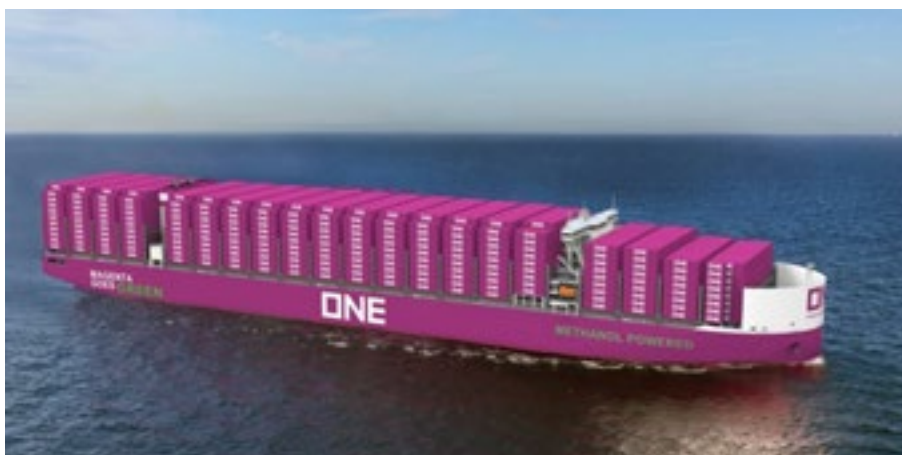
BIA welcomed Minister for Skills and Training Brendan O'Connor's recent news the Federal Government has reinstated the trades Boat Builder and Repairer, and Shipwright to the Australian Apprenticeship Priority List. Inclusion on the Priority List means employers have access to Federal funding via a wage subsidy to support new apprentices signed up from 1 January 2024.

## ONE orders twelve methanol-fuelled container ships

Ocean Network Express (ONE) has signed Ship Building Contracts with Jiangnan Shipyard and Yangzijiang Shipbuilding for a total construction of twelve 13,000 TEU methanol dual-fuel container ships.

Each shipyard will build six vessels and are all scheduled to be delivered from 2027. These vessels will include technologies such as optimized hull form, waste heat recovery systems and bow windshield. Selected vessels will also be equipped with an air lubrication system and shaft generator to help with exploring potential enhancements in fuel efficiency and the reduction of greenhouse gas (GHG) emissions.

In the current maritime and sustainability landscape, methanol is anticipated to hold significant potential for emission reduction. This move aims to help accelerate ONE's decarbonization efforts and ensure compliance are in line with regulations in the shipping industry.



## Damen to build four fully electric ferries for BC Ferries

Damen Shipyards has won the contract to build and supply four, fully electric, passenger car ferries for BC Ferries.

The vessels, based on Damen's Island-class RoRo 8117 E3 model, will operate on 100% electrical power and have a capacity of carrying up to 47 vehicles and 390 passengers. The power trains will be supplied by battery packs with a 2,000-kilowatt capacity, and rapid recharging using renewable electricity will occur during passenger and vehicle embarkation.

In addition to onboard auxiliary diesel engines for backup, Damen will provide shoreside charging equipment, marking the fourth time the company has offered this service.

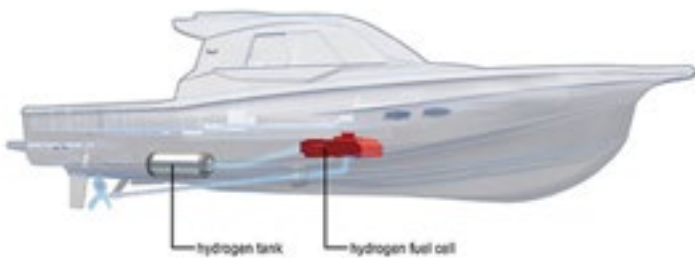


## Polish Shipping Association joins ECSA membership

The European Community Shipowners' Association (ECSA) has announced the Polish Shipping Association became a full member as of 1 January 2024. The Polish Shipping Association brings together the Polish Shipowners' Association (ZAP) and the Polish Shipping Companies Association (PZPZ).

"We are proud to welcome the Polish Shipping Association as a new member of ECSA. The Polish Shipping Association extends the geographical scope covered by our membership, brings additional expertise and knowledge, and further strengthens the position of European shipowners in Brussels" said ECSA Secretary General Sotiris Raptis.

Marcin Talwik, representing the Polish Shipping Association, said "We are delighted to become part of the ECSA membership and share our expertise and insight with colleagues from across the EU. The ECSA membership will allow us to strengthen the voice of Polish shipping to EU policymakers. The Polish membership is testament of the work of ECSA as the focal point of the European shipping industry in Brussels".



## A 4-stroke hydrogen engine is in development by Yanmar

Yanmar Power Technology Co. has announced the development of a hydrogen-fueled 4-stroke high-speed engine for coastal vessels in Japan. The concept engine is part of the Nippon Foundation's zero emission ship demonstration experiment. The company first announced plans to develop a hydrogen fuel cell system for boats in 2020. They also announced in November 2023 they had delivered a hydrogen fuel cell for a Japanese passenger ship currently under construction.

The potential for hydrogen propulsion could have major effects on the marine sector with Yanmar engines currently being supplied to brands like Nautique, Beneteau, Bertram, Hanse, Jeanneau, Leopard Catamarans, Riva, XO Boats, and others. While the announcement pertains to large commercial vessels, the potential to apply the platform to recreational boats and yachts is evident given their existing partnerships.

## Spain declares environmental emergency as millions of plastic pellets spill from ship

Communities across Northern Spain are fearing an environmental disaster as millions of tiny pellets, which were spilled by a cargo ship off Portugal last month, continue to wash ashore. On 8 December 2023, the Liberia-registered Toconao lost six containers while sailing around 80km off northern Portugal. One of the six containers held over 1,000 sacks of plastic 'nurdles' — small PET pellets used in the manufacture of plastic products — weighing over 25,000kg.

PET is not biodegradable. Dozens of communities across Spain's northern coast have seen a "white tide" of the 5mm nurdles washing up ashore in the weeks following the spill. Hundreds of volunteers have taken to beaches in an attempt to clean up the spill in the north-west Galicia region, while fishers have been searching for sacks floating in the Atlantic.



## SYF 2024 presents leading yacht brands and unveils a refreshing lifestyle festival market

Returning after a highly successful inaugural event in 2023, the Singapore Yachting Festival (SYF) will take place from 25th - 28th April 2024 at ONE degrees15 Marina Sentosa Cove. The 4-day event will showcase spectacular yacht displays and stunning entertainment. With a concerted effort to showcase the full spectrum of the unique yachting lifestyle, the 2024 edition will launch a Lifestyle Festival market; visitors can expect experiential activities, pop-up lifestyle stalls, demonstrations, live music, roving entertainment and much more.



Mr Arthur Tay, SUTL Enterprise CEO and Executive Director, said, "ONE degrees15's acquisition of the Singapore Yachting Festival signifies a transformative journey towards elevating our brand influence in the marine industry. With curated unique experiences, SYF aligns seamlessly with our vision to propel yachting into a lifestyle embraced by a discerning, aspirational audience."

## Record deliveries could push container fleet above 30 million TEU in 2024

In 2023, shipyards delivered 350 new container ships with a total capacity of 2.2 million TEU, beating the previous record from 2015 when 1.7 million TEU was delivered. The 2023 record is now likely to be beaten in 2024. As 2023 saw a relatively low level of container ship recycling, new ships entering the fleet caused an 8% rise in the capacity of the container fleet, the fastest growth registered since 2011. Ships larger than 15,000 TEU continued to dominate deliveries and the segment grew 28% after 1.3 million TEU were delivered in 2023.

In 2024, 478 container ships with a capacity of 3.1 million TEU are scheduled for delivery, beating the 2023 record by 41%. The container fleet capacity is therefore expected to grow by 10% in 2024.

Recycling of ships is expected to increase in 2024 but the fleet could still grow by nearly 2.8 million TEU and by end 2024 exceed 30 million TEU for the first time in history.

Another 83 ships larger than 15,000 TEU are expected to be delivered in 2024, adding 1.4 million TEU to the segment's capacity and doubling its capacity in just four years.



## Wider launches its first hybrid catamaran

*Image credit: Wider Yachts*

Wider, the Italian yacht builder based in Fano, has launched the first unit of its hybrid catamaran, WiderCat 92. The 28-metre composite catamaran integrates Wider's hybrid propulsion system, with twin electric motors delivering 500kW each to the thrusters and two 349kW variable speed generators for electrical energy production.

The system's heart is the yacht's n°30 LiFePO4 (Lithium-Iron Phosphate) batteries, managed by a battery management system to facilitate intelligent charge balancing. Wider says the generators aboard WiderCat

92 operate at minimum power consumption, allowing cruising in ZEM (Zero Emission Mode) with a complete silence or a 14-hour autonomy on battery power at anchor.

Additionally, 150 m2 of solar panels ensure energy self-sufficiency at anchor, with any excess energy stored in the batteries for nighttime use.



## ClassNK approves Yanmar's hydrogen fuel cell technology

ClassNK has issued an Approval in Principle (AiP) for a maritime hydrogen fuel cell system developed by YANMAR Power Technology. ClassNK has issued the "Guidelines for Fuel Cell Power Systems On Board Ships (Second Edition)", specifying safety requirements for the design of ships using fuel cell power installations and the systems themselves to promote and expand the utilization of fuel cells in ships.

According to ClassNK, the maritime hydrogen fuel cell system (300kW) developed by YANMAR PT is designed with key auxiliary components such as gas valve units integrated within the system enclosure, aimed to facilitate easy installation on ships.

ClassNK carried out a review of the system in line with its guidelines, and examined the result of required tests and risk assessment. Upon confirming it complies with the prescribed requirements, ClassNK issued the AiP. This is the first AiP certification for a maritime hydrogen fuel cell system developed by a Japanese manufacturer.



THEFOILING.ORGANIZATION

## Foiling Organization to establish Italian headquarters

The Foiling Organization, the global association of the foiling industry and its professionals, is establishing its headquarters in Genoa, Italy. This initiative marks the first step of a strategic partnership with the Municipality of Genoa.

The organisation's plans include hosting the world's first Foiling Congress on 18 April 2024 in Genoa, bringing together association members and all those interested in joining: shipyards, component manufacturers, designers, universities and research facilities, professional sailing teams, yacht clubs, associations, events and institutions.

The congress will culminate in the awards gala of the seventh edition of the Foiling Awards, which since 2014 have honoured personalities and significant projects in the world of foiling.

"The foiling industry is growing rapidly and will play a central role in the blue economy so relevant for our City," says the municipal councillor Francesco Maresca. "Therefore, it will be a pleasure for us to host the activities and events of The Foiling Organization, which has what it takes to do a great job."



## New Damen offshore service vessel can be charged with turbines

Damen Shipyards Group has launched a fully electric Service Operations Vessel (SOV) with offshore charging capabilities that can pave the way for significantly reduced emissions in the maintenance of offshore wind farms.

Damen undertook studies to assess the feasibility of an electric SOV to dramatically increase sustainability of vessel operations at offshore wind farms and quickly established that technically it would be possible. However, two main questions were to be answered. Firstly, for this to be possible, offshore charging capabilities would be required. Secondly, given that this model represents an increase in CAPEX costs, it had to be established if there was a healthy business case.

The charging system uses the motion-compensated gangway to create a connection between the vessel and a turbine or substation offshore, in much the same way a personnel transfer is undertaken. Damen and its partner MJR selected the charging method in order to maximise safety and efficiency. The gangway is controlled from the wheelhouse, requiring no manual interaction with charging equipment. It has the added benefit of utilizing pre-existing offshore infrastructure, thereby adding considerable cost-efficiency.

## Southeast Asia reports 19% rise in ship robberies in 2023

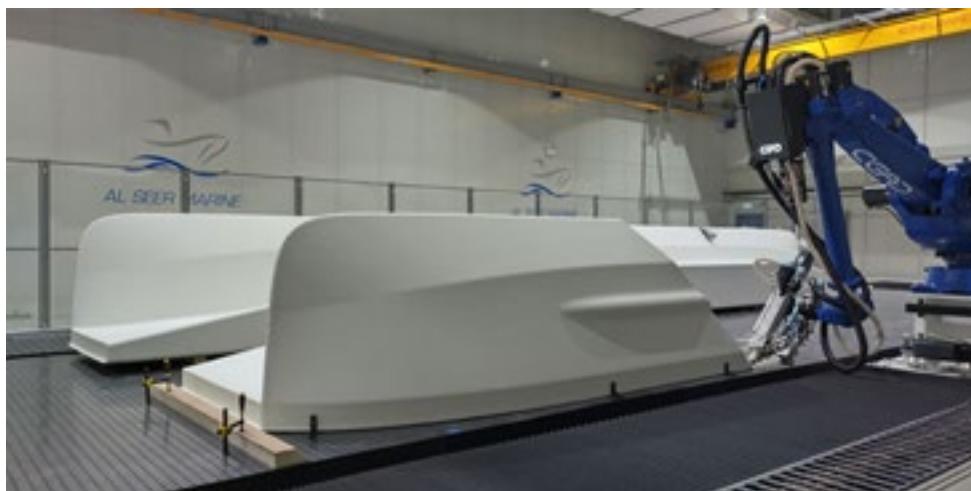
A Singapore-based maritime organisation reported a 19% rise in ship robberies in Southeast Asian waterways in 2023. Out of 100 cases, there was one attempt at an armed robbery. Krishnaswamy Natarajan, the executive director of the Regional Cooperation Agreement on Combating Piracy and Armed Robbery (ReCAAP), highlighted that they were small-scale thefts involving the theft of goods such as scraps, nominal value wires, brass ship products, and engine spares.

The number of events in SOMS increased to 63 from 55 in 2022, which was particularly concerning. Despite these challenges, coordinated efforts by Malaysian and Philippine officials prevented any reported crew kidnappings for ransom by the Abu Sayyaf Group (ASG) in the Sulu-Celebes Seas. In 2023, the ReCAAP Information Sharing Centre (ISC) proactively addressed the changing needs of the maritime sector.

## World's largest 3D-printed boat unveiled

Al Seer Marine and Abu Dhabi Maritime have unveiled the world's first 3D printed water taxi, securing a Guinness World Records title for the largest 3D printed boat. This boat has been made with CEAD Flexbot at Al Seer Marine, an Abu Dhabi marine services provider, using the largest robotic 3D printer worldwide (4x36m).

The boat consists of two hulls, printing time of only 5,5 days each. With a breathtaking 11,980 x 3,594 metres, it has space for 29 people plus bicycles and wheelchairs.



Crafted from 67% recycled materials, this 11,980 metre long marvel not only represents a technological feat but also signifies a giant leap towards sustainable transportation. The builder feels, this milestone is not just a record-breaking feat; it's a call to action for the industry to adopt greener technologies.

## Navalt launches India's fastest solar electric boat: The Barracuda

Two time Gussies Award Winner Navalt of India has launched the fastest solar electric boat in the country – the Barracuda, with a top speed of 12 knots (22 km/h, 14 mph). The vessel, launched at the Navgathi Yard, Panavalay in Alappuzha, was built in collaboration with Mazagon Dock Shipbuilders Ltd. It will be named Saur Shakthi and will be used as a workboat.

"We wish to celebrate this remarkable feat in sustainable transportation, presenting it as our heartfelt contribution to our nation's journey towards a cleaner, greener future on the seas," said Sandith Thandassery, CEO of Navalt.

Thandassery was named Innovator of the Year at the 2023 TiE Kerala awards for entrepreneurs and ecosystem builders in the Indian state, and is also the author of 'Solar Electric Boats: Plan, Build and Benefit'. He founded Navalt as India's only indigenous electric propulsion system builder. One of the first boats developed by the company, the Aditya, has been in operation as a commuter ferry in Kerala, India, since 2017.

Aditya makes 22 trips each day, and has carried almost 3.4 million passengers since its launch, saving about 175,000 litres of diesel fuel and almost a million pounds (435,000 kilograms) of CO2 emissions.



## ICOMIA announces new Boating Industry Conference

The International Council of Marine Industry Associations (ICOMIA) and the Singapore Boating Industry Association (SBIA) have announced the inception of the 1st ICOMIA Boating Industry Conference. The inaugural event will be held and organised by ONE°15 Marina at Sentosa Cove in Singapore from April 23-24 in conjunction with the Singapore Yachting Festival 2024.

Key themes of the conference are sustainability and the decarbonisation of the recreational marine industry with ICOMIA's ongoing 'Propelling Our Future' campaign shaping much of the dialogue. The conference programme will include presentations on the latest research and innovation across the various aspects of the industry from propulsion systems to infrastructure development. In addition, panel discussions will engage on the potential and development of Asia's growing markets as well as industry-driven efforts to grow boating.

ICOMIA will be drawing on their global network of industry experts and thought leaders to create a dynamic programme that will stimulate discussion and creative ideation.



## ABYC announces board members at annual meeting

The American Boat & Yacht Council (ABYC) marked its 70th anniversary, welcomed new board members, and honoured award recipients at its annual meeting in Annapolis, Maryland. ABYC board chair Jeff Wasil and president John Adey briefed attendees on ABYC's initiatives and acknowledged the volunteers dedicated to boating safety. Captain Amy Beach, director of inspections and compliance for the US coast guard (USCG), also addressed the gathering.

"A recent study found NMMA certified boats using ABYC standards are much less likely to be involved in accidents involving serious injury or fatality than non-certified boats," noted Beach. "The USCG cannot accomplish its safety mission alone, and we're thankful to have such long-standing partnerships as ABYC."



The 2024 board of directors were elected, including Scott Croft of BoatUS, Sean Hatherley of Navico Group and Randall Lyons from the Massachusetts Marine Trades Association. Hatherley highlighted ABYC's role in setting industry standards and its international recognition by groups including the International Organization for Standardization and the USCG.

"Without the level of education and training provided, many companies large and small would not be successful today," he says. "The industry is constantly changing, and ABYC has everything covered to make sure boats are built to safe standards and high quality."

## Belgian shipowners welcome the country's EU Council Presidency

On behalf of its members, the Royal Belgian Shipowners' Association (KBRV) has welcomed Belgium's takeover of the rotating Presidency of the Council of the European Union, which lasts six months until the end of June 2024.

Echoing the six priorities of the Belgian Presidency, Mr Lemmens further explained how the maritime industry plays a key role in supporting Belgium's vision for the future of Europe.

He said, "Europe needs to strengthen its competitiveness in order to enhance its economic security and resilience. As a great maritime nation, Belgium has a forward-looking and innovative shipping industry made up of a talented and experienced workforce. Both Belgian and the wider European shipping sectors are effectively supporting Europe's dominant position as a global trading powerhouse. This is the foundation of Europe's geopolitical strength that should be reinforced and built upon."

"Europe also needs to ensure the rapid yet smooth transition from carbon-based to sustainable fuels, which is the basis to combat climate change, by supporting key industries that are driving the process. The Belgian shipping industry is a prime example that is leading shipping's green transition."



## IMB Report Reveals Alarming Rise In Maritime Piracy Worldwide In 2023

Recent data from the International Maritime Bureau reveal a concerning increase in maritime piracy cases in 2023. The research indicates the first successful hijacking from Somalia since 2017, which alarmed specialists in marine security. The yearly Report on Piracy and Robbery (armed) shows 120 instances in 2023—a slight increase over the 115 incidents from the previous year.

The most disturbing incident mentioned in the report is the successful hijacking off the coast of Somalia on December 14, 2023. About 700 nautical miles east of Bosaso, a handymax bulk ship was taken over by alleged Somali pirates. Since 2017, there has not been a successful hijacking in Somali waters. This is a matter of concern, according to IMB Director Michael Howlett, who expressed concern. The IMB is again urging all masters and vessel owners to continue adhering to the guidelines and reporting requirements outlined in the most recent version of the Best Management Practices.

The incident highlights the ongoing threat that Somali pirates pose. Although fewer instances have been reported in the Gulf of Guinea (22 in 2023 compared to 81 in 2020), the region remains a hotspot for maritime piracy. This region accounted for three of the four hijackings reported worldwide in 2023, which also accounts for all 14 crew kidnappings and seventy-five per cent of reported crew hostages. Crew safety is also a concern in the Singapore Straits, where opportunistic crimes are rising. Michael Howlett raises concern about vessels' incomplete and delayed reporting. The IMB continues to stand up for the timely reporting of all accidents since it advances its knowledge of risk.

## International Fund for Fishing Safety announces first funding round

The International Fund for Fishing Safety, a grant giving programme providing financial support for on-the-ground safety initiatives that aim to improve safety standards in the global fishing industry has announced its first open funding call.

The announcement was made at the International Fishing Industry Safety and Health (IFISH6) Conference 2024, held at the UN FAO Headquarters in Rome. This international conference is one of the only opportunities for researchers, safety and health professionals, instructors, workers, and experts from across the global fishing industry to come together and share information to improve safety in one of the world's most dangerous occupations. The Fund will target areas where there is the most need for improved safety outcomes, particularly Asia – which is home to 80% of fishers and some of the most hazardous and unregulated working environments.

Applications to the Fund will be managed by The Seafarers' Charity, and decisions made by a steering committee comprising industry experts from across the fishing ecosystem.



## Caterpillar announces marine batteries and shoreside charging solutions

Texas, US-based engine builder Caterpillar Inc has confirmed a commitment to introduce a new line of marine class-certified batteries and shoreside charging solutions aimed at bringing greater ecological sustainability to the marine sector.

The company's electrification initiative is aimed at enabling operators to connect their vessels to shoreside energy supplies when in port to reduce diesel fuel consumption. The system targets commercial vessels and large yachts.

"Marine batteries and shoreside charging are key components to help lower emissions in the maritime sector," said Caterpillar Marine vice president and general manager, Brad Johnson. "This offering supports our customers' sustainability efforts and positively impacts the industry's energy ecosystem."



## IACS launches new recommendation to promote shipbuilding quality of machinery piping systems

The International Association of Classification Societies (IACS) has launched a new recommendation, 177, to enhance the quality of machinery piping systems in shipbuilding.

Piping systems convey different fluids at various temperatures and pressures to all parts of the ship, including to nearly every enclosed space on a vessel. As such, and because these systems are a means through which many of a ship's control systems operate, it is crucial that these systems are designed to meet high quality standards. In recognition of the need for uniform quality standards to be implemented across the shipbuilding industry, IACS has developed Rec.177 which provides comprehensive guidance on shipbuilding quality standards for machinery piping systems for use during a ship's new construction phase.

The recommendation is designed to improve the quality of fabrication, installation, commissioning and function tests as well incorporating remedial standards to address situations where the prescribed quality standards have not been met.

Rec.177 focuses primarily on machinery piping systems covered by classification society rules which address critical functions such as ship propulsion, electricity generation and navigational safety. The recommendation builds upon and complements Rec.47 which sets down guidance on ship-building quality standards for the hull structure itself.

Key highlights of the Rec.177 include:

- Terminology: Clear and precise definitions related to machinery piping
- Qualification of welders/operators and Non-Destructive Testing (NDT) operators
- Welding procedures (for metallic pipes) and plastic coating or lining procedures (for steel-plastic composite pipes), Procedures for bonding, NDT, and installation
- Requirements for Quality Management Systems of shipyards
- Detailed quality standards for materials, cutting, bending, edge preparation, assembly and installation.





## Netherlands considering electric boating courses in vocational school curricula

To meet the fast-rising demand for electric propulsion in recreational boating, the Netherlands is considering making electric sailing courses part of the curricula of its intermediate vocational schools. The push comes from the Dutch yacht building industry The Nederlandse Jachtbouw Industrie (NJI). It says, "The need for skilled electricians is great, and work is underway to develop part-time 'Electric Sailing' courses at intermediate vocational schools across the Netherlands."

NJI represents around 180 yacht builders that construct and finish hulls, build complete yachts of wood, metal, or synthetic materials, and handle repairs. In November, it applied for state funding for courses teaching the correct and safe assembly of electrical propulsion systems in boats to 24m (79ft) and the proper and safe execution of work on such systems. NJI branch manager Gerwin Klok hopes the course can start being delivered in the 2024-25 school year.



## Historic moment for SAAM Towage as all-female crew completes tug voyage

SAMM Towage, a tugboat service provider operating in British Columbia, marked a historic moment for the maritime industry with its first all-female tugboat crew on a journey from Prince Rupert to Stewart. Captain Hailey McIntyre and deckhand Ocean Rutherford embarked on the 12-hour voyage, assisting with vessel docking and undocking upon arrival. This milestone reflects the coastal industry's openness to diversity, offering many opportunities for those interested in pursuing careers in the marine industry.

SAMM Towage Canada's director of operations, Brook Walker, expressed pride in celebrating this unique occurrence in the company's 70 years of history, highlighting the company's commitment to inclusivity.

Photo credit: Kim Rodriguez



## Navico Group announces major investment in its Lowell facility

Navico Group, a division of Brunswick Corporation and the world's leading supplier of integrated systems and products for the marine and RV industries, today announced a multimillion-dollar investment in its Lowell, Michigan facility to create two Centres of Excellence in metal fabrication and electrification. The investment will increase quality, capacity, and efficiency, as well as improve product manufacturing capabilities.

## Indian Register of Shipping announces senior management appointment



In line with the rapid expansion of the Indian Register of Shipping (IRS), Mr P.K. Mishra, previously Head of Operations, has been promoted to Joint Managing Director of IRS, effective 1st January 2024.

Joining as a Surveyor with IRS in 1998, Mr Mishra rose through the ranks to become Chief Surveyor in 2023. With close to 25 years of experience in IRS and the industry handling key responsibilities, he has been an integral part of the organisation. Throughout his time in IRS, Mr Mishra has consistently demonstrated leadership, strategic thinking, and a commitment to excellence.

Mr Mishra has also been an active contributor to the International Association of Classification Societies (IACS) through various panels and expert groups. He has represented the Indian Flag in Marine Environment Protection Committee (MEPC) Meetings from 2012 to 2022 at the International Maritime Organization (IMO). This includes participating in various IMO Meetings such as the Pollution Prevention and Response (PPR) Sub Committee, Assembly & Council.

## Historic canalside hedgerows to be improved for wildlife

Important hedgerows running alongside the Grand Union Canal in Market Harborough are set to be improved thanks to a partnership project between the Canal & River Trust, Sustrans and Harborough District Council.

Hedgerows are invaluable for a wide range of species including field mice, voles and hedgehogs as well as a variety of birds and even amphibians. Along canals, with their abundance of wildlife and linear routes, the hedges provide corridors safe from the threat of predators and an important source of food. However, if left unmanaged the hedgerow will simply grow upwards and become a line of separate trees, leaving wildlife vulnerable to predators and the elements.

To prevent this, contractors will be carrying out hedgelaying, using traditional techniques which involve cutting stems and bending them so that over time they grow horizontally and intertwine, forming a thick, bushy barrier. Local volunteers will also have the opportunity to help deliver the habitat improvements.



## UK's Shipping Forecast hits 100

The Maritime and Coastguard Agency (MCA) has celebrated the 100th anniversary of the first broadcast of the Shipping Forecast, a quintessentially British thing and symbolic of a nation steeped in maritime tradition. The forecast was first broadcast on 1 January 1924.

The iconic Shipping Forecast is a BBC Radio broadcast produced by the Met Office on behalf of the MCA. Although the Shipping Forecast officially came into existence in 1924, it was in October 1925 when it was first broadcast via the BBC. "It's a national institution," says Met Office's archivist Catherine Ross, "that has so much more meaning behind it than just a forecast. It's iconic."

"It's a history of the last 100 years of what's happened around our shores, from a weather perspective of course but also maritime safety; the two are heavily linked and it is a big part of why the Met Office even exists."

The history of the forecast goes back to 1861, when Vice-Admiral Robert FitzRoy developed a telegraphic messaging system to issue weather warnings to ships, following the loss of the steam clipper Royal Charter. The vessel foundered (sank) in a violent storm off the coast of Anglesey, with the loss of more than 450 lives, prompting FitzRoy's desire to prevent it happening again.

Ross believes the Shipping Forecast has saved thousands, possibly even hundreds of thousands of lives.

## World's first hydrogen-electric boat driven by PCBFC completes real world testing

Bramble Energy has unveiled what is believed to be the world's first hydrogen-electric boat driven by Printed Circuit Board Fuel Cell (PCBFC) technology, marking what it says is a revolutionary turning point in the history of the marine industry. The company made a significant step toward decarbonising the maritime industry when it successfully launched a 57-foot narrowboat in Sheffield, Yorkshire, in partnership with custom engine builder Barrus.

As a component of the HyTime project, this demonstration vessel showcases the potential of Bramble Energy's ground-breaking PCBFC technology to cut carbon emissions in marine transportation quickly and affordably. With its unique marine fuel cell system, the narrowboat can run emissions-free for up to 600 miles while utilising the 14 kg of hydrogen on board. Solar panels on the boat's roof provide extra power, which charges a 22kWh battery system.

Built from the ground up in Sheffield, the narrowboat has a brand-new hydrogen system specifically designed to satisfy maritime regulations. For every boat that uses it, this cutting-edge powertrain technology has the potential to save up to 12 tonnes of CO2 annually.

After extensive testing on UK inland waterways, Bramble Energy's Hydrogen Innovation Hub in Crawley will evaluate the fuel cell's real-world performance through data analysis of the narrowboat. This analysis will facilitate a smooth transition to hydrogen and help fulfil emissions rules for cleaner and greener waterways. It will also contribute to the continuous development of PCBFC systems for broader maritime applications.



Image credit:  
Bramble Energy



## BAE Systems begins building shipbuilding academy in Glasgow

BAE Systems announced construction has begun on a new Applied Shipbuilding Academy at its Scotstoun shipyard on the banks of the River Clyde in Glasgow, as the company bolsters its efforts to develop future talent.

Designed to support the development of the entire workforce, from apprentices to senior leaders, the Academy will comprise of a Modern Trade Hall and a Flexible Learning Hub. It will also serve to upskill the existing workforce while attracting new talent. A historic industrial building will be retrofitted to become the Modern Trade Hall, with areas dedicated to each shipbuilding trade, ship-realistic mock up environments and research & technology facilities. Immediately adjacent will be a Flexible Learning Hub, containing more than 30 classrooms, a STEM innovation lab and office facilities.

On completion in the second half of 2024, the Shipbuilding Academy will provide bespoke training for almost 4,500 employees, including nearly 700 apprentices. These new facilities will also enable a substantial expansion of the early careers programs at BAE Systems, doubling the intake in Glasgow to more than 200 new apprentices each year.

## Inland waterways heading to net zero

UK politicians at Westminster were updated recently on how the UK inland waterways industry can work towards achieving net zero on leisure craft. The event was hosted by the All-Party Parliamentary Group for the Waterways (APPG). Its chairman Michael Fabricant, MP for Lichfield, welcomed speakers Bowman Bradley, chairman of the IWA/RYA/Cruising Association Joint Working Group and Simon Lawford, technical sales and renewable fuels manager of Crown Oil.

Boaters, representatives from boating organisations and other interested parties attended virtually via Zoom and were given the opportunity to ask questions following the presentations.

Although electrically powered boats are increasingly being built and those using diesel as fuel will reduce in number, over the long term very few existing boats would be converted to electric drive which is expensive and quite a big job.



## Irish company develops boat with deck made of solar panels

There are many electric boats, both big and small, that can be charged in whole or in part from solar panels. But those photovoltaic cells are normally on the roof or roofs of the boat – or in the case of the Sunreef 80, actually integrated into the composite materials of the entire hull.

Waterways Industrial, based in Northern Ireland, has a different take. Their Gridbeater Amphibian pontoon boat is propelled by an electric outboard that charged from solar panels on the Gridbeater's deck. Richard Bell of Waterways Industrial told Carlton Reid of Forbes magazine "Unlike other glazed solar panels, these have a covering that enables them to be walked on and hence suitable as a deck material." Bell said the solar panels are made to a unique design by a small Chinese company with whom Waterways has a working relationship on other products.

Waterways specializes in off-grid solar panels and nomadic solar power stations for multiple applications. They also offer solar panels for boats and houseboats, and the idea of putting solar panels on boat decks grew out of that.

## Caudwell and ZF form technical partnership

UK propulsion specialist Caudwell Marine has teamed up with ZF, the German engineering firm, to enhance the performance and capabilities of its new 300hp, V6 diesel outboard engine.

As part of the technical partnership, ZF has developed a twin-clutch transmission system that seamlessly integrates with Caudwell's purpose-built, turbo-charged V6 diesel powerhead and axis-drive steering system with dual propellers.

The agreement extends even further with active involvement in the assembly of Caudwell Marine's lower unit. Whilst the lower unit is Caudwell's own design, with related IP, the connection leverages ZF's vast experience in precision manufacturing.

"We have been thrilled to embark on this technical partnership with ZF. Initial design and development discussions started some years ago and our relationship has grown and grown as we now reach the point of series product units," said Peter Ordway, commercial director at Caudwell Marine.



# Tritex NDT Multiple Echo Ultrasonic Thickness Gauges



*The Drone Thickness Gauge*  
MultigaUGE 6000



*The Underwater Thickness Gauge*  
MultigaUGE 3000



*The ROV Thickness Gauge*  
MultigaUGE 4000



*The Surveyors Thickness Gauge*  
MultigaUGE 5650

Tritex NDT specialize in the manufacture and supply of Multiple Echo Ultrasonic Metal Thickness Gauges, used for verifying corrosion levels and measuring metal thickness from one side only, without removing any protective coatings. The MultigaUGE 5650 Surveyor Gauge can measure both metal and GRP, in one gauge, and also switch from Multiple Echo to Echo - Echo with the simple press of a button, using the same probe.

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# SAFETY Briefings

## Seadogz report: An accident waiting to happen is MAIB finding into fatal RIB crash

The Seadogz report into an accident on the morning of 22 August 2020 when the commercially operated rigid inflatable boat (RIB) crashed into a 4.5m high, 5-ton channel marker in Southampton Water at a speed of 38.4 knots has been published. The RIB's engine stopped abruptly and two of the passengers were catapulted overboard into the water, where their lifejackets inflated.

All eleven passengers and the skipper were treated in hospital, most for substantial impact injuries. One, a 15-year-old passenger, had sustained severe injuries when she was thrown against the handhold directly in front of the bench seat. She died in hospital that afternoon.

### Seadogz report safety issues

- The skipper did not see the buoy in sufficient time to take avoiding action. He had lost his positional awareness, most likely due to the high mental workload associated with operating at high-speed close to other marine assets.
- Seating and handholds afforded little protection to those on board in the event of a rapid deceleration.
- The RIB's operating company did not have a safety management system, and their risk assessments were cursory and generic.
- The regulations did not consider the intended operation or high-speed operations of a small commercial craft. Significant limitations were identified, including:
  - crash protection
  - seat design
  - forward visibility
  - safety management system requirements

### Seadogz report recommendations

- Recommendations (2023/120, 2023/121 and 2023/122) have been made to the Maritime and Coastguard Agency to: conduct an anthropometric assessment of the design and operational requirements for the protection of passengers and crew on small commercial



high-speed passenger craft; ensure the relevant outputs of the anthropometric assessment are, where appropriate, promulgated into guidance and incorporated as future requirements; and, to expedite the introduction of the Sport & Pleasure Vessel Code.

- The British Standards Institution has been recommended (2023/123) to propose to the International Organization for Standardization that ISO 11591 is revised to include a field of vision requirement from the steering position of small craft.
- A recommendation (2023/124) has been made to the British Ports Association, UK Harbour Masters' Association, and the UK Major Ports Group to contribute to the development of guidance on the oversight of small commercial high-speed passenger craft operations in port areas.
- Associated British Ports Southampton has been recommended (2023/125 and 2023/126) to ensure that its risk assessments consider the operation of small commercial high-speed craft within the port limits and agree the proper use of these craft with their operators.
- The RIB's manufacturer has been recommended (2023/127) to ensure that the design of the seats, handholds and restraints on its high-speed craft meet the latest relevant industry guidance and that the documentation provided to owners is accurate.

Download the report at <https://bit.ly/47B8dAt>.

## Lithium-ion battery safety: A series of fires on recreational vessels have been linked to lithium-ion battery powered devices

Lithium-ion battery safety is in the news again. Responding to this emerging safety issue for boat owners, Nautilus Marine Insurance has interviewed a panel of independent experts for an article within the latest issue of Nautilus Marine Magazine to share their technical advice.

Commenting on the lithium-ion battery safety initiative Lyndon Turner, CEO of Nautilus Marine Insurance and Publisher of Nautilus Marine Magazine, said that "Nautilus Marine Insurance sees the safety of boat owners as our number one priority. We recognise the desire of boat owners and those in the wider marine industry to learn more about the safety issues surrounding the use of lithium-ion batteries on board vessels. So, we saw it as a responsible initiative to interview a range of experts to share their technical advice around lithium-ion battery safe practices."

The resulting nine-page lithium-ion battery safety article features in the latest issue of Nautilus Marine Magazine. Those interviewed within Nautilus Marine Magazine include Dr Adam Best (CSIRO), Matt Ruwald (AllMarine Power Solutions), Michael Lieberman (Marine Surveyor and Loss Adjuster) and Warren Damm (Technical Sales Director at NAVICO).

The full article can be downloaded at <https://bit.ly/3tiM8sB>.

## REPORT bites

**The Maritime & Port Authority of Singapore set a new annual vessel arrival tonnage record of 3 billion gross tonnage (GT) in 2023.**

The Melksham, Chippenham & Calne branch of the Wilts & Berks Canal Trust has received the charity's annual Tony Davy Award, named in memory of its former chairman.

**Texas, US-based engine builder Caterpillar Inc recently celebrated the production of the company's 10,000th engine built on its C175 diesel platform.**

Canadian coffee roaster Café William revealed that its first cargo sailboat set sail from the port of Santa Marta in Colombia on December 18, bound for North America.

Crowley's eWolf, the first all-electric ship assist tug in the U.S., has commenced sea trials along the U.S. Gulf Coast, the company confirmed on social media.

**UK-based maritime design and applied technologies company Artemis Technologies has sold a 100% electric foiling workboat to Denmark.**

The Council Port Authority of Valencia has approved in an Extraordinary Board of Directors meeting the specifications that comprise the legal and economic criteria for the tender of the new terminal.

Brunswick Corporation has announced the completion of solar installations at three of its global facilities including its first project in Mexico.

The Scottish government has officially agreed to remove boat moorings and berthings from the scope of a new national visitor levy, unless the vessels are permanently moored and used for accommodation.

The WECHULL+ project has received a €2.5 million grant to develop new floating structures of high-performance concrete expected to reduce cost and CO2 footprint and improve circularity and reliability in the offshore renewable energy sector.

## Engine room flooding leads to sinking of fishing vessel



Uncontrolled flooding through a hole in the plating beneath the engine room of a fishing vessel led to its sinking in the Gulf of Mexico, the National Transportation Safety Board report has revealed.

The commercial fishing vessel Captain Alex was fishing offshore of Galveston, Texas on 25 November 2022, when the vessel began flooding. The four crewmembers on board were unable to stem the flooding and evacuated to a responding U.S. Coast Guard boat. The sinking resulted in an oil sheen and debris field; a reported 17,000 gallons of diesel fuel were on board. There were no injuries. The Captain Alex was a total loss valued at \$500,000.

The Coast Guard responded to the Captain Alex's call for assistance as the vessel was taking on water. The Coast Guard floated a dewatering pump to the Captain Alex's crew; however, the pump was not able to pull water and later broke. With the vessel continuing to take on water, the crew evacuated the vessel.

A post casualty exam of the vessel did not occur as the wreckage was not salvaged. The investigation was unable to obtain information about hull maintenance, and the last vessel survey noted that no recent hull gauging report or maintenance records were available. It is possible the hole was caused by the deterioration of the hull steel plating.

"Periodic out-of-water examinations by qualified individuals such as a marine inspectors or surveyors can help determine the material condition of the vessel's hull and identify areas of corrosion and fatigue," the report said. "For steel-hulled vessels, regular gauging of the hull using ultrasonic testing is an effective non-destructive testing method for identifying material deterioration of plating."

Download the report at <https://bit.ly/3vBLGX0>.





# SAFETY Briefings

## Three incidents caused by inadequately maintained electrical connections

BSEE (United States Bureau of Safety and Environmental Enforcement) has observed a recent trend of safety issues linked to inadequately maintained electrical connections that compromise wiring integrity.

This pattern has given rise to safety incidents, such as fires and arc flashes, underscoring the vital importance of averting these electrical hazards. Poor electrical connections pose a common and significant fire hazard, as they have the potential to generate substantial heat without significantly impeding electric current flow. This renders fuses and circuit breakers ineffective, allowing for escalation of the hazard. It is crucial to address these issues promptly and comprehensively to maintain a safe working environment.

### Incident 1: Generator Cable Melting



Fig 1 - Melted Cable Lug on Generator.



Fig 2 - #2 phase cable melted off lug connection.

This incident involved a complete power loss of a temporary generator within the production facility. Upon investigation, the platform electrician identified that the 480-volt alternating current (VAC) phase cable had melted off at the generator bus connection. This was attributed to a loose cable connection at the cable lug. In response to the situation, power was switched over to the platform's emergency generator. Fortunately, no injuries or damage beyond the wiring were reported. The root cause of the incident was traced back to the faulty cable connection at the cable lug, leading to excessive heat generation and subsequent cable melting.

### Incident 2: Smoke and Cable Break



Fig 3 - Damaged insulation on heat trace cable routed along the top of the inlet flange.

This incident unfolded during a routine nighttime equipment check at a production facility. Crew members detected smoke emerging from a gap in the insulation near the inlet flange on the second flanged section of a fuel gas line run. An electrician was alerted and was able to take immediate action by turning off the breaker in the junction box, which supplied power to the heat trace section, ensuring a termination of all power. To prevent smoldering, the crew soaked the insulation with water. Upon subsequent investigations, a break in the heat

trace cable insulation on the inlet flange of the gas volume bottle was found. The root cause of this incident was traced back to the failure of the breaker to terminate power to the heat trace, attributed to improper grounding. This failure resulted in excessive heat and smoldering of insulation.

### Incident 3: Arcing at generator junction box



Fig. 4 - Junction Box (400 Automatic Transfer Switch).

Personnel conducting daily checks during a rainstorm heard a sudden popping sound, which prompted immediate investigations and revealed wires arcing at the junction box (400 Automatic Transfer Switch (ATS); for the gas generator. Personnel promptly initiated an emergency shutdown for the gas generator, activating the emergency diesel generator to supply power to the facility. Personnel strictly followed Lockout/Tagout (LO/TO) procedures as part of the emergency shutdown protocol. All valves to vessels on the facility were isolated and stop work authority was invoked to ensure immediate safety.

Personnel discovered that the top cable on the ATS from the platform diesel generator lacked a traditional drip loop. This absence allowed rainwater to flow onto the live power cable below, leading to its failure. Although designed to withstand weather, the improperly installed cable, exposed to constant sun and rain without adequate protection, developed small fractures in its casing. Over an undetermined number of years, rainwater seeped into the cable, causing material fatigue, and ultimately resulting in the cable's failure during a thunderstorm.

In light of this recent trend, BSEE recommends, where appropriate, that operators and their contractors, consider the following:

- Implementing a routine inspection and maintenance schedule for cable connections to ensure secure and correct function.
- Ensuring that personnel involved in cable connections and maintenance receive proper training and understand the importance of secure and reliable connections.
- Communicating and rehearsing emergency response procedures, such as switching over to emergency generators, in case of power-related incidents.
- Reviewing and enhancing existing procedures for connecting and securing cables.
- Reviewing and reinforcing LO/TO procedures to ensure the safe and secure isolation of electrical components during maintenance and investigations.
- Conducting periodic thermographic inspections using a forward-looking infrared (FLIR) camera to identify any signs of overheating or loose connections.
- Utilizing locking type connections in areas where fouling of electrical lines due to water ingress is a risk.

## REPORT bites

**The Australian government is investing \$70 million in the development of a hydrogen hub in Bell Bay, Northern Tasmania.**

BlueNewables, a Spanish engineering consultancy supporting the marine energy sector, is moving forward with its floating solar demonstration project in Valencia.

**The first two electric tugs for SAAM Towage's fleet, built by the Turkish shipyard Sanmar, are ready to sail from the Port of Tuzla to Vancouver, Canada.**

Color Line's two passenger ferries, linking Denmark and Norway, have been fuelled exclusively with B100 biofuel, supplied and managed by marine fuel supplier Bunker One.

Damen Shipyards Group has been selected to build four new hybrid electric Island Class vessels for BC Ferries, enhancing capacity and passenger experience.

**Iliad Catamarans, an Australian builder of luxury long-range powercats, has unveiled its new flagship model, the Iliad 75 catamaran.**

DP World has announced plans to transfer its global headquarters to Expo City Dubai, as part of the company's transformation from a local port operator to a global supply chain solutions provider.

France's Port-Camargue marina has completed a project worth about €1m (US\$1.1m) to accommodate multihull craft, such as catamarans and trimarans.

Yamaha Motor has announced it's recently concluded a stock purchase agreement with Germany's DEUTZ AG, which owns marine electric propulsion manufacturer Torqeedo, to acquire all of Torqeedo's shares.

The Cruise Lines International Association (CLIA) has reported that Royal Caribbean Group President and CEO Jason Liberty has been appointed chairman by the CLIA board of directors. He succeeds Pierfrancesco Vago, executive chairman of MS.

Nova Scotia recycling facility R.J. MacIsaac Ltd. has won certification from Lloyd's Register classification society according to the requirements of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.

## Containership MSC Rita and fishing vessel collision report published



The National Transportation Safety Board (NTSB) has released its investigation report on the collision between containership MSC Rita and fishing vessel Tremont which happened on October 28, 2022.

On October 28, 2022, about 0036 local time, the containership MSC Rita and the fishing vessel Tremont were underway in the Atlantic Ocean, 55 miles southeast of Chincoteague, Virginia, when the two vessels collided. The 13 people aboard the Tremont abandoned the vessel and were rescued by Good Samaritan vessels and a US Coast Guard helicopter. No injuries were reported. An oil sheen was reported; a potential of up to 31,000 gallons of diesel fuel were lost with the fishing vessel. Damage to the vessels was estimated at \$4.75 million (Tremont) and \$1.5 million (MSC Rita).

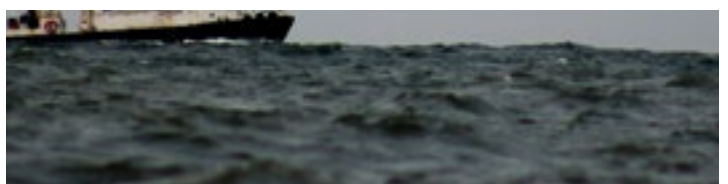
### Probable cause

The National Transportation Safety Board determines that the probable cause of the collision between the containership MSC Rita and the fishing vessel Tremont was the Tremont mate not maintaining a proper lookout and keeping the autopilot engaged while troubleshooting the vessel's gyrocompass, which resulted in the vessel turning into the path of the MSC Rita.

### Lessons learned

Conducting maintenance on critical equipment while underway In this casualty, maintenance of the gyrocompass was being conducted while the vessel was underway with its autopilot, which was receiving heading information from the gyrocompass, engaged. Simultaneous operations, often referred to in safety management systems, is a situation where two or more operations occur in the same place at the same time and may interfere with each other. Managing simultaneous operations is an essential element of safety management and safe vessel operation. Before beginning work, mariners should identify hazards associated with working on one piece of equipment that may affect another, such as sensors feeding information to other equipment, and manage those risks to avoid unsafe conditions.

Download the report at <https://bit.ly/4b10Vc5>.





## Crude tanker S-Trust fire caused by lithium-ion battery is finding

The National Transportation Safety Board (NTSB) has released an investigation report into the blaze on the bridge of the crude tanker S-Trust. On 13 November 2022, a fire started on the bridge of the crude tanker S-Trust while the vessel was docked at the Genesis Port Allen Terminal in Baton Rouge, Louisiana. Fire teams from the vessel's crew extinguished the fire. There were no injuries and no pollution was reported. The damage to the vessel was estimated at \$3 million.

The S-Trust was a Liberian-flagged, 800-foot-long, steel-hulled liquid bulk cargo vessel. The vessel was built in 2005 and had a cargo capacity of 741,732 barrels. The vessel's superstructure contained living quarters, the galley, a ship's office, the cargo control room, and the bridge; it consisted of five decks: the main deck, A deck, B deck, C deck, and the bridge deck.

Investigators found the remains of three batteries (one nickel-metal hydride and two lithium-ion) on the communications table. The single nickel-metal hydride battery (all of its six cells) was intact; one of the lithium-ion batteries (both cells) was found intact in the remains of the chargers (one nickel-metal hydride charger and one lithium-ion charger). Investigators only found components of the second lithium-ion battery (a two-cell battery). Lithium-ion battery cell explosions are typically caused by a thermal runaway; as such, the initial orange flash and puff of smoke on the video feed was likely the result of one of the missing lithium-ion cells exploding due to a thermal runaway. The heat produced from a thermal runaway of a lithium-ion battery cell can exceed 1,100° F, which can easily cause any nearby combustible material to ignite, including adjoining cells of the same battery. As the fire expanded, the closed-circuit video captured a second flash, followed by a flaming object being propelled from the fire and landing on the deck of the bridge, where it continued to burn. This was most likely the other missing lithium-ion cell from the same battery. Based on the video, investigators determined that the second missing lithium-ion cell also experienced a thermal runaway, most likely initiated from the heat of the fire started by the initial battery cell thermal runaway.

A thermal runaway occurs when a cell overheats and combusts; it is a chemical reaction that can occur to any type of battery cell if it is damaged, shorted, overheated, defective, or overcharged. It is possible, based on the battery remains' location among the charger remains, that one of the batteries had been left in the charger, which could have led to overcharging. However, a crewmember told investigators that the batteries were not in the chargers before the fire. Further, investigators were not able to find the missing cells, and, due to the explosion, the extensive heat from the thermal runaway reaction, and subsequent fire on the bridge, the battery cells may have been completely consumed. Therefore, investigators could not examine the first cell that exploded to determine the exact cause of the initial thermal runaway.

The National Transportation Safety Board determines that the probable cause of the fire on the bridge of the S-Trust was the thermal runaway of one of the cells in a lithium-ion battery for a UHF handheld radio.

### Lessons Learned

#### Lithium-ion Battery Fires

A lithium-ion battery cell, if damaged, shorted, overheated, defective, or overcharged, can spontaneously experience a thermal runaway which is a chemical reaction that can cause the cell to ignite and explode. A cell that has exploded can be propelled from its initial position within a battery. Due to the potential for rapid expansion of a lithium-ion battery fire, detection, containment, and extinguishment are essential to prevent damage to a vessel.

Crews can help prevent thermal runaways and ensuing fires by doing the following:

- follow manufacturers' instructions for the care and maintenance of lithium-ion batteries,
- properly dispose of damaged batteries,
- avoid unsupervised charging, and
- keep batteries and chargers away from heat sources and flammable materials.

Additionally, companies should ensure that lithium-ion batteries and devices that use lithium-ion batteries are certified by an Underwriter's Laboratory or another recognized organization. Should a lithium-ion battery fire occur, crews can attempt to extinguish the fire with water, foam, CO<sub>2</sub>, or other dry chemical or powdered agents. However, if the battery fire cannot be extinguished, personnel should attempt to allow the pack to burn in a controlled manner; this includes watching for nearby cells that may also experience thermal runaway and extinguishing other combustibles that may catch on fire.



Download the report at <https://bit.ly/3utRpgT>.

## REPORT bites

**The production of the third Icon-class ship for Royal Caribbean Group has started at Finnish Meyer Turku Shipyard.**

Italian shipbuilder Fincantieri has secured a "green" loan totalling €415 million intended for the construction of 'low-carbon' cruise ship Mein Schiff Relax.

**Plans for the €200m development of the Ermioni club in Porto Heli, a small Greek seaside town on the eastern side of the Peloponnese, have been published.**

Product tanker recycling activity dropped to its lowest level on record in 2023, partly due to strong earnings, second-hand values and a reduction in newbuilding deliveries.

Scott Bader UK, the Northamptonshire-based composites specialist, has announced its intent to invest £30m to transform its flagship UK manufacturing site.

**Axopar x Agapi Boat Club says its first joint membership club will be opening in 2024 as it rapidly expands to new locations worldwide.**

Swedish ferry company Stena Line has marked a milestone on its journey towards sustainable shipping with the steel-cutting ceremony for the first of its methanol-ready 'NewMax' hybrid ferries.

Saudi mega-development Neom has revealed details the Norlana town which will be wrapped around a marina on the Gulf of Aqaba report Dezeen.

The government of Quebec, Canada is getting behind Vision Marine Technology to the tune of up to US\$3m, in the form of a subscription to preferred shares for the electric outboard propulsion system manufacturer.

Lerwick Harbour, situated at the crossroads of the North Sea and North-east Atlantic, has been tasked with servicing Equinor's first development phase of a controversial oil and gas field located on the UK Continental Shelf.

## Engine room flooding leads to sinking of fishing vessel



An electric arc from a severed extension cable was the probable cause of a fire on bulk carrier Almirante Storni (IMO 9497452) on December 4th 2021, a Swedish State Accident Commission has concluded. The fire started in the timber cargo when the vessel was off Gothenburg. Only after the arrival in the Port of Gothenburg on December 11th 2021 could the fire finally be extinguished.

The National Accident Commission (SHK) has released its report on the fire. The conclusions were based on a fire scene investigation carried out during the unloading in Skandiahamnen. During the investigation a severed extension cable was found which was likely the remains of a cable that was used for lighting when the ship loaded in Orrskär. When the ship departed, the extension cable was cut off and left.

The SHK assessed that the probable cause of the fire was that an arc in the extension cable ignited the timber load. The way in which the timber packages were loaded also meant that the fire could quickly increase in intensity and spread. The report found that the handling of the ship fire was carried out largely in an efficient way, given the prevailing conditions. No people were injured and no hazardous substances were released. However, there was damage to the ship as a result of the extinguishing.

2012-built, Liberia-flagged, 19,994 gt Almirante Storni is owned by Pucon Schifffahrtsgesellschaft care of manager NSC Schifffahrtsgesellschaft of Hamburg, Germany. ISM manager is NSC Shipping GmbH of Hamburg, Germany. It is entered with North of England Club on behalf of MS "PUCON" Schifffahrtsgesellschaft mbH & Co KG.

## MV Mona fire: Transport Malta issues the report

Transport Malta has published an investigation report about an incident that took place on 14 September 2022. The vessel MV Mona was transiting the Aegean Sea, en route to a dry dock in Tuzla, Türkiye, when a fire broke out in the engine-room. Flames were observed rising above the main engine's cylinder unit no. 2.

The voyage had been uneventful until around 1715 when, during routine rounds in the engine-room, the second engineer noticed a fuel oil leak from a slot in the fuel distributor housing of the main engine's cylinder no. 2.



# SAFETY Briefings



As his attempts to arrest the leak by further tightening the bolt of the housing with a spanner were unsuccessful, he used a pipe for added leverage on the spanner to tighten the bolt even further. Observing that the leak had now stopped, the second engineer wiped off the spilled oil that had collected below and left the engine-room. He proceeded to the ECR to switch the engine-room to UMS mode and then to inform the chief engineer about the leak during dinner time in the mess room.

At 1730, however, just as the second engineer arrived in the ECR, the fire alarm activated for the engine-room. At about this time, the second engineer also observed a low-pressure alarm for the main engine's cylinder unit no. 2, on the ECR control panel. Opening the door to the engine-room, he saw high flames and dense smoke rising from cylinder unit no. 2. He shut the door and ran back to the ECR, while raising a verbal alarm on the fire.

## Cause of the fire on board MV Mona

Based on the crew members' narratives and the observed fire pattern, the safety investigation concluded that the fire was caused by a spray of fuel oil from the region of the main engine's cylinder units nos. 1 to 3 onto hot surfaces in the vicinity.

As mentioned earlier in this safety investigation report, the main engine's manual specified a torque of 130 Nm for the tightening of the housing bolts. The second engineer had used a spanner with a pipe for extra leverage to tighten the bolt from where he observed an oil leak. He had no indication as to the torque being applied to further tighten the bolt.

Although the damaged threads of the bolt suggested failure due to over tightening, the safety investigation requested the Company to provide it with the broken bolt for the purposes of laboratory tests. These tests would have assisted the safety investigation to determine the cause(s) for the breakage of the bolt. However, the Company advised the MSIU that the broken bolt was held by the vessel's insurers and was therefore unavailable.

The denied access to the broken bolt not only has compromised a detailed analysis of the failure mechanism of the bolt but prohibited it altogether. To this effect, the MSIU was unable to contribute towards a technical analysis and therefore on how the repeat of such an accident can be prevented.

In view of the above, the safety investigation can only suggest that the applied extra torque may have exceeded that specified in the manual and resulted in the failure of the bolt.

## Fishing vessel FREYJA: Report released by BSU after fire in engine compartment

The German Bureau of Maritime Casualty Investigation (BSU) has published an accident report following a fire that broke out in the engine compartment of the German fishing vessel FREYJA on the evening of 17 September 2021.

The fire on board the fishing vessel FREYJA resulted in the destruction of most of the boat. The fire-induced foundering of the vessel made it impossible to identify usable evidence of the cause of the fire or the exact starting point of its development during the investigation of the wrecked parts. The statements of the crew merely permit the conclusion that the fire broke out inside the engine compartment. Possible causes include battery problems (excessive release of explosive oxyhydrogen gas into the atmosphere of the warm and poorly ventilated engine compartment), contact of lubricant or fuel with hot surfaces, defective insulation of heat-conducting engine components or even a short circuit in the electrical cabling.

In particular, the fact that cabling, conventionally encased in plastic, ran inside the bilge of the fishing vessel with no special additional protection was a risk factor. The insulation of the cables in the bilge was naturally exposed to the chemical influences of the oil and water mixture found there. In this respect, it cannot be ruled out that there has been an undetected degradation of the layers of insulation over the years, subsequently leading to a short circuit that caused the fire.



## Conclusions

During the investigation into the very serious marine casualty involving the fishing vessel FREYJA, it was not possible to determine the cause of the fire. Nevertheless, important findings were made or those from previous investigations confirmed, which can serve as a basis for safety recommendations.

## Fire protection/firefighting – survey procedures of BG Verkehr (DS)

It is generally known that in addition to the improper execution of welding operations and self-ignition of cargo, technical faults in electrical systems or cabling, battery problems and self-ignition of propellants or lubricants due to contact with hot surfaces are all possible causes of fire on board a ship. In addition to the requisite special care during periodic inspections, maintenance and competent repair of hazardous systems and equipment on board, the survey procedures of BG Verkehr (DS) play a central role, especially with regard to the safety of fishing vessels.

Over the course of their service life, which often spans many decades, some of these vessels have undergone various changes of ownership. Accordingly, but also because of changing regulations and standards, various structural changes and technical modifications are inevitably made on fishing vessels over the years. Past investigations of the BSU have repeatedly confirmed that these have unfortunately not always been carried out with the necessary care and expertise. Moreover, it is not always possible to readily identify any technical deficiencies or their wear-induced development on a ship.

## Performing surveys on and issuing safety certificates for coastal fishing vessels of less than 24 metres in length

During the (periodical) surveys of the ship's safety installations and equipment, surveyors from the BG Verkehr (DS) should pay particular attention to the fire hazard posed by technical installations. The same applies to the existence and proper state of operation and maintenance of portable and permanently installed fire extinguishing equipment. If deficiencies are identified, the safety certificate should initially be issued only on a provisional and temporary basis. The safety certificate should not be allowed to have its full official effect up to the normal expiry date until it is demonstrated (by follow-up survey or the provision of other supporting documents) that all safety-related deficiencies have been rectified within the time limit.

Download the report at <https://bit.ly/3T6rjLd>.

## Accidental discharge of condensed aerosol fire-extinguishing system on beam trawler Resurgam report issued

On 15 November 2019, an apprentice engineer died when a FirePro condensed aerosol fire-extinguishing system was inadvertently activated in the engine room of the fishing vessel Resurgam (PZ1001) as it was being installed. The apprentice engineer together with a shore engineer and two installation technicians were working in the engine room when the system activated, filling the engine room with the fire-extinguishing aerosol.

### Safety issues

- The fire-extinguishing aerosol was hazardous to health when inhaled in significant quantities and these hazards were not identified in the manufacturer's safety related information
- The installation of the fire-extinguishing system had not been properly planned or risk mitigation measures put in place to protect people working in the space
- There was ineffective oversight at both the system design and installation stages and no standards for marine installers: this contrasted with the framework for land-based installations of the same product

### Recommendations

- The Maritime and Coastguard Agency has been recommended (2023/116) to take steps to improve fire-extinguishing system installation standards.
- FirePro has been recommended (2023/117 and 2023/118) to undertake a specific risk assessment for the installation and operation of each of its fire-extinguishing systems; and, to review its safety-related documentation and incorporate all of the system's hazards, specifically carbon monoxide production.
- The owner of Resurgam has been recommended (2023/119) to revise its safety management system to ensure that personnel safety measures are in place.



Download the MAIB pdf report at <https://bit.ly/3Sa24FY>.



## AMSA publishes a safety alert and investigation recommendations into fatal Conception dive boat fire

*Photo credit: Ventura County Fire Department*

The Australian Maritime Safety Authority (AMSA) has issued a safety alert to provide guidance to operators of domestic commercial vessels (DCVs) on risks associated with safety management systems inadequately considering electrical systems and other potential fire hazards.

This safety alert aims to raise awareness of recommendations made by the United States National Transportation Safety Board (NTSB), following the investigation into the fire that resulted in 34 fatalities and subsequent loss of the passenger vessel Conception.

While this incident did not occur in Australia or on an Australian vessel, the findings of the NTSB investigation provide a useful reminder to local industry on the importance of having an effective safety management system (SMS) in place.

### The incident

Conception was a 22.8-metre, United States-flagged passenger vessel that caught fire in the early hours (local time) of September 2, 2019, off Santa Cruz Island, California. Of the 39 people on board, all 33 passengers and one crewmember perished in the incident. Five crewmembers were asleep in the crew berthing area on the upper deck. One crewmember and the 33 passengers were asleep in the bunkroom below the main deck. A crewmember on the upper deck was awakened by a noise and realised that fire was rising from the salon compartment directly below. The four other crewmembers sleeping on the upper deck, including the master, were immediately alerted to respond. The crewmembers attempted to access the salon to assist those in the bunkroom, but access was blocked by fire and smoke. In response to a distress message sent by the master, the US Coast Guard and other first responder vessels arrived on scene within 90 minutes. Despite firefighting and search and rescue efforts, the vessel burned to the waterline and sank just after daybreak with 34 souls still on board.

### Findings

The NTSB report drew a large number of findings, the following of which are considered worthy of note by those operating passenger vessels in Australia:

- The most likely ignition sources were the electrical distribution system of the vessel, unattended batteries being charged, improperly discarded smoking materials, or another undetermined ignition source.
- Evidence indicated that the overnight, unattended charging of a large number of batteries was normal practice in the salon compartment. This risk had not been considered.
- A primary contributory factor was failure by Conception's operator to provide effective oversight of its vessels' operations, which jeopardised the safety of crewmembers and passengers. This included the absence of an overnight roving patrol and lack of smoke detectors in the salon, which allowed the fire to grow undetected, precluded firefighting and evacuation efforts, and directly led to the high number of fatalities.
- Conception's emergency escape arrangements were inadequate because both means of escape led to the same space, which was obstructed by a well-developed fire, and the escape hatch was located directly above the bunks.



- The analysis section of the report noted that since the salon compartment was a critical element in the egress pathway from the passenger bunkroom, prudent fire safety planning should have minimised risky activities (unattended charging of batteries) and materials, such as the plastic chairs and polyethylene trash cans that could contribute to a fire, in this area. Each device and battery represented a separate potential source of ignition.

The master of Conception was later convicted by a US attorney's office of criminal negligence in connection with the deaths of the 34 people aboard the vessel.

### Reminders

- Review the risk assessment for your operation regularly and ensure fire risks are adequately considered. Update your SMS as required.
- The SMS should include fire safety briefings to passengers at the start of the voyage and regular fire drills with the crew.
- Ensure that the SMS is effectively implemented and followed at all times.
- Ensure you have in place sufficient watch arrangements on your vessel, including the use of a roving patrol during sleep periods.
- Consider emergency escape options for your vessel, including a secondary means of escape into a different space than the primary exit.
- Ensure that smoke and fire detection systems on your vessel are compliant, allow for proper coverage and ensure they are regularly tested and properly maintained.
- Consider interconnected smoke and fire alarms to allow for early detection.
- Consider installing Carbon Monoxide monitors in below-deck areas containing passenger spaces.
- Consider engaging a marine electrician to verify whether there are limitations on your vessel's electrical system restricting the simultaneous use of appliances such as air conditioning, battery chargers, water heaters, galley appliances and electronics.
- Consider engaging a marine electrician to conduct inspection and resistance testing of the vessel's electrical cabling and connections as part of the ongoing maintenance plan for the vessel.
- Develop a procedure for charging electronic devices away from flammable items and in a controlled location/container.
- Lithium Ion battery installations should meet manufacturers' requirements and Australian/New Zealand Standard 3004 (Electrical installations – Marinas and pleasure craft at low voltage).

## MARINE SURVEY COMPANY FOR SALE

The business is based in Palma de Mallorca and has been established for more than 35 years, making it possibly the oldest in Spain. The office is central within this busy yachting hub. The company's core business is surveying private yachts both power and sail, with jobs undertaken worldwide. Extensive documentation and reference material, including all necessary surveying documentation are included with the sale.

The company has an exemplary reputation with a very strong client base which includes Spanish, French and British insurance companies.

The company is fully capable of expansion dependent on the input and resources of the new owner(s).

The sellers envisage a handover period to be mutually agreed.

For further information please contact in confidence by email: [murkybilge@gmail.com](mailto:murkybilge@gmail.com)



## Capt Purnendu Shorey obituary

***A short obituary by Mike Schwarz following the recent announcement of the death of Capt Purnendu Shorey.***

Losing a member of the IIMS family is always a sad occasion, even more so when one has got to know that person over time. So, it is with sadness that I inform you of the passing of Capt Purnendu Shorey MIIMS, who has been taken far too young following a long illness. An active member of the IIMS India Branch Committee, I met Purnendu in Mumbai a couple of times. He was a charismatic man and struck me as something of a 'mover and shaker' locally. As well as being an experienced Master Mariner with over 30 years of maritime industry experience, Purnendu was the co-founder of the Offing Group. He was also a noted motivational speaker and had a zest for life. On behalf of IIMS members in India, I am sure I can say that he will be sorely missed. Additionally, I would like to send my condolences to his widow, children, family, friends and colleagues.





## IIMS CPD year ends this month...

March 31st 2024 formally marks the end of the 2023 CPD (Continuing Professional Development) year. Claims may be made up to and including that date using the smart CPD App.

In February 2017, the Institute launched a bespoke App specifically designed to help members with the burden of maintaining their Continuing Professional Development (CPD) points in a simple, yet efficient fashion. In June 2017, version two was launched with some aesthetic improvements.

### Why is CPD essential in the modern world?

CPD is how professionals in all industry sectors maintain and evolve their skills, knowledge, experience and understanding - and marine surveyors are no different. Ideally, CPD requires individuals to consciously and proactively do, track, document and reflect on activities that make them better at what they do, in this case marine surveying.

CPD professional development is important for individuals because it keeps their thinking fresh, their skills relevant and their motivation high. Some of the benefits of CPD include:

- Opportunities for upskilling training
- A desire and willingness to show commitment to self-development and professionalism
- Keeping up to date (avoid becoming obsolete in a rapidly changing world) – so a better client service can be provided and keep your hand in, especially with skills you may not have used for a while
- Enhancing your skillset and abilities
- Avoiding skills gaps appearing
- Advancing the body of knowledge within your profession
- Helping to prevent you from becoming complacent and jaded with your work thanks to an influx of new knowledge and ideas



Since the launch of the App, the volume of claims has grown significantly as more and more members realise the importance of documenting their career progression and achievements. As the Institute has never mandated CPD, the decision was taken to reward those who successfully complete the accumulation of 15 points each year. The reward comes in the form of an eye-catching CPD compliant roundel which is applied to a member's individual listing on the website and Marine Surveying Search App to tell the world that he/she is CPD compliant.

Each individual claim is validated by a member of the head office team before authorisation is granted to ensure it meets the requirements of the scheme. The App allows for documents and evidence to be uploaded. The CPD points table can be viewed at <https://bit.ly/34tVp4j>.

All claims require evidence. Sometimes that is not forthcoming which means a claim will be denied pending the necessary evidence being supplied. It is a robust process.

As Capt Chris Kelly, Chairman of the IIMS Professional Assessment Committee, said, "Gaining CPD points is not difficult and there are many avenues a surveyor can choose to explore to expand their surveying expertise; perhaps the difficulty for some comes in actually documenting it and keeping accurate records. CPD is not about doing your day job, it is about the new knowledge and skills you can acquire each and every year to make you more professional and

the day job easier. The old adage that we are never too old to learn still rings true."

If you are not familiar with the App and CPD process, first you need to be able to access or download the free CPD App. Android users who wish to download the App need to go to the Google Play Store and in the search box type IIMS CPD. The App has the IIMS logo, so will not be hard to identify. Click on INSTALL. Once installed, open the App. Log in using your IIMS credentials. Once logged in, click on the ellipses icon on top right, and select "Help". This will redirect you to a HELP page. Read the document once and using the App should be self-explanatory. If you still need more help, please email IIMS for assistance.

IOS users who wish to download the App, need to go to "App Store", click on the "Search" icon and in the search box type IIMS CPD. The app has the IIMS logo, so will not be hard to identify. Click on GET and then INSTALL. Once installed, open the App. Log in using your IIMS credentials. Once logged in, click on the ellipses icon on top right, and select "Help". This will redirect you to a HELP page. Read the document once and using the app should be straightforward.

For those who are traditional internet website users and prefer to use this version, the login panel can be found by clicking a link "My CPD Program" on the IIMS membership details page.

If you get stuck, please email Rosie Webb at IIMS HQ on [infor@iims.org.uk](mailto:infor@iims.org.uk) and she will be able to help and advise you.

Once active, a members can check their CPD account themselves to see that the points have been allocated and added successfully. There is no limit to the number of points a member can claim in a year, but only 3 CPD points can be carried forward to the following year, which the App will automatically do.

## Upcoming IIMS training events

Over the years, IIMS has put together some first-class training events, seminars and workshops around the world and this year is no different. The Head Office team has worked tirelessly to put together education programmes that review old technology as well as giving a glimpse into some of the new emerging technologies that are going to impact a surveyor's life in the coming years.

You do not have to be an IIMS member to join one of the seminars – all are welcome and many of the events are hybrid, meaning the option to join online is possible. More often than not, videos are made of the presentations, and these are included in the cost of the event to be watched on catch up at a later date.

### Ireland Small Craft Working Group 13/14 March 2024

IIMS looks forward to hosting this practical and theory training event face-to-face at Howth Yacht Club near Dublin.

The first day is very much about surveyors' tools with some hands-on engagement as we go into the marina armed with moisture meters and ultrasonic thickness gauges. On the second day there are presentations on sailboat rigging on yachts and a look at some of the common fibres in use for cruising and racing ropes. Karen Brain will put the topic of marine insurance under the microscope and Geoff Waddington and Mike Schwarz will talk about report writing techniques.

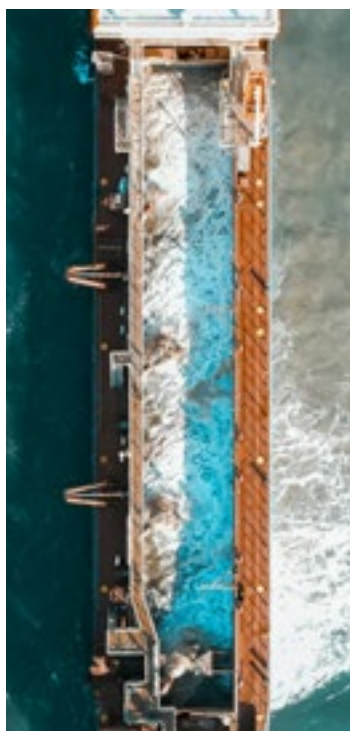
For more information and to book your place go to <https://bit.ly/41NUNjn>.

### IIMS Canada Branch AGM & Seminar 16 March 2024

You are invited to attend the one day IIMS Canada Branch AGM 2024 and workshop training seminar on 16 March 2024. The event is hybrid, so if you cannot join in person, you can join via Zoom. The venue is the Holiday Inn at Elk Lake, 4670 Elk Lake Drive, Victoria, BC, V8Z 5M1.

After the AGM, there is an update on regulation changes from Transport Canada, followed by presentations on keel repairs and green technology trends in the marine industry.

For more details about the event go to <https://bit.ly/3T2yIA9>.





## Upcoming IIMS training events

### Yacht & Small Craft Spring Training Day 19 March 2024

An essential one day training event for yacht and small craft marine surveyors, the venue is the Axis Conference Centre in Southampton UK, but the event is being broadcast live for the benefit of surveyors not just in the UK, but in Europe and further afield too.

The event covers a wide range of topics including fixed fire suppression and fire detection systems, an overview of stainless steel wire standing rigging and its lifetime expectancy, rigging issues linked with overloading boats for blue water cruising and an introduction to and live demonstration of thermal imaging cameras (thermography) and how this technology can assist and support the work of a marine surveyor.

Full details about the programme and how to book your place are at <https://bit.ly/48kAJqA>.



### IIMS Baltimore Conference 12-13 April 2024

Once again, the Institute is heading back to the MITAGS facility for what has become a popular two day event being held in-person and broadcast online to make attendance for those in more distant parts of the United States possible.

Thanks to James Renn and Ray Bracken who are finalising the programme details at the time of writing.

More information about the programme can be viewed at <https://bit.ly/3wnrUPq>.



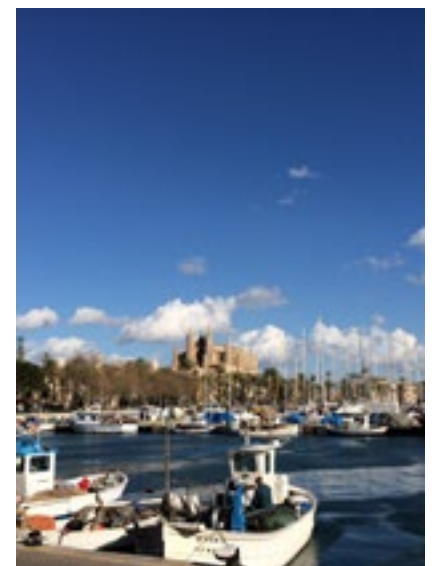
### Western Mediterranean Small Craft Working Group Palma 25-26 April 2024

You are invited to join the team at the popular annual two-day Western Mediterranean yacht and small craft working group training event being held in Palma Port, Mallorca.

As well as two days of networking and quality training from some real industry experts and heavyweights, delegates will receive a free VIP pass to the Palma International Boat Show which is taking place that weekend.

Subject to be tackled include Post Construction Assessment, developments and implications of the Directive and the implications of Brexit, stray currents in marinas and galvanic corrosion, Load Line Length clarification and an important update on lithium-ion battery technology and what we have learned.

Full programme details and how to book your place are at <https://bit.ly/4bIWV0j>.



## IIMS 2024 Annual General Meeting, Dinner and one-day Conference

The Institute is pleased to announce that its AGM will be held on Tuesday 4th June 2024 commencing at 14.30. IIMS is returning to the well-equipped Axis Conference Centre, Chilworth, Southampton which offers first class facilities for in-person delegates. The AGM will also be broadcast live from the venue to ensure that members can join remotely via a Zoom link.

At this year's Conference, the IIMS presidency will formally pass from Peter Broad to Capt Ruchin Dayal, who will take up the term for two years.

Certain grades of membership will be entitled to vote. Please keep an eye out for electronic notification nearer the date of the matters requiring your vote.

A pre-conference IIMS dinner will be held at Chilworth Manor, adjacent to the conference venue on the evening of Tuesday 4th June. More details to follow soon.

The following day, Wednesday 5th June, IIMS is presenting a full day of presentations for both in-person and online delegates via Zoom. The morning plenary

session has relevance for surveyors from all aspects of the marine surveying profession. After lunch, the room will divide in two. For small craft surveyors we have three presentations and the same for commercial ship surveyors.

To whet your appetite for this event, some of the topics we plan to cover include a look at the pitfalls of tick box surveys, an introduction to the amended Large Yacht Code by the Cayman Registry, the benefits of using shearography technology and a live interview with the remarkable Ian Nicolson.

Watch this space for more details coming soon.





## Recent new IIMS members and upgrades

### Full members

Bunker Hill	MIIMS	USA
Charles Mawer	MIIMS	UK
Diptiman Guha	MIIMS	Dubai
Sebastian Zumbo	MIIMS	UK
Stephen Bates	MIIMS	New Zealand
Timothy Idiaghe	MIIMS	Nigeria

### Associate members

Fergus O'Kelly	AssocIIMS	Ireland
Frank Messana	AssocIIMS	USA
Mike Harris	AssocIIMS	Guernsey
Ross Keeble	AssocIIMS	USA
Wisdom Aguomba	AssocIIMS	Nigeria

### Affiliate members

Alp Bugra Sengul	AffiliIIMS	Turkey
Andrew Middleton	AffiliIIMS	UK
Domagoj Vakante	AffiliIIMS	Croatia
Emiliano Parenti	AffiliIIMS	Italy
Robert Burton	AffiliIIMS	UK
Steve Malone	AffiliIIMS	Ireland

### Technician members

Simone D'Antoni	TechIIMS	Italy
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### Graduate members

Peter Langmead	GradIIMS	Zambia
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*IIMS congratulates Peter Langmead for completing his studies in the IIMS Advanced Professional Qualification in Marine Surveying.*

## Are your membership fees still outstanding?

Thanks to the vast majority of members who have paid their fees in a prompt fashion. But if you have forgotten or have overlooked to pay, please be reminded that your membership will be suspended from 1st April 2024. In the event that happens, your listing and profile will be hidden on the website and on the Marine Surveyor Search App.

If you need help paying your membership fee, or have mislaid your invoice, or simply have a query please email Jen Argent at [accounts@iims.org.uk](mailto:accounts@iims.org.uk).

## New digital membership cards phased in

At the start of the 2024 membership year, IIMS made the decision to withdraw the general production of hard plastic membership cards in an attempt to reduce its carbon footprint. This has proved to be a successful initiative with positive results. The new digital format provides the same information as before and has been welcomed by many, but not by all.

However, the Institute is still quite happy to provide a plastic card on demand at no additional charge and so far, has fulfilled about 100 requests this year.

If a plastic membership identity card is still required, please let head office know.

## Upgrading membership

As part of your career progression, have you thought about upgrading your membership? This applies especially to graduate and affiliate members. Moving up the membership hierarchy brings additional benefits.

For more information see <https://bit.ly/3wjRAZ3> or to have an informal discussion about upgrading your membership, email Camella Robertson at [membership@iims.org.uk](mailto:membership@iims.org.uk).

## Check your online presence

What IIMS says publicly about you on your profile is important and it is essential to keep it up to date. For example, do we show the best telephone number? Perhaps you have recently moved or changed email provider and have not notified us. If that is the case, you may be missing important information about your membership and upcoming events. Perhaps you are moving into a new area of surveying and need to update your specialisations and competency list, or even delete some services you no longer provide. We are here to assist you.

Please take a moment to review your listing and personal contact details. If you need to amend anything, please email Rosie Webb on [info@iims.org.uk](mailto:info@iims.org.uk) and she will take care of it for you.

## REGULATIONS

### Amendments to shipping regulations

This article offers information and an overview about various amendments which have either just become regulations, or which will do so later this year.

#### **IMSBC Code - December 2023**

*Adopted by MSC 105.*

Updates to the International Maritime Solid Bulk Cargoes (IMSBC) Code, to include new definitions (including an updated definition for group A cargoes), references and requirements for cargoes which may undergo dynamic separation. Section 7 will be amended to cover cargoes that may liquefy or undergo dynamic separation.

#### **SOLAS Chapter IV amendments - January 2024**

*Modernisation of the Global Maritime Distress and Safety System (GMDSS). Adopted by MSC 105.*

The Global Maritime Distress and Safety System (GMDSS), adopted in 1988, has been subject to review and modernisation with the aim to adapt to modern communication systems and remove carriage requirements for obsolete systems. MSC 105 adopted SOLAS amendments to modernize the GMDSS requirements, as well as consequential amendments to the High-Speed Craft (HSC), Special Purpose Ships (SPS) and Mobile Offshore Drilling Units (MODU) Codes.

#### **SOLAS records of equipment, FSS code, IGF code and LSA code - January 2024**

*Adopted by MSC 101.*

Amendments to the appendix to the annex to the 1974 SOLAS, concerning the addition of a footnote to Forms C, E and P in the Records of Equipment. Amendments to chapter 15 of the

International Code for Fire Safety Systems (FSS Code), relating to inert gas systems.

Amendments to parts A and A-1 of the International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (IGF Code), including those relating to regulations on loading limit for liquefied gas fuel tanks, regulations for fuel distribution outside of machinery space, regulations for internal combustion engines of piston type and fire protection for fuel storage hold space; and amendments relating to the protection of the fuel supply for liquefied gas fuel tanks, aimed at preventing explosions.

Amendments to chapters IV and VI of the International Life-Saving Appliance Code (LSA Code), relating to general requirements for lifeboats and launching and embarkation appliances.

#### **SOLAS Chapter II-1 - Towing and mooring equipment - January 2024**

*Adopted by MSC 102.*

Amendments to chapter II-1 of the International Convention for the Safety of Life at Sea (SOLAS) related to towing and mooring. The amendments to SOLAS regulation II-1/3-8 (Towing and mooring equipment), require appropriate and safe-to-use designs of mooring arrangements, and introduce a maintenance and inspection regime, as well as proper documentation.

Related guidelines were also adopted, covering the design of mooring arrangements and the selection of appropriate mooring equipment and fittings for safe mooring; and inspection and maintenance of mooring equipment including lines; as well as revised guidance on shipboard towing and mooring equipment. Amendments to parts B-1, B-2

and B-4 of SOLAS chapter II-1 related to watertight integrity requirements.

#### **SOLAS Chapter II-1 - Water level detectors on multiple hold cargo ships other than bulk carriers and tankers - January 2024**

*Adopted by MSC 103.*

New SOLAS regulation II-1/25-1 requiring water level detectors on multiple hold cargo ships other than bulk carriers and tankers.

#### **SOLAS Chapter III - Survival craft embarkation and launching arrangements - January 2024**

Amendments to SOLAS regulation III/33 and the LSA Code, aiming to remove the applicability of the requirements to launch free-fall lifeboats to test their strength with the ship making headway at speeds up to 5 knots in calm water on cargo ships of 20,000 GT and above.

#### **FSS Code Chapter 9 - Fixed fire detection and fire alarm systems - January 2024**

Chapter 9 of the International Code for Fire Safety Systems (FSS Code) relating to fault isolation requirements for individually identifiable fire detector systems installed in lieu of section identifiable fire detector systems on cargo ships and passenger ship cabin balconies; and clarifying the acceptability of less complex and costly section identifiable fault isolation for individually identifiable fire detector systems on cabin balconies; and clarifying the acceptability of less complex and costly section identifiable fault isolation for individually identifiable fire detector systems.

#### **Revised Annexes to the International Convention on Load Lines - January 2024**

*Adopted by MSC 104.*

A minor amendment to chapter II (Conditions of assignment of freeboard), as well as amendments to chapter III (Freeboards) of annex I (Regulations for determining load lines) of Annex B to the 1988 Load Lines Protocol, concerning watertight doors on cargo ships, and associated amendments concerning watertight doors on cargo ships to chapter 2 (Ship survival capability and location of cargo tanks) of the International Code of the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code).



**IMDG Code - January 2024***Adopted by MSC 105.*

Updates to the International Maritime Dangerous Goods (IMDG) Code in line with the updates to the United Nations Recommendations on the Transport of Dangerous Goods, which set the recommendations for all transport modes. Contracting Governments to the SOLAS Convention are invited to apply the amendments from 1 January 2023 on a voluntary basis.

**Revised FAL Convention - January 2024***Adopted by FAL 46.*

Amendments to the Facilitation (FAL) Convention which will make the single window for data exchange mandatory in ports around the world, marking a significant step in the acceleration of digitalization in shipping. Other amendments adopted include lessons learned from the COVID-19 pandemic and add new and amended Recommended Practices to prevent corruption and illicit activities in the maritime sector.

**Mandatory Single Window** - The amendments update the provisions of the FAL Convention on mandatory electronic data exchange in ports for ship clearance. The amendments to the annex of the Convention will make it mandatory for public authorities to establish, maintain and use single window (SW) systems for the electronic exchange of information required on arrival, stay, and departure of ships in ports.

**MARPOL Annex I - watertight doors - January 2024***Adopted by MEPC 78.*

Chapter 4 – Requirements for the cargo area of oil tankers.

**MARPOL Amendments - Annex I, II, IV, V, & VI - May 2024***Adopted by MEPC 79.*

**Mediterranean Sea Emission Control Area** for Sulphur Oxides and particulate matter - designation of Mediterranean Sea, as a whole, as an Emission Control Area for Sulphur Oxides and Particulate Matter, under MARPOL Annex VI. In such an Emission Control Area, the limit for sulfur in fuel oil used on board ships is 0.10% mass by mass (m/m), while outside these areas, the limit is 0.50% m/m.

**Mandatory garbage record books** for smaller ships - amendments to MARPOL Annex V to make the Garbage Record Book mandatory also for ships of 100 gross tonnage and above and less than 400 gross tonnage. This extends the requirement for mandatory garbage record books to smaller ships, which will be required to keep records of their garbage handling operations, namely discharges to a reception facility ashore or to other ships, garbage incineration, permitted discharges of garbage into the sea, and accidental or other exceptional discharged or loss of garbage into the sea. The move supports the implementation of IMO's Strategy and Action Plan to address marine plastic litter from ships.

Protecting seas in the Arctic - regional arrangements for port reception facilities - amendments to the MARPOL annexes to allow States with ports in the Arctic region to enter into regional arrangements for port reception facilities. The amendments relate to MARPOL Annexes I (oil), II (noxious liquid substances), IV (sewage), V (garbage) and VI (air pollution).

EEXI, CII, and rating values - amendments to appendix IX of MARPOL Annex VI on the reporting of mandatory values related to the implementation of the IMO short-term GHG reduction measure, including attained EEXI, CII, and rating values to the IMO Ship Fuel Oil Consumption Database (IMO DCS).

**Fuel flashpoint in bunker delivery note** - amendments to appendix V of MARPOL Annex VI, to include the flashpoint of fuel oil or a statement that the flashpoint has been measured at or above 70°C as mandatory information in the bunker delivery note (BDN). 1 July 2024 MARPOL HFO in Arctic waters prohibition Adopted by MEPC 76

Entry into effect of amendments to MARPOL Annex I (addition of a new regulation 43A) to introduce a prohibition on the use and carriage for use as fuel of heavy fuel oil (HFO) by ships in Arctic waters on and after 1 July 2024. The prohibition will cover the use and carriage for use as fuel of oils having a density at 15°C higher than 900 kg/m<sup>3</sup> or a kinematic viscosity at 50°C higher than 180 mm<sup>2</sup>/s.

## Hong Kong Convention set to impact the shipping industry from 2025

On 26 June 2023, Bangladesh and Liberia acceded to the Hong Kong Convention. This means the Convention will enter into force for the Safe and Environmentally Sound Recycling of Ships on 26 June 2025, writes Stela Spiraj, Senior Engineer, Regulatory Affairs Department, ABS. And it could present opportunities and have profound effects for marine surveyors.

The goal of the Hong Kong Convention is to prevent significant risks to human health and the environment throughout a ship's operating life and during ship recycling. Upon the Convention's entry into force new and existing ships with a gross tonnage (GT) of 500 or more should have a valid International Certificate on Inventory of Hazardous Materials (IHM) no later than five years after the Convention's start date in 2025 or before being sent for recycling, whichever occurs first.

The Hong Kong Convention applies to ships of 500GT or more engaged in international trade and flying the flag of a party to the Convention or operating under the authority of a flag of a party to the Convention, and to ship recycling facilities operating under the jurisdiction of a party to the Convention.

Ships will be required to develop and maintain an Inventory of Hazardous Materials that consists of three parts:

Part I: Hazardous materials listed in Appendices 1 and 2 to the Convention, contained in the ship's structure and equipment including their location and approximate quantities. The Convention prohibits or restricts new installation of hazardous materials listed in



Appendix 1 and it requires the recording of new installations that contain hazardous materials listed in Appendix 2.

Part II: Operationally generated wastes that are potentially hazardous to the environment and human health at ship recycling facilities.

Part III: Stores like regular consumable goods, which may potentially contain hazardous materials that are not integral to a ship. Part I should be developed following the 5-step approach outlined in the IHM Guidelines, verified on board and maintained during the operational life of the ship. Parts II and III are to be developed to detail hazardous material that will be delivered with the ship to the recycling facility.

#### **Ships will undergo the following survey regime:**

- An initial survey to verify Part I of the IHM, before the International Certificate on Inventory of Hazardous Materials is issued.
- A renewal survey at intervals not exceeding 5 years.
- An additional survey (either general or partial) at the shipowner's request after a change, replacement, or significant repair.
- A final survey before recycling.

The second aim is to prevent and to the extent practicable, eliminate accidents, injuries and other adverse effects on human health and the environment caused by ship recycling.

The Hong Kong Convention establishes that the methodology for designing, constructing and operating ship recycling facilities be safe and environmentally sound. These facilities will need to develop a Ship Recycling Facility Plan prior to being authorized by the competent authority(ies) of the party. Prior to recycling a ship, an authorized ship recycling facility must prepare a ship-specific Ship Recycling Plan taking into account information provided by the shipowner.

#### **Actions for ships to comply with the Convention**

New ships of 500 GT and above contracted on or after 26 June 2025 must have an IHM in place upon delivery. The IHM Part I should be developed in accordance with MEPC.379(80) during the design and construction phase based on the supplier's material declaration forms and should be submitted to the recognized organization or flag administration, along with supporting information Material Declarations (MD) and Supplier's Declaration of Conformity (SDoC). Upon completion of the initial survey, the recognized organization or flag administration will issue the documentation detailing compliance with the IHM Part I.

Some existing ships with IHM Part I may be able to undergo a simple verification by an attending surveyor, while others may need to submit an updated IHM Part I for review. Existing ships with an IHM Part I technically reviewed by ABS for compliance in accordance with resolution MEPC.269(68) or / and EU SRR (EU No.1257/2013) do not require IHM Part I technical submission.

Once reviewed, surveyor attendance will be required to verify that the reviewed IHM Part I is onboard. The surveyor will also confirm the location of materials listed in the IHM Part I. On completion of a satisfactory IHM review and survey, the surveyor will issue the IHM certificates as appropriate.

Existing ships must meet the Hong Kong Convention requirements within five years of the Convention's entry into force, or before going for recycling if that occurs earlier. Ships proceeding to a recycling facility may have the initial and final surveys held concurrently.

## MGN 416 (M) Amendment 1: Inspection, survey and certification guidance for United Kingdom small commercial vessels operating in non-UK waters

MGN 416 Amendment 1 was published on 9 January 2024 and replaces MGN 416 first published in 2010. The purpose of this amended MGN is to provide guidance and clarification with respect to small commercial vessels and rescue boats including any search and rescue assets operating in non-UK waters.

International Conventions do not cover all vessels and other Maritime Administrations or Port State Authorities are under no obligation to accept UK certificates. Some Maritime Administrations or Port State Authorities may accept UK certificates if they consider them equivalent to their own.

Owners and operators should contact the relevant Maritime Administrations for details of the local operating requirements before operating abroad. This includes for work, providing a service and/or to undertake search and rescue activities. However, other Maritime Administrations have the right to refuse to allow such vessels to operate.

Read the new amended MGN at <https://bit.ly/3Hb1Xoi>.

## Amendments to IMSBC Code impacting solid bulk cargo handling

New amendments to the International Maritime Solid Bulk Cargoes (IMSBC) Code enter into force on 1 January 2025 with voluntary implementation from 1 January 2024.

The amendments introduce new individual cargo schedules with specific carriage requirements for the following Group B cargoes (cargoes that possess a chemical hazard which could give rise to a dangerous situation on a ship). They are direct reduced iron, electric arc furnace dust (pelletized), fish meal.

Download the Lloyds Register guidance at <https://bit.ly/47uh8DJ>.





## New revision of Red Ensign Group Yacht Code published

A new revision of the gold standard Red Ensign Group Yacht Code, set to come into force in July 2024, has been published, which intends to provide guidance on the best practice to facilitate safe solutions for commercially operated yachts over 24 metres (78 feet) in load-line length.

The new revision represents all the expertise gained across almost three decades of regulating the large yacht sector since the first version was published by the Maritime and Coastguard Agency in 1997.

A spokesperson for Red Ensign Group said, "The Red Ensign Group Yacht

Code is the international standard for the design, construction, and operation of these vessels. We will never compromise on safety and crew welfare and maintain the highest maritime regulatory standards. However, we do recognise that it's important to support innovation and technological developments in a rapidly changing industry."

This is the first significant revision since 2019 and has been developed over a period of two years in close consultation with the REG Yacht Code Industry Working Group, which consists of a wide-ranging number of stakeholders including shipyards, designers, management companies, and regulatory authorities.

Substantive changes have been made to reflect the relevant regulatory amendments that have been published in recent years by the IMO and to accommodate current trends and innovation in yacht design.

The new revision of the Red Ensign Group Yacht Code includes guidance on battery systems, over-side working systems, emergency training, installation of fire appliances, petrol storage, and more.

Significant amendments to the existing text have also been made to provide additional clarification to those areas of the Code which have previously been open to interpretation, to ensure its consistent application and to set a level playing field for the industry.

Although the Code will not come into force until July 2024 to give the industry time to become familiar with it and comply, it has already been published.

Download the code at <https://bit.ly/317xl7K>.

## Canadian vessel construction and equipment regulations updated

The Minister of Transport, Pablo Rodriguez, announced that new Vessel Construction and Equipment Regulations, which apply to the construction and equipment of new vessels 24 metres or more in length (excluding fishing vessels and pleasure craft), have come into force. The regulations update and consolidate requirements that previously existed in various regulations under the Canada Shipping Act, 2001, and the Canada Labour Code, into one set of regulations and add penalties for non-compliance. The regulations are wide-ranging, setting updated requirements with respect to structural strength, stability, machinery, electrical systems, lifesaving equipment, and crew accommodations, as well as fire protection on vessels without mechanical means of propulsion.

View the new regulations at <https://bit.ly/48qLybb>.



## New MCA notes, guidance and advice

Here are the most recent new documents to be released by the UK Maritime & Coastguard Agency for the period of December 2023 to January 2024.

### Released on 12 December 2023

MGN 691 (M) Navigation and radar training requirements for workbook code 3  
Go to <https://bit.ly/47tvJzw>

### Released on 19 December 2023

The Code of Practice for the Safety of Small Fishing Vessels of less than 15m Length Overall  
Go to <https://bit.ly/4aTUdoy>

### Released on 21 December 2023

MSN 1870 (M+F) Amendment 5 Personal protective equipment regulations 1999  
Go to <https://bit.ly/48njxRY>

### Released on 22 December 2023

Survey and inspection of fishing vessels chapters 1 to 17 (MSIS 27)  
Go to <https://bit.ly/3tNRDeX>

### Released on 28 December 2023

MGN 546 (M) Amendment 1: in-water surveys  
Go to <https://bit.ly/3NWMpIL>

### Released on 4 January 2024

MGN 550 (M+F) Amendment 1: Electrical installations - guidance for safe design, installation and operation of lithium-ion batteries  
Go to <https://bit.ly/3tTlwNF>

### Released on 8 January 2024

MSN 1914 (M) The carriage of dangerous goods and marine pollutants: amendments to international standards  
Go to <https://bit.ly/4aUehXR>

## EMSA report into the potential of hydrogen as fuel for shipping



The maritime industry faces substantive challenges, many of which

are driven by increasingly stricter air emissions and climate legislation as its practitioners navigate a course towards decarbonisation. Among the broad spectrum of technologies and fuel solutions being considered, hydrogen that is produced with renewable energy (green hydrogen) has been identified as a fuel that could offer a 'near-zero' carbon solution on a well-to-wake basis. The European Maritime Safety Agency (EMSA) has produced a 572 page technical report on this topic.

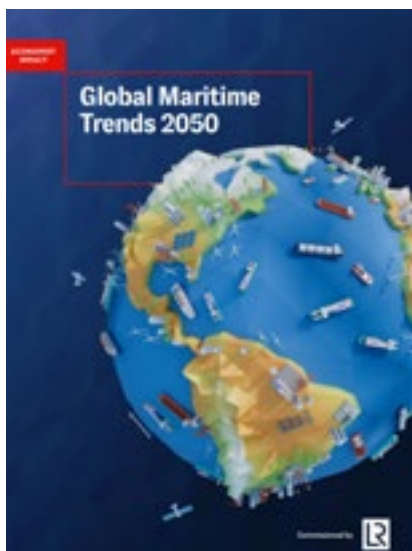
While shipping has limited experience using hydrogen as a fuel and some of the key technologies (such as engines) remain under development, there is sufficient land-based experience with its production and use that would serve as a sound basis for the transition to marine fuel.

There are some barriers, such as hydrogen's low energy density, (which would increase the storage needs onboard a ship), the cost of the equipment and the significant need to expand the global capacity to distribute and produce green hydrogen. In the end, hydrogen-fuelled vessels may prove to be a more appropriate solution for short-sea shipping rather than deep-sea. By examining the current production capacity for hydrogen, the existing regulatory landscape, fuel storage options, supply and power generation technologies – along with techno-economic analyses and risk-based case studies – this study has identified the potential for adopting hydrogen as a marine fuel.

Download the report in full at <https://bit.ly/3Rh5BI0>.



## Global Maritime Trends 2050



The report authored by Economist Impact, and commissioned by Lloyd's Register and Lloyd's Register Foundation, aims to shed light on potential maritime futures, offering an understanding of the direction our industry is heading towards.

The research led to four feasible shipping futures that present both warnings and opportunities for our sector including fictional 'what if' scenarios such as the opportunities widespread adoption of hydrogen could bring, or the potential critical challenges posed by a 40cm sea-level rise.

Key takeaways:

- Key ports in US, Europe and Asia could be unusable by 2050 without urgent action on decarbonisation

- Africa countries could become the dominant supplier of seafarers by 2050
- Women could make up 25% of all seafarers by 2050 (currently <2%)

The report will kick-start the launch of the wider multi-year Lloyd's Register and Lloyd's Register Foundation Global Maritime Trends 2050 research programme. The programme will include a series of 'deep dive' reports in which expert organisations will be commissioned to examine what is needed to create a safe and sustainable maritime sector in the face of geopolitical, macroeconomic, technological, and other societal shifts.

Download the report in pdf format at <https://bit.ly/3uYkKjP>.



## Signal dry bulk annual report 2023

The year 2023 witnessed significant shifts in commodity patterns, exacerbated by a difficult economic environment in China and geopolitical tensions, especially between Russia and Ukraine, which led to significant shifts in commodity development. The Chinese economic environment in 2023 posed a challenge, which had a particular impact on iron ore prices and demand for raw materials. The slowdown in Chinese economic growth and strict regulatory requirements impacted infrastructure and construction activity and dampened demand for iron ore. This downturn was exacerbated by environmental policy measures to reduce steel production capacity, which in turn impacted global iron ore prices and trade flows. In December, it was reported that China channelled nearly USD 50 billion of low-cost funds into policy-oriented banks last month, suggesting that the central bank may be increasing funding for housing and infrastructure projects to support the economy.

The coal industry encountered challenges as major Asian economies, including China, Japan, and South Korea, initiated stricter environmental regulations. These nations are diversifying their energy portfolios, aiming to decrease their dependency on coal. Specifically, China committed to diminishing coal consumption between 2026 and 2030 as part of its national strategy to peak carbon emissions—a pledge solidified in



the 2021 U.S.-China climate joint declaration. Despite these trends, there was a surprising uptick in coal demand in mid-December, rising by 1.4% in 2023 and exceeding 8.5 billion metric tons for the first time, as per IEA estimates. The agency attributed this increase to an anticipated 8% growth in coal usage in India and a 5% rise in China. Thus, global coal demand is not expected to fall earlier by 2026, while Chinese coal demand is expected to fall in 2024 and plateau through 2026. That said, the outlook for coal in China will be significantly affected in the coming years by the pace of clean energy deployment, weather conditions, and structural shifts in the Chinese economy.

In the grain segment, 2023 witnessed a significant shift in the dynamics of global exports, with Brazilian exports emerging as a dominant force poised to challenge the longstanding leadership of the United States. Historically, the United States has held a prominent position as the world's leading grain exporter, benefiting from its vast agricultural resources, advanced farming techniques, and robust transportation

infrastructure. However, recent weather disruptions in Brazil have created opportunities for Argentina's corn industry in 2024. These weather-related challenges, combined with reported delays in Brazilian planting, have paved the way for the United States to potentially enhance its export volumes, particularly in the first quarter of 2024.

Geopolitical tensions, particularly between Russia and Ukraine, coupled with China's growing influence on the global economy have had a profound impact on commodity production, price dynamics and the development of the freight market. In early December, China took measures to stimulate the economy, spreading optimism and setting the stage for a possible improvement in macroeconomic conditions in the first quarter of 2024. Based on Signal Ocean's data, this analysis provides an in-depth examination of trends in freight market prices, bulk flows and demand for key commodities, providing valuable insights into their evolving dynamics.

Read the detailed report online at <https://bit.ly/3vqeSjw>.





## Management of Survival Craft on Fixed/Floating Offshore Installations: Preliminary Findings on Best Practice

The testing and maintenance of survival craft presents much greater risks at offshore facilities, which operate in a fixed position exposed to open ocean environments, than onboard ships, which can relocate to a safer location. This information paper aims to drive improvements to current Life Saving Appliance

design and safeguards, regulatory requirements, industry best practices and programmes.

It makes a case for change to the IMO, government marine regulatory authorities, industry partners and LSA Original Equipment Manufacturers to drive towards an agreed international standard that is fit for purpose for the design, maintenance, training, testing and operation of offshore facility survival craft.

This preliminary information paper is intended as a contribution to further work, culminating in a more detailed publication in parallel with a case for change submission to the IMO.

## The World Economic Forum report

The World Economic Forum report, written in collaboration with McKinsey & Company, measures the current state of global cooperation. It is meant to serve as a tool for leaders to better understand the contours of cooperation broadly and along five pillars – trade and capital flows, innovation and technology, climate and natural capital, health and wellness, and peace and security.

It is no secret that the current global context is concerning, as heightened

competition and conflict appear to be replacing cooperation. The result is that new power dynamics, changing demographic realities and breakthrough frontier technologies are raising the temperature on long-simmering distrust rather than fuelling opportunities for benefit. Businesses are responding to these complicated – and often fraught – geopolitical developments by shifting operations and facilities closer to home.

After trending positively for much of the past decade, global cooperation risks moving into reverse. The story varies by pillar:

**Trade and capital:** trade and capital cooperation grew through the pandemic disruption but slowed in 2023; geopolitical tensions and new restrictions make the future path unclear.

**Innovation and technology:** flows of data, IP and international students powered an increase in cooperation until 2020, but new questions have arisen about how to work together to harness opportunities.

**Climate and natural capital:** the level of cooperation for climate and natural capital has been rising

steadily, due in large measure to an increase in commitments, but emissions also continue to rise. **Health and wellness:** cooperation in health and wellness rose swiftly in response to the pandemic but appears to be settling back to historical patterns.

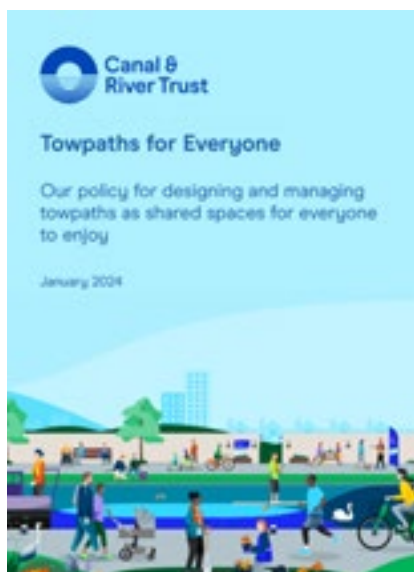
**Peace and security:** cooperation in peace and security has declined since 2016 and plummeted recently.

Because it is unlikely that the current geopolitical climate will change and competition and confrontation will soon cool, the barometer suggests that leaders in business and government should reimagine cooperation. The barometer shows that cooperation is multifaceted, and elements of cooperation can coexist with elements of rivalry. Leaders can practice “coopetition” – balancing cooperation and competition – to advance shared interests in specific areas, despite lack of alignment elsewhere. Further, leaders can use these instances of cooperation to build mutual trust, which in turn could strengthen cooperation in other areas.

Download the full report at <https://bit.ly/47pXAQR>.



# NEW marine reports and guides



## Canal & River Trust publishes its policy to keep towpaths safe and accessible

With the UK's canals attracting record numbers of visitors and more people using towpaths than ever before, a

policy document has been published by the Canal & River Trust (CRT) setting out how these vital, historic and typically narrow routes can be sustainably used, managed, and made more accessible for the benefit of all.

### Towpaths for Everyone

Alongside the canals' core use for boating and angling, 'Towpaths for Everyone' outlines the key role that the 2,000-miles of towpaths play in public life, including as part of a nationwide active travel network. The policy sets out how CRT and its partners and towpath visitors can all play their part in ensuring towpaths remain the nation's greatest linear green spaces, providing vital access to nature through towns and cities and links to the countryside.

To help ensure people share the often limited towpath space and that they remain safe and welcoming places for all, Towpaths for Everyone has a code of conduct for visitors. This includes cyclists and runners respecting the slowest moving people on the towpath as well as those accessing the water space, such as boaters and anglers.

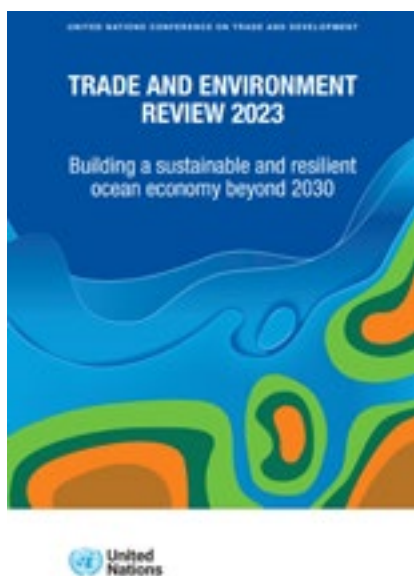
### Increasingly popular spaces

Heather Clarke, CRT director, commented, "Whilst our historic canals are still navigated by boats much as they were at the height of the Industrial Revolution, today's canals and their towpaths have also been repurposed for modern society. They are increasingly popular spaces for walking, running, cycling, and angling as well as serving boaters and those accessing other on-water activities such as canoeing and paddleboarding.

"With towpaths more popular than at any time in history, we face challenges in balancing the needs of all the people who use them, whilst protecting their special waterway character, heritage and environment. As our ageing network faces increased pressures from government funding cuts and climate change-driven damage, it is more important than ever to secure investment from third parties to keep these much-loved spaces open and accessible."

Download the policy document in pdf format at <https://bit.ly/47xZ6AL>.

## Building a sustainable and resilient ocean economy beyond 2030



The Trade and Environment Review 2023 analyses the impacts of human activities and global crises on the ocean economy, which includes traditional sectors such as fishing and shipping, as well as emerging ones like offshore wind energy and marine biotechnology. It addresses the current and emerging crosscutting role of the ocean in advancing economic growth, social inclusion and environmental sustainability.

The report builds on the recommendations from the 4th UN Oceans Forum and the 2nd UN Ocean Conference held in 2022. It highlights the urgent need for a global "Blue Deal" to boost investment in protecting our ocean and sustainably using its resources.

Fifty to eighty percent of life on earth is found in the ocean. For centuries

the ocean, which is the planet's life support system, was considered too vast to fail and its resources so infinite that they could be exploited imprudently.


The ocean economy is worth between \$3 trillion and \$6 trillion and offers vast opportunities for developing countries to build resilience. But marine resources are under threat from climate change, pollution and overfishing. About 11 million tonnes of plastic flow into the ocean each year. Globally, 34% of fish stocks have fallen to levels that are biologically unsustainable. At stake are the livelihoods of about 3 billion people – living mostly in coastal developing countries – who rely on the ocean for food and income.

Download the pdf report at <https://bit.ly/48WvUUV>.





# MARINE SURVEYOR SEARCH



## THE MARINE SURVEYOR SEARCH APP

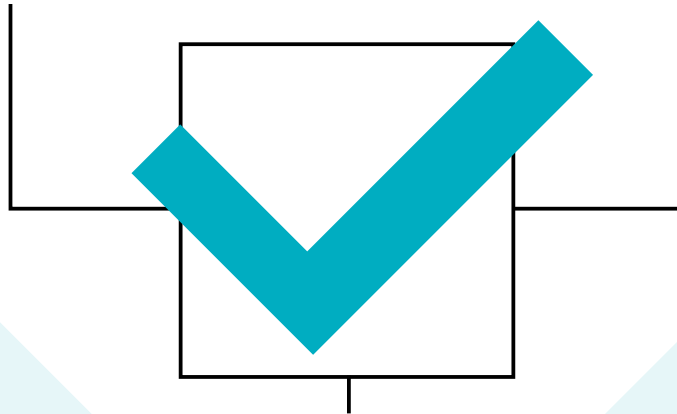


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# IIMS President raises concerns about the growing tick box culture of marine survey reporting



Tick box marine survey reporting is becoming far more common than it used to be. That is the view of Peter Broad, President of the International Institute of Marine Surveying (IIMS). But are tick box marine survey reports fit for purpose, or are they lazy reporting?

## Advantages:

- 1.** **Standardisation:** They provide a standardised framework for conducting inspections, ensuring that essential aspects of a vessel are systematically checked. This helps in maintaining consistency across different surveys and facilitates easy comparison between vessels or inspections.
- 2.** **Efficiency:** Tick box survey reports streamline the inspection process, allowing surveyors to cover a wide range of components and systems efficiently. This structured approach can save time during the survey.
- 3.** **Clarity and Communication:** The reports offer a clear and concise method of communication between surveyors, vessel owners, operators, and regulatory bodies. The use of tick boxes can help in quickly conveying the status or condition of various elements.

## Limitations:

- 1.** **Lack of Nuance:** While tick box reports cover a broad range of items, they might not capture all nuances or specific details about a ship or boat's condition. Some aspects may require more qualitative and quantitative assessments beyond a tick box.
- 2.** **Subjectivity:** Interpretation of tick box options (e.g., 'Satisfactory,' 'Requires Attention') might differ between surveyors, leading to subjective assessments. This subjectivity can sometimes limit the accuracy of the report.
- 3.** **Comprehensive Understanding:** Relying solely on tick boxes might not provide sufficient information about the vessel's condition that requires attention but isn't part of the standard checklist.

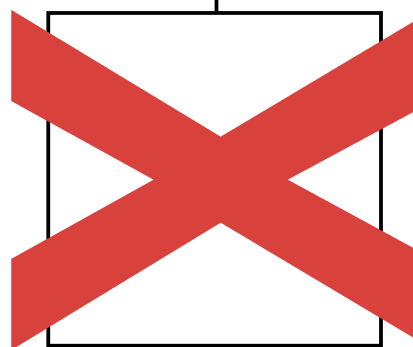
In essence, a tick box marine survey checklist can be useful as a structured framework to guide inspections and perhaps less experienced surveyors to help ensure comprehensive coverage. However, they should be used to complement a surveyor's expertise and experience, not replace it.

Peter Broad said, "I draw a clear distinction between an 'Inspection' and a 'Survey.' I would suggest that the level of training and experience to carry out a marine survey by a qualified surveyor is higher than that of an inspection carried out by an inspector. A tick box form may be useful for an inspection by a less qualified and less experienced person to gather information quickly on the status of a system where a 'Yes' or 'No' answer can be given without any further explanation."

The marine survey report is ultimately the surveyor's output and his/her responsibility to the instructing party. The effectiveness of a tick box survey template depends on the surveyor's ability to use them judiciously, combining the tick box assessments with clear and concise written textual evaluations and expert judgment.

Again, from Peter Broad, "The effectiveness of a tick box survey report depends on how it is used and the context in which it is applied to ascertain if it is fit for purpose."

IIMS Chief Executive Officer, Mike Schwarz, added "A survey report should give the instructing client a clear and detailed overview of what has been surveyed with a list of any defects and recommendations that have been found. A tick box survey does not necessarily meet that requirement and can leave the instructing client lacking in essential information. IIMS sees a number of tick box survey reports that are not fit for purpose."



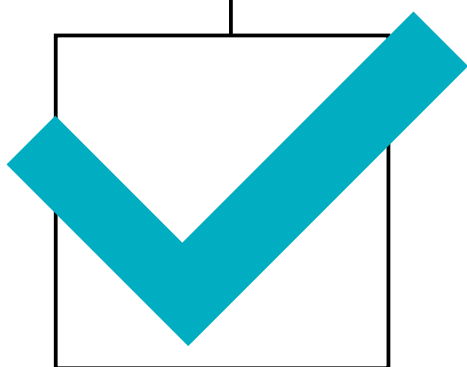
## Here's an example:

Does the vessel have a bilge pump? YES ☐ NO ☐

This tick in the box does alone not provide an explanation as to whether the bilge pump works, if the piping system is in good condition, if it has an oily water separator and if the oily water separator is certified and in working condition. Are the bilges clean and free from oil contamination? Are there any rags in the bilges?

Obviously, one tick box about the bilge pump is not sufficient to provide a full description based on the attending surveyor's observations and his/her understanding of the importance of the bilge pump from a ship safety aspect and the expectations of MARPOL.

Ultimately, a professional marine surveyor must remember that their survey reports are admissible as court documents if there is a legal case. Imagine if a vessel sinks and there is loss of life, and the subsequent marine accident investigation finds that the bilge pump was not working properly. The last attending surveyor on that vessel who ticked the box only for the bilge pump and made no further comment could be potentially looking at a charge of gross negligence, or even worse.





# LinkedIn comments

As soon as this article was published on the IIMS LinkedIn feed earlier in the year, it had over 5,000 impressions and drew a number of interesting comments. Here's a selection.

As an underwriting agent we rely on reports from our surveyors not a tick box. It is essential for risk analysis. Unbelievably in our sector (pleasure craft) we still compete against a few insurers who allow owner to carry out own tick box survey.

As to how in the event of a dispute Financial Ombudsman views if a layman survey ticks all the boxes is not easy to say. In my opinion though any insurer accepting a tick box survey of any description has no grounds to decline any incident such as the bilge pump situation described.

Yes, we need to standardize but not tick box. Always engage a professional.

Good article to read.

**Ian Crumpen,**  
*Managing Director at Nautical Insurance Services Ltd.*

"Owner to carry out own tick box survey". I have come across these. If the seacock box was ticked, what happens if the boat sinks due to long-term corrosion and subsequent failure of one seacock? Will the insurer decline the claim, stating that the insured provided false information? I recently investigated a burnt-out vessel. The claim was turned down as the insured had ticked the box to say that they had a recent survey report, which they hadn't!

**Nic Fieldhouse**

Very interesting article and comments, thank you all. I have been privileged to read a lot of surveyors' reports as part of my work on the Professional Assessment Committee of the IIMS. Reports written by both newly qualified and very experienced surveyors looking to upgrade their membership or add new specialisations to their experience portfolio. These reports come from all around the world and often reflect a regional style that varies considerably from country to country.

It is a truism to state that it is as important to get a tick box report 'right' as it is for a free text report. Both demand an appropriate level of surveying technique and scrutiny but differ in the writing and proofreading skills needed to be effective. It is a common failure of the surveyor to properly identify, record and communicate their observations and conclusions regardless of which style of report they (and their market) prefer. Poor report layout, grammar, limited vocabulary and spelling errors plague many of the reports I have seen. Every error reduces the credibility of the report and may leave the surveyor open to a claim.

**David Petridge**

When a tick box type of report is submitted to a client, it is a fairly good sign that the surveyor is one of the following:

- a. Stupid (too stupid to realise the risks that they are taking - the sort of risks described in Peter and Mike's article).
- b. Daft (poor technical knowledge, poor report writing skills, etc).
- c. Too cheap (they need to get the survey published quickly so that they can get on with their next cheap survey, the only way to make a living when you're cheap).
- d. Lazy.
- e. Greedy.
- f. Not enjoying their profession.
- g. Or a combination of all of these.
- h. Stupid (see 'a' above).

**Name withheld**

There is nothing wrong with using a tick box report format as a checklist. The art is in drafting the questions in such manner that the essential information is being obtained. That's where the quality is, exactly the same as with conventional style reporting. Besides the checklist, there should be sufficient opportunity for the surveyor to add comments, remarks, deficiencies, and observations. What we have to realize is that the quality of a report depends on the information it provides, not on the word count.

**Hans de Koning**

I'm sure everything has its place. I'll stick to writing my surveys. I find myself being able to accurately describe what I'm seeing, not a drop-down box that is close. This article is a great read. Thank you for your time.

**Race Turner**

Thanks Mike and Peter for your insight highlighting "tick box" and its negative implications. As alluded, inexperienced inspectors and untrained surveyors are often practicing "tick box" mostly through checklist documents. Have witnessed such "tick box" practices by several small boat operators in an unregulated surveying industry.

**Derek Saru**

Clients are investing a lot of money in their purchases often for the first time. Tick box reports fail these clients who surely should be given the maximum information and service coupled with the knowledge and experience of the surveyor. No tick box reporting from me.

**William Castelton**

A very good article. The lack of clarity of a vessel's condition isn't in anyway helpful. Having seen an incident following the Class approval (box ticked) on a watertight door, which failed shortly after departing the shipyard, it shows that factual, accurate, detailed and clear reporting is essential.

**Andrew Jameson**

# STCW under review by the IMO Maritime Safety Committee:

## Here's the timeline

The IMO Maritime Safety Committee (MSC) has decided to initiate a review of the STCW Convention and Code that will go through several phases, with a view to be completed by the autumn of 2027.

The IMO has announced a roadmap for the comprehensive review that will start in February 2024. The Organization, as part of the 2010 Manila Amendments, developed standards for training, watchkeeping and certification for personal safety and social responsibilities.

Having recognized the need to tackle bullying and harassment in the maritime sector, including sexual assault and sexual harassment (SASH), with the objective of ensuring a safe workplace, MSC 105 instructed the HTW Sub-Committee to develop and finalize, as a matter of priority, STCW training provisions addressing bullying and harassment in the maritime sector, including SASH.

Here is a timeline of the key changes that are expected for adoption in the next 4 years during IMO Sub-Committees and IMO MSC.

### Starting last month in February 2024: HTW 10

- Finalize preliminary list of specific areas identified for review.
- Finalize road map for the comprehensive review of the STCW Convention and Code.
- Agreeing and finalizing a methodology for proposing and considering amendments to the STCW Convention and Code, including effective date of any amendments, and the time needed to complete necessary updates of the relevant instruments.
- Invite proposals for amendments to the STCW Convention and Code to ISWG-STCW 1, subject to the MSC 108 approval of areas identified and methodology for proposing and considering amendments, as applicable.
- Consideration of the option to convening of an intersessional working group (ISWG) or/and a virtual Correspondence Group meeting and agree to ToR.
- Report of HTW 10 to MSC 108.

### May 2024: MSC 108

- Approval of preliminary list of specific areas identified for review.
- Approval of a road map for the comprehensive review of the STCW Convention and Code.
- Approval of a methodology for proposing and considering amendments to the STCW Convention and Code.
- Approval of the convening of ISWG-STCW 1, if applicable.

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# 2025

## **Summer 2024: Council 132**

- Approval of the convening of ISWG-STCW 1, if applicable.

## **ISWG-STCW 1 or virtual CG meeting(s)**

- Consideration of proposed amendments.
- Preparation of draft text of amendments.
- Revise road map if necessary.
- Report of ISWG-STCW 1 to MSC 109 and HTW 11, as applicable.

## **December 2024: MSC 109**

- Instruction to HTW 11 based on outcomes of ISWGSTCW 1 if held before MSC 109, as applicable.
- Consideration of the type of meeting to adopt amendments of the comprehensive review of the STCW Convention and Code.

## **Spring 2025: HTW 11**

- Consideration of the report of the ISWG-STCW 1, if applicable.
- Preparation of draft text of amendments and finalize work of review stage.
- Consideration of the convening of an intersessional working group and agree to its ToR for ISWG-STCW 2.
- Revise road map if necessary.
- Report of HTW 11 to MSC 110.

## **Summer 2025: MSC 110**

- Approval of the type of the meeting to adopt amendments to the STCW Convention and Code and recommendation to Council.
- Approval of the convening of ISWG-STCW 2.

## **Summer 2025: Council**

- Endorsement of the decision of MSC for the type of meeting to adopt amendments of the comprehensive review of the STCW Convention and Code (extended MSC or diplomatic conference).
- Approval of the convening of ISWG-STCW 2.

# 2024



#### **2025-2026: ISWG-STCW 2**

- Start work on targeted revision of STCW Convention and Code.
- Consideration of the proposed amendments.
- Preparation of draft text of amendments.
- Revise road map if necessary.
- Report of ISWG-STCW 2 to HTW 12.

#### **Spring 2026: HTW 12**

- Consideration of the report of the ISWG-STCW 2.
- Preparation of draft text of amendments.
- Consideration of the convening of an intersessional working group and agree to ToR for ISWG-STCW 3.
- Revise road map if necessary.
- Report of HTW 12 to MSC 111.

#### **2026: MSC 111**

- Taking note of the progress of the work on the comprehensive review of the STCW Convention and Code.
- Approval of the convening of ISWG-STCW 3.
- Authorization for HTW 13 to finalize the draft text of amendments for approval with a view to circulation.
- Authorization for HTW 13 to finalize the draft resolutions.

#### **2026:Council**

- Approval of the convening of ISWG-STCW 3.

#### **2026-2027: ISWG-STCW 3**

- Continuing the work on the targeted revision of STCW Convention and Code.
- Consideration of proposed amendments.
- Preparation of draft text of amendments.
- Preparation of draft resolutions.

#### **2026: MSC 112**

- Instruction to HTW 13 based on outcomes of ISWGSTCW 3 if it is held before MSC 11.

#### **Spring 2027: HTW 13**

- Consideration of the report of the ISWG-STCW.3 and instruction by MSC 112, as applicable.
- Finalization of the draft text of amendments of the STCW Convention and Code and the draft resolutions.
- Report of HTW 13 to MSC 113.

#### **2027: MSC 113**

- Endorsement of the draft text of amendments to the STCW Convention and Code and the draft resolutions and circulation of the draft text in accordance with the procedure set out in the Convention.

#### **Autumn 2027: Meeting to adopt amendments**

- Holding of the meeting to adopt amendments of the comprehensive review of the STCW Convention and Code and the draft resolutions.

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# IMO embraces new era as Panama's Arsenio Dominguez assumes leadership role

Panama's long-time representative to the International Maritime Organization, (IMO), Arsenio Dominguez, officially began his role as Secretary-General with a brief message outlining his vision to the maritime community. He sought to highlight the successes of the organization while also recognizing the need for it both to evolve and the strong near-term challenges that must be addressed.



Dominguez launched his candidacy 13 months ago to succeed Kitack Lim who had led the IMO since 2016 and completed his two terms as of December 31, 2023. It was a hotly contested election with Dominguez running on a platform of "Taking the lead, for a united and better future." He declared that he would serve the IMO by "putting people and planet first." He won the election in July 2023.

"With me as the 10th Secretary-General, I welcome you to join us in an era of progression of the organization, one that leads by example and with higher values from inclusion, diversity, and transparency," Dominguez said in his videotaped message. "I look forward to working with you for the years to come into a new and exciting era to make this maritime sector a much better one."

He takes the lead of the IMO at an especially challenging time. Shipping is literally under attack in the Red Sea with the industry facing one

of its most significant disruptions as a growing number of ships are diverting adding 5,000 miles or more to their voyages by going around for Africa to avoid the Red Sea. At the same time, the industry is under increasing pressure from regulators and environmentalists to move faster to address the critical need to decarbonize its operations. Many have been critical of the IMO for its slow pace, although in 2023 the members reached consensus on much stricter targets. Geographically, regulators such as the European Union however have moved ahead with their own programs and carbon tax threatening the IMO's ability to establish a global approach to the challenge.

Dominguez marks his 20th year at the IMO in 2024, most recently serving as the director of the Marine Environment Division, a position he assumed in 2017, as well as a member of the Senior Management Committee of the IMO. He

was first appointed in 2004 as the alternate representative of Panama to the IMO and starting in 2014 he was appointed Ambassador of Panama to the IMO. Dominguez, who is a naval architect, has more than 25 years of professional experience in the international maritime world.

"Here at IMO, we have a great trajectory of successes. But of course, we can always do more. I don't need to tell you how vital the shipping industry is for the world," he said in his first message as Secretary-General. "It's this time of the year when we look back in reflection and excitement of the things that we have done, the things that we could have done, and the things that we're yet to do."



# TRANSPORTING lithium-ion batteries:



## identifying and addressing the risks

*By Richard Allingham (Partner), Elizabeth Elliott (Associate) and  
Reema Shour (Professional Support Lawyer), Hill Dickinson*

The international transportation industry has been looking carefully at the hazards inherent in transporting lithium-ion (Li-ion) batteries and goods powered by them. As has been highlighted recently in the industry press, while Li-ion battery fires are not a common occurrence, their consequences can be devastating.

It has been reported by a major insurer in its 2023 Safety and Shipping Review that battery fires on vessels remain one of the biggest safety concerns facing the international maritime industry. Li-ion batteries are said to be the cause of, or to have contributed to, a number of serious fires on board vessels in recent years.

Also in March 2023, the European Maritime Safety Agency (EMSA) published its CARGOSAFE study, which assesses the risks associated with fires on container ships and evaluates prevention, detection, firefighting, and containment measures. The study indicated that the main cargo types identified as responsible for a large share of cargo fire accidents included Li-ion batteries.

These reports follow on from a 'Lithium Batteries White Paper' published in November 2022, which highlighted a number of industry concerns and recommended regulatory changes, as well as proposing various practical measures for fire prevention and emergency response.



Given ongoing global decarbonisation initiatives, there has been a resulting increase in the use of electric vehicles (EVs), electric scooters and bikes and electronic equipment and consumer goods generally. It has been predicted that the market for EVs will grow by 30% between 2020 and 2030. Therefore, the risk of such fires becoming more frequent during the carriage and transportation of Li-ion batteries or goods powered by them is a real one unless it is addressed head on. Stakeholders within the supply chain – including shipowners, carriers, freight forwarders, terminal and port operators, insurers and manufacturers – have been working together to manage the risks and reduce future exposure. Regulators are also considering whether existing regulations are inadequate and need to be revised.

In this article, we consider some issues arising and recent industry response.

### **Thermal runaway**

In simple terms, where a battery cell is damaged or faulty and overheats, it can result in a chemical reaction which itself generates more heat and the cell may gradually become so hot as a result of this chain reaction that toxic gases are produced. This can result in the battery becoming damaged, exploding, melting or catching fire. Such fires have incredibly high temperatures, can be self-perpetuating and very hard to extinguish.

### **CINS Network Guidelines**

In March 2023, the Cargo Incident Notification System (CINS) and Network, in conjunction with other industry stakeholders, produced the 'Lithium-ion batteries in containers guidelines'.

The Guidelines state that the common causes of fires and explosions involving Li-ion batteries have been due to internal manufacturing defects, physical damage or substandard quality and internal electrical failure (overcharge, over-discharge or short circuit). Other fires have been related to packaging failures and mis-declaration of cargo or non-declaration of Li-ion batteries.

It is recognised that Li-ion battery technology is evolving rapidly and, therefore, risk control procedures for the safe transportation of Li-ion

batteries and related goods may need to develop and evolve over time. However, the Guidelines recommend that the supply chain should improve its incident record relating to the transport of Li-ion batteries. Manufacturers and supply chain stakeholders are also advised to implement a number of measures, including:

Developing performance-based standards for Li-ion batteries;

Developing ventilation and cooling or extinguishing systems to manage thermal runaway;

Updating industry standards, transport regulations and codes to address thermal runaway risks;

Developing education, training and emergency response procedures;

Introducing Li-ion battery cargo screening, inspections and vanning surveys; and

Introducing transparency related to factory audit and supply chain know your customer procedures.

Further CINS guidelines are expected in due course, dealing with compliance, risk assessment and emergency response, as well as training and awareness.

It is worth noting that Maersk, one of the world's largest container shipping companies, has issued a best practice for transporting EVs. It has also seized the market opportunity of developing specialised Li-ion battery and EV storage warehouses to mitigate the risks involved with storage. The storage facilities have advanced thermal monitoring systems that track battery temperatures, detect abnormalities and ultimately prevent fires from breaking out.

### **The Regulations**

The relevant regulations are the IMO's International Maritime Dangerous Goods Code (IMDG) for transport by sea, International Air Transport Association (IATA) for transport by air and the Agreement for the Carriage of Dangerous Goods by Road (ADR) for transport by road. All three sets of regulations are based on the UN Model Regulations on the Transport of Dangerous Goods, adapted where appropriate for specific circumstances

for each mode. Different categories of batteries and battery-powered vehicles or equipment will have their own specific UN number. For rail transport, there is the International Carriage of Dangerous Goods by Rail (RID).

The regulations cover requirements for the construction and testing of batteries, classification and declaration of shipments, packaging and stowage.

Furthermore, the International Code for the Safe Carriage of Packaged Hazardous Articles (ICHCA) provides guidelines for safely transporting dangerous goods, including Li-ion batteries, by sea.

Batteries and devices that contain batteries are classified as dangerous goods and have to comply with specific packaging and shipping regulations. All Li-ion batteries, equipment powered by Li-ion batteries and Li-ion battery-powered vehicles are 'Class 9' under the UN Model Regulations and IMDG Code, which covers miscellaneous dangerous substances and articles. This is the least hazardous ranking and means they can be stowed above and below deck and with other dangerous goods.

Nonetheless, as dangerous goods, they must be declared and shipped as such under the applicable UN number. Additionally, the vessel will have a Document of Compliance (DOC) for dangerous cargo, which indicates where the batteries can be safely stowed on board. Furthermore, all batteries must be tested and must meet the specified criteria.

However, there are Special Provisions (SPs) complementing the UN classification. Smaller lithium batteries are considered to be less hazardous, even though they continue to be dangerous goods. Under SP 188, if they satisfy certain requirements, they can be transported under specific conditions and will not have to comply with other ADR/IMDG Code provisions, for example the carrier will not have to be specifically notified of the container's contents.

In 2021, the UK Maritime and Coastguard Agency (MCA) published a marine guidance note (MGN 653(M)) on 'Electric Vehicles onboard Passenger RoRo Ferries'. This notes

that the IMO has no requirements specific to the carriage of EVs on passenger or cargo RoRo ships. In fact, SP 961 excludes EVs carried on Ro-Ros and car carriers from the requirements that apply to battery-powered vehicles or equipment. Consequently, carriers do not generally have a list of all EVs on board, or their respective locations.

### **Regulatory changes?**

There have been calls to reclassify Li-ion batteries as class 4.3 under the IMDG Code. This covers flammable solids which, when in contact with water, emit flammable gases. They would then be subject to much more stringent segregation requirements.

The White Paper recommends revoking the SP 961 exemption for EVs so that carriers can plan stowage locations and the monitoring of EVs during the voyage in greater detail, with a view to developing early detection, evacuation and/or firefighting procedures.

It also proposes a separate UN number for Li-ion powered EVs so that they could be subject to specific requirements for declaration and documentation (for example, state of charge, type of battery, battery chemistry and capacity).

There are currently no rules governing the state of charge, except for transport by air. IATA Regulations specify a maximum of 30% and it has been proposed that this should be extended to transport by sea and other forms of transport. This would help in reducing the risk of thermal runaway during transportation.

The IMO is reportedly considering whether any changes need to be made to the IMDG Code but nothing specific has yet been confirmed.

### **Legal considerations**

Under Article III Rule 1 of the Hague/ Hague-Visby Rules, the carrier has a due diligence obligation to make the vessel seaworthy and to properly man, equip and supply the vessel. Article III Rule 2 sets out the carrier's obligation to take reasonable care of the cargo, subject to certain exceptions set out in Article IV, including the fire exception in Article IV Rule 2b. Article IV rule 6 provides for the shipper's indemnity in the case of dangerous goods, where they have been shipped without the carrier's knowledge or consent.

Dangerous cargo can, of itself, make a vessel unseaworthy, as can faulty systems and inadequately trained crew. Whether the carrier acted as a prudent owner is not always straightforward because it may not be clear before or at the commencement of the voyage that a battery forming part of the cargo was defective and the carrier will not usually check on the contents of a container itself. Instead, it will rely on the documentation provided by the shipper. A hidden danger is nonetheless relevant.

The shipper has a strict liability for shipping dangerous goods without the carrier's knowledge, but the indemnity will not be engaged where the loss has been caused by the carrier's failure to exercise due diligence.

Ultimately, a shipper should protect itself by providing all the relevant documentation and making the relevant declarations. The carrier may not then be able to rely on lack of knowledge/consent, but it can stow the goods appropriately and take any required precautionary measures.

### **Contractual terms**

Transactions within the logistics industry are usually conducted on the basis of standard terms and conditions that will incorporate provisions dealing with the transport and/or storage of dangerous goods. The customer will normally be under a strict duty to notify a forwarder, carrier or warehouse keeper if goods are dangerous and to provide all the documentation and information required so that the goods can be stored or transported safely. However, a forwarder must still show reasonable skill and care in handling and transporting the goods. As the use of Li-ion becomes increasingly more common, forwarders, carriers and warehousing facilities should familiarise themselves with the potential risks associated with them.

Contractual clauses, particularly those dealing with dangerous goods and any exclusion/limitation of liability clauses, should also be reviewed to ensure that they provide sufficient protection and allocate risk as required. Where a forwarder has been negligent in its handling of the goods, it may not be able to rely on a standard exclusion/limitation of liability clause.

### **Mitigating risk**

Damaged or defective Li-ion batteries are at greater risk from short-circuiting and while ideally they should not be shipped, there are likely to be an increasing number of used and reconditioned Li-ion batteries in the future, including those in second-hand EVs. Some carriers might refuse to carry them at all, but this could potentially encourage mis-declaration of cargo and may not be commercially viable in the long run.

Similarly, some carriers might refuse to allow batteries to be charged on board due to safety concerns, but they will come under commercial pressure to do so.

It has also been reported that manufacturers would like to see more powerful Li-ion batteries qualifying under SP 188. Potentially, technological developments might impact on the current classification because smaller batteries are increasingly more powerful. However, at an industry conference in March 2023, 'Lithium-ion batteries in the logistics supply chain,' it was stressed that manufacturers' ambitions to develop more powerful, lighter and diverse battery cells should not be allowed to override safety concerns for their transportation. The importance of bringing manufacturers of EVs and the batteries that power them into the debate could not be over-emphasised.

In the meantime, participants in the supply chain should ensure that they do adequate due diligence on their counterparties and the cargo/goods in question so that they can satisfy themselves that the cargo has been prepared and declared correctly. Once batteries enter the intermodal supply chain, particularly if they have been shipped under SP 188, they are likely not to be checked to see if they are compliant.

Therefore, it remains crucial to keep up-to-date on legal and technological developments, comply with industry guidance and establish internal processes for minimising the risks.

***This article first appeared on the Hill Dickinson website and is republished here with our thanks.***

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# VLCC tanker detention in Corpus Christi, USA

## A PORT STATE CONTROL CASE STUDY

In late 2023 a VLCC Tanker was inspected in Corpus Christi, USA (Port UNLOCODE USCRP). Following the inspection the tanker was detained with eighteen deficiencies. Given the unusually high number of serious deficiencies recorded, the aim of this case study is to illuminate the case and to ensure lessons can be learned for the future.

### TERMINOLOGY USED

**DCS:** Deficiency codes spread. Number of deficiency codes required to achieve the 100% of the deficiency codes. Alternatively partial indicators may be used such as DCS20, DCS50 or DCS80 to reach 20%, 50% or 80% of total deficiencies in port respectively.

**Deficiency Profile:** Detailed list of all PSC findings with an indication of the deficiency code (detainable or not).

**DER:** Detention rate (% of inspections ended with detention).

**Detention Profile:** Detailed list of all detainable PSC findings with an indication of the deficiency code.

**DPI:**  
Average deficiencies per inspection.

**Global benchmark:** The value of the KPI based on the global statistics for same ship type and age.

**POCRA:** Port Call Risk Assessment

**SIR:**  
Ship inspection ratio – % of unique ships inspected versus unique ships calling in port over the last 12 months.

**UNLOCODE:**  
Standardized UN code for each port/terminal, as defined by UN.

0% (the global benchmark for similar fleets is 1.09%).

### Port background

In Corpus Cristi (Port UNLOCODE USCRP) over the past 36 months there had been 535 inspections on tankers resulting in three detentions. The port's detention Rate (DER) is 0.75% which is almost identical

### The ship's background & PSCI eligibility

The 15 year old ship, built in South Korea, was assessed with a PSC Inspection Window (IWOD) Open given the risk profile of the ship and the manager in the MoU area. The ship was eligible for inspection as she had an inspection window open since 12/12/2021.

The ship's manager (DOC holder) manages a fleet of 44 Tankers (LR1/LR2, Suezmax, VLCC).

The ship's PSC history during Last 36 months included 4 inspections (see graphic below).

The ship had last been inspected in USCG in Galveston, Texas back in 2020 and no deficiencies were found.

### Manager's background prior the detention

The manager's PSC record over the last 36 months from November 2022 to October 2023 included 156 inspections resulting in 81 deficiencies and 0 detentions.

The inspections were mostly conducted to the Tokyo MoU (39) with USCG (34) & Paris MoU (27). The manager's deficiency per inspection (DPI) was 0.63% (the global benchmark for similar age and type ships is 0.72%) and the detention ratio (DER) was

Date (mm/yyyy)	Port	UNLOCODE	Country	MOU	Ship Eligible for PSCI	Detention	# of Defs
09/11/2023	Corpus Cristi	USCRP	USA	USCG	Yes	Yes	18
15/10/2023	Gdansk	PLGDA	Poland	Paris MoU	Yes	No	8
31/7/2021	Yangpu	CNYPG	China	Tokyo MoU	Yes	No	0
12/12/2020	Galveston, Texas	USGLS	USA	USCG	Yes	No	0

to the global average for ports inspecting tankers of 0.85%.

The port's deficiency per inspection (DPI) for the last 36 months is 0.54%, lower than the global average for ports inspecting Tankers (0.72%). The statistics show that Corpus Christi is a port with increased PSC inspection experience on tankers (from 858 inspections on ships over the last 36 months, 535 was on tankers (64%)). The port KPIs are close to the global average (in respect of DPI and DER).

### Port Call Risk Assessment (POCRA)

The PSCI has been analyzed with the Port Call Risk Assessment (POCRA) Risk Assessment Tool developed by the RISK4SEA Platform with the following outcome:

### PSC Inspection Probability

The ship's prior inspection in USCG was back in 2020, so the ship was eligible for inspection again. The ship was rated Priority I and the manager's performance in USCG was marked as high. The inspection window had been open since December 2021.

The ship's inspection ratio (SIR) for the unique ships called/inspected the last 12 months in Corpus Christi Port was 20%, meaning that two out of ten unique tankers calling at Corpus Christi were inspected.

As the ship had an open inspection window open date and the PSC history of the ship and its manager was well known and assessed by the local PSC authorities, the inspection probability was assessed as CERTAIN.

### PSC inspection severity

Related factors of the ship marked out some risks (red flags):

- Ship deficiency per inspection – last 12 months > from Global average
- Ship Age Risk > 15 years old
- The manager's PSC history within the MoU which was assessed as medium risk.

Some parameters were red flag, specifically:

- Ship DPI with manager
- Manager deficiency profile versus port top 20 deficiency codes
- Port related factors were assessed to be medium risk (yellow flag) as the port's KPIs were close to or lower than the global average.

### Overall POCRA Assessment

Taking into consideration the above inspection probability and inspection severity the overall POCRA assessment was that the call risk was high. This should be an alert factor for preparation.

### PSC inspection result

The ship called at Corpus Christi and USCG officers boarded her for inspection and to check the ship's safety status and condition. The result of the PSC inspection was eighteen deficiencies of which 10 were detainable. As it is expected in such situations the code 15109 - Maintenance of the ship and equipment was marked to engage the manager to verify ISM implementation on board through an ISM audit. All deficiencies were related to maintenance.

The breakdown of the Deficiency Areas that the ship found to be unsafe were:

### Root Causes

Almost 90% of the ships detained have zero detentions in the 36 months prior so it is a strong and clear indication that any ship may be detained if not properly prepared. Research has provided evidence that ships are being detained for the following key reasons:

- Inadequate identification that the ship will be inspected. It is evident in this case by the end result.
- Inadequate preparation of the crew and the ship as hardware. Numerous deficiencies in the areas where weekly inspections are due (FFA, LSA, Cargo Operations) are a testimony to that.
- Inadequate maintenance. All deficiencies were related to proper maintenance practices.

### POCRA preparation checklist

If the vessel had used the POCRA preparation checklist, the findings may have resulted differently. The POCRA checklist in Corpus Christi for tankers in its full extent generates a specific checklist including twenty seven items analyzed in detail. This checklist includes seven of ten detainable items identified during inspection. If the vessel had prepared properly in advance the detention could have been avoided, as all detainable items had been already identified for the ship.

### Lessons to be learned


There are a number of lessons to be learned from this case study:

- The ship's maintenance condition and preparation on board was of a low level.
- Six deficiencies were found on fire safety and three on life saving appliances. This is too many, as the SOLAS weekly inspections are covering such issues.
- The five detainable deficiencies on fire safety related to oil accumulation. This is a serious issue onboard tankers.
- As PSC inspections aim to identify safety gaps onboard, having too many technical/procedural issues unattended will possibly lead to detention.
- Extreme caution should be exercised on the handling of the ISM Codes 15xxx. It is highly recommended that an additional audit onboard the ship is carried out to verify SMS implementation.



SOURCE: RISK4SEA





# Do you know when **fire protection systems onboard** should be inspected?

All fire protection systems and appliances should at all times be in good order and available for immediate use while a ship is in service. A helpful recent Marine Notice by the Palau Ship Registry highlights and gives guidance about the requirements of their inspection regime.

Fire protection systems need to be inspected weekly, monthly, quarterly and annually, as follows to ensure proper functioning.

#### **Weekly inspections should be carried out to ensure that:**

- a. All public address systems and general alarm systems are functioning properly;
- b. Breathing apparatus cylinders do not present leakages; and

- c. All fireman's outfits and EEBDs are appropriately supplied, arranged, and in proper condition;
- d. All fire detection, fire alarm, and fixed-extinguishing system control panel indicators are functional by operating the lamp/indicator test switch and verifying that all control/section valves are in the correct position;
- e. All fire door control panel indicators, if provided, are functional by operating the lamp/indicator switch;
- f. Verify low-location lighting systems are functional by switching off normal lighting in selected locations;
- g. Verify water mist, water spray, and sprinkler systems control panel indicators and alarms are functionals, visually inspecting pump unit and its fitting, and checking the pump unit valve positions.

#### **Monthly examinations**

Ships' officers are responsible for performing monthly examinations of firefighting system equipment and recording the examinations in the ship's official logbook.

Monthly inspections should be carried out to ensure that:

- a. All fire extinguishers, fire hydrants, hose and nozzles are in place, properly arranged, and are in proper condition;
- b. Dry pipe sprinkler systems have appropriate pressures as indicated by gauges;
- c. Sprinkler system pressure tanks have corrected levels of water as indicated by glass gauges;
- d. All sprinkler system pumps automatically operate on reduction of pressure in the systems;
- e. All fire pumps are operational;
- f. Emergency fire pump fuel supply is adequate and heating system in satisfactory condition.



### Quarterly Examinations and Inspections

Ships' officers are responsible for performing quarterly test and examinations of the following firefighting system equipment and recording the test and examinations in the ship's official logbook.

Quarterly inspections should be carried out to ensure that:

- a. All automatic alarms for the sprinkler systems are tested using the test valves for each section;
- b. The international shore connection is in proper condition;
- c. Lockers and fire stations providing storage for fire-fighting equipment contain proper inventory and equipment is in proper condition;
- d. All fire doors and fire dampers are tested for local operation; and
- e. All CO2 bottle connections for cable operating system clips should be checked for tightness on fixed fire-extinguishing installations.

### Annual Testing and Inspections

As part of the annual statutory survey for Safety Equipment Certification, the following inspections and tests should be carried out to ensure that fire mains, fire pumps, hydrants, hoses, and nozzles:

- Are visually inspected ensuring their condition;
- Flow test fire pumps for proper pressure and capacity;
- Test hydrants valves for proper operation;
- Verify all control/section valves are in the correct position;
- Examine all flexible hoses in accordance with manufacturer's recommendations;
- Test all fuel shut-off controls connected to fire protection systems for proper operation.
- Pressure test a sample of fire hoses at the maximum fire main pressure;
- Verify all fire pump relief valves;
- Examine and clean all filters/strainers;

### Fixed fire detection and fire alarm systems are visually inspected for proper condition:

- Externally examine all high-pressure cylinders for evidence of damage or corrosion;
- Test all fixed system audible and visual alarms.

### Foam fire extinguishing system:

- Visually inspect all accessible components for proper operation;
- Test all fixed system audible alarms;
- Flow test all water supply and foam pumps for proper pressure and capacity;
- Verify all pump relief valves are properly set, as applicable;
- Examine and clean all filters/strainers;
- Take samples from all foam concentrates carried on board and subject them to the periodical control test for both low and high expansion foam;
- Test all fuel shut-off controls connected to fire-protection system for proper operation.

### Water mist, water spray, and sprinkler systems:

- Verify proper operation of all water mist, water-spray and sprinkler systems using the test valves for each section;
- Visually inspect all accessible components for proper condition;
- Externally examine all high-pressure cylinders;
- Check the hydrostatic test date of all high pressure cylinders;
- Test all fixed system audible and visual alarms;
- Test all antifreeze systems for adequate freeze protection;
- Verify all pump relief valves;
- Examine and clean all filters and strainers;
- Test emergency power supply switchover;
- Test automatic sprinklers and automatic water mist nozzles in accordance with the manufacturer's guidelines;
- At least once every five years, the control valves of fixed fire-fighting systems should be internally inspected.



# Fire and explosion risks posed by carriage of scrap metal

The NorthStandard P&I Club presents the risk involved with bulk shipments of scrap ferrous metal, as explained by Dr Neil Sanders of Burgoyne Consulting Scientists and Engineers.

According to NorthStandard, bulk shipments of scrap ferrous metal (iron and steel) bring risks involving heating, flammable gas production and fires. Dr Neil Sanders of Burgoyne Consulting Scientists and Engineers shares the potential problems with all types of scrap ferrous metals in this article.

## 1 Self-heating, possibly to ignition

In practice, self-heating has occurred in cargoes that were declared as scrap metal, Group C, as well as in ferrous turnings etc., Group B. Self-heating occurs because iron and steel oxidise (rust) by reacting with oxygen in air, or oxygen in water. Oxidation reactions produce heat, which tends to be retained due to the insulating effect of surrounding cargo. The oxidation reactions become exponentially faster at higher temperatures, so self-heating can worsen, sometimes to the point of ignition, depending on the circumstances and actions taken.

Freshly exposed iron and steel surfaces have a high tendency to oxidise, whereas 'aged' surfaces that are already oxidised react more slowly, or insignificantly. Fresh surfaces may occur because the metal has been recently shredded, or because it has been stored after shredding in a way that avoids exposure to air, e.g., within a large stockpile or coated in oil that drains off.

## 2 Hydrogen, produced by water oxidation of scrap iron and steel

Hydrogen is highly flammable over a wide range of concentrations of hydrogen and air/oxygen. It is also extremely easy to ignite, odourless and colourless. We have seen cargoes declared as scrap metal, Group C, producing problematic amounts of hydrogen which, if allowed to build up and ignite, would cause an explosion in ship's holds.

Although the IMSBC Code entries mention trying to keep these cargoes dry, in practice scrap iron and steel cargoes are often stored in outside stockpiles in the rain, and terminals use water sprays to suppress dust. Therefore, iron and steel scrap may be wet, potentially producing hydrogen.

Seawater has a greater tendency than fresh water to oxidise iron and steel, producing hydrogen, but fresh water can also produce hydrogen, depending on the circumstances. The IMSBC Code does not indicate measuring gases in holds, so hydrogen production may go unnoticed.

## 3 Combustible materials in the cargo, such as cardboard, rags, plastics from recycled items, oils, and flammable gases from cylinders or aerosols.

Some of these combustible materials can be ignited at temperatures from roughly 250°C upwards, which is much lower than the ignition temperature of the scrap iron and steel. Fires in scrap metal (Group C) cargoes usually involve combustibles in the cargo and only rarely the scrap metal itself.

## 4 Ignition sources in the cargo, such as batteries and cylinders with flammable gases.

These items are of course contaminants, but they may be present due to the source of the scrap, e.g., household recycling. They may cause ignition during handling or shifting of cargo, or spontaneously. Burning material may also be loaded with the cargo.

## 5 Asphyxiating atmospheres due to oxidation of iron and steel cargo removing oxygen from the hold gases.

Oxygen may also be removed from adjacent spaces, if there are any gaps in bulkheads. In the case of self-heating or fire, carbon monoxide and carbon dioxide will be produced, which can also cause asphyxiation. Therefore, thorough risk assessments and precautions are needed before entering holds containing iron and steel scrap, and the same applies to adjacent spaces.



## Dealing with scrap iron and steel cargoes and incidents

According to Dr Neil Sanders, the following general points may assist, although no two incidents are the same and each must be assessed to determine the appropriate actions.

**1** Measuring hold gases daily should help to identify any reduced oxygen levels, hydrogen, other flammable gases, and carbon monoxide, although gas measurement is not mentioned in the IMSBC Code. Carbon monoxide is a good indicator of smouldering and burning. Gas samples should preferably be drawn from hold sample points, with the sampling tube inserted at least 1 metre into the hold ullage to avoid drawing fresh air into the gas monitor.

Typical ships' gas monitors are often only effective at measuring flammable gases down to about 10% oxygen. Below that level, a different type of flammable gas sensor will be needed, or a splitter to mix the hold gas with fresh air. With a splitter, of course the true readings must be calculated appropriately, also using readings taken without a splitter.

Some ship's gas monitors use infrared (IR) sensors for flammable gases, which do not register hydrogen. This could lead to missing a dangerous situation. Therefore, gas monitoring for scrap iron and steel cargoes requires correct equipment and correct usage, which will be difficult to arrange if the vessel is already at sea.

**2** Ignition sources should be avoided such as smoking, hot work, paint chipping etc., due to the possibility of flammable gas production, although this is not mentioned in the IMSBC Code. This applies unless a 'gas free' situation has been confirmed and is re-checked appropriately over time.

**3** In the case of self-heating and / or gas production, the correct approach will depend on the situation. For example, production of excessive amounts of flammable gases e.g., hydrogen will mean that natural ventilation is required to keep below the lowest gas level that can allow an explosion, plus a safety margin, such as a maximum of 20% or 50% of the lower explosive limit (LEL). On the other hand, allowing more air (oxygen) into a hold through ventilation will tend to worsen any self-heating or fire. The correct actions will depend on factors such as the gas readings and temperatures.

**4** In the case of a fire, the correct approach again depends on the circumstances. Scrap iron and steel in relatively large pieces (tens of millimetres and above), without finely divided material such as turnings, will usually not ignite, except in extreme circumstances. In this situation fires tend to involve combustible materials within the scrap such as cardboard, plastics, oils etc.

Fires can often be controlled via the hold being closed and un-ventilated to limit oxygen. This is easier if the proportion of combustibles in the cargo is not very high.

However, flammable gases can build up in a hold in a fire situation, or they may exist already e.g., due to hydrogen production. Low oxygen levels in a hold, due to oxidation reactions of the cargo or fire, may prevent explosive mixtures of flammable gases while the hold remains closed. Even so, opening up will introduce air and may risk producing a flammable mixture when air mixes with hold gases, if the flammable gas concentration was high to start with. Therefore, gases should be measured with appropriate equipment, and an assessment made about the correct approach.

Boundary cooling has a limited benefit, if any, for fires in holds. For the cargo itself, the IMSBC Code indicates that water should not be used for firefighting at sea with ferrous metal turnings etc. (Group B), but copious quantities of water may be used in port, having proper regard to the ship's strength and stability. The entry for scrap metal (Group C) does not mention water. Using water to fight fires in scrap iron and steel cargoes could produce hydrogen and/or its weight could cause strength and stability problems, so it should be considered properly beforehand.

If fuel tanks are adjacent to holds on fire, then consideration should be given to filling them completely ("pressing them up"), to exclude air and prevent fire or explosion in the fuel tank. In extreme cases it may be better to fill fuel tanks with water completely, rather than run the risk of fuel igniting, but usually filling with water can be avoided.

If a fire cannot be controlled without an unacceptable build-up of flammable gases in a hold, then the only alternative may be to discharge the cargo. Once discharged, it can be spread out in a layer ashore and doused with water to deal with fire and self-heating.

After controlling a fire in a hold, some smouldering may continue, even if the oxygen level remains low. Therefore, suitable precautions should be put in place before opening a hold, to deal with any flare-up that may occur.

If a fire involves finely divided iron or steel, such as turnings, then the approach may be similar to that above, but the fire can potentially burn very hot. The same potential issues of flammable gas build-up, explosion risks and ventilation apply, particularly if hydrogen is produced by oxidation with water.



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# COAL CARGOES: AVOIDING EXPLOSION AND SELF-HEATING

By **Gitana Røyset**, Gard Claims Executive, Arendal



Gitana Røyset has written this article of give advice on the best ways to avoid self-heating and explosions on vessels carrying coal. Royset noted that, despite its contribution to greenhouse gas emissions, global coal consumption climbed to an all-time high in 2022. And it is on track for a record-breaking 2024.

Coal is a fossil fuel with varying properties, depending on its source and handling before it is loaded aboard ship. Some coals can self-heat, and some emit methane – characteristics that can create fire and explosion risks to the crew, vessel and cargo.

Røyset said that Gard had seen several cases involving problematic coal cargoes, particularly those originating in Indonesia. She said that her particular focus in this article was how to deal with a cargo that was both self-heating and emitting methane, and how to safely monitor for both conditions.

The IMSBC Code requires that the shipper provides the master with the characteristics of the coal, in writing, for all types of coals. As a minimum the information should include the

coal's moisture content, sulphur content, size and whether the cargo may be liable to emit methane or self-heat. In Gard's experience it is common for coal cargo declarations to be inaccurate. For example, coal loaded in Indonesia, Borneo and Kalimantan often tended to self-heat, without being declared as such. Some charterparties or associated documents have required masters of vessels to treat such coal as liable to self-heat, regardless of the shipper's declaration.

The IMSBC Code indicates that precautions for self-heating apply if the coal has been declared as liable to self-heat. However, Gard said that it was usually best to treat coal as if it was liable to self-heat and emit methane in the first instance, and use initial, frequent gas measurements to check the actual situation, and to act accordingly. "Given that the cargo declaration may be inaccurate, Gard's advice has been to treat all coal as self-heating until it is shown that it is not."

Some coal can emit methane (CH<sub>4</sub>), which will produce flammable mixtures with air / oxygen (O<sub>2</sub>) in hold ullages, thus presenting a risk of explosion. CH<sub>4</sub> emission is usually dealt with by ventilating, thus keeping the level of CH<sub>4</sub> well below the minimum that will support flaming combustion or explosion. Many types of coal tend to self-heat, which can lead to toxic atmospheres, spontaneous combustion, and

production of flammable gases. Self-heating is usually dealt with by excluding air / O<sub>2</sub>, by trimming stows flat and closing hatches and vents.

In some cases, although uncommon, coal can both self-heat and produce CH<sub>4</sub> at the same time. This is more difficult to deal with because the two effects need opposite actions to bring them under control. Self-heating requires sealing to reduce the level of oxygen, while methane requires ventilation to decrease the concentration of methane.

The IMSBC Code does not give explicit instructions for this situation, but it is often (correctly) taken to indicate that ventilation should take priority, due to the acute nature of explosion risks. In this situation expert advice is usually appropriate, and more detailed comments are below.

Because self-heating can produce flammable gases, and gas detectors are usually calibrated for CH<sub>4</sub> and display results as CH<sub>4</sub>, self-heating



is sometimes misinterpreted as CH<sub>4</sub> emission. This can lead to holds being ventilated, which worsens the self-heating.

Coal that is liable to self-heat should not be loaded on board vessels if its temperature exceeds 55°C. This is because self-heating reaction rates increase exponentially as temperatures rise. As shippers' declarations may not be reliable, proper temperature measurement before loading is very often appropriate, for example in Indonesia, even if the coal is not declared as liable to self-heat. Temperature measurement of the coal to be loaded needs to be done at multiple points, to pick up hot spots. The temperature should preferably be measured below the surface, because if there is any self-heating the bulk will be hotter than the surface. If that cannot be done, then freshly exposed coal should be measured before it has been able to cool.

Once coal is on board, temperatures are more difficult to measure. Temperature sounding pipes within the holds are often used, but their readings are of limited value because bulk coal transmits heat poorly. Therefore, the focus should be on temperature measurement before loading.

The IMSBC Code indicates that coal stows should be trimmed 'reasonably level' to the hold boundaries. This is to minimise the exposed surface area, and to avoid cracks, hence minimising air entry and self-heating. It is good practice to take photos of the coal stows at the completion of loading to show the final trim, and to record the ullage size.

Holds and adjacent spaces must not be entered without proper precautions to ensure that the atmosphere is safe, because coal often removes O<sub>2</sub> from air and produces toxic gases such as the odourless carbon monoxide (CO). If there are delays of more than a few hours with no loading, consider closing the holds and measuring gases in the meantime.

Once holds are full, the IMSBC Code provides that, unless indicated otherwise, ventilate for the first 24 hours after departure from the load port, and measure gases once

during this period, after closing vents for a suggested period of not less than 4 hours. With self-heating coal that might not be declared as such, venting may worsen self-heating. It is often best to measure gases early within the first 24-hour period, after closing vents for the suggested period for measurement, and to repeat gas measurements frequently thereafter until conditions are seen to be stable. This is to check early for excessive CH<sub>4</sub> / flammable gas and CO.

If CH<sub>4</sub> / flammable gas concentrations remain below 20 %LEL, then holds should remain closed and unventilated. This is to exclude air / O<sub>2</sub> and hence minimise the potential for self-heating.

If CH<sub>4</sub> / flammable gas is increasing and above 20 %LEL, ventilation needs to be considered as a priority, to avoid explosion risks, which are more acute than self-heating. However, the %LEL action level for ventilating also depends on the ventilation history, the O<sub>2</sub> and CO levels and other factors.

Ventilation can hide self-heating problems. This can suppress CO measurement results, the best indicator of self-heating. Therefore, gas measurements need to be assessed carefully and ventilation needs to be controlled correctly, to avoid both explosion risks and self-heating. If gas measurements indicate that CO is rising above 50 parts per million (ppm) in unventilated holds, that indicates that the coal has propensity to self-heat. Gard recommends seeking expert advice if the CO level is above 50 ppm, as is indicated in the IMSBC Code. In such cases gas measurements should be taken at least every 12 hours until the situation is stable.

For coal with any self-heating tendency, once the vessel arrives at the port of discharge it is recommended to keep all cargo holds and vents closed and to measure gases until the discharge operation is ready to start. This applies to all holds individually meaning those holds that are not actively being discharged should remain closed. Pre-discharge surveys should not cause holds to be opened, allowing air / O<sub>2</sub> entry to the holds, unless discharge is to commence very shortly, or gas measurements have shown that there is no self-heating tendency.

If coal is showing signs of problematic self-heating, then it should be discharged all in one go, without delays. It is preferable to have a discharge plan to facilitate this, if it is possible within ship loading and stability limits. If there are any significant delays during discharge in any holds, consider re-closing those holds and measuring gases.

In case of severe self-heating or fire in coal, the IMSBC Code mentions avoiding using water when at sea. Røyset said that Gard's experience was that spraying water could help to suppress heating and fire, usually at anchor or alongside. Care however must be taken to keep within loading and stability limits, for example by pumping out water to an appropriate tank. Fresh water is preferred because seawater is often detrimental to the end use of the coal.

## Concluding remarks

**Given that cargo declarations may be unreliable and faced with the prospect of catastrophic losses to people and property, Gard said that it was important that care be taken at each stage, from loading to discharge, to monitor loading temperatures and, critically, gas levels on board.**

**The writer noted that coal has other characteristics not addressed here. For example, some coal can also liquefy or produce acidic liquids which may corrode the vessel's structure.**

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# How to ensure proper hatch cover maintenance onboard



Britannia P&I Club has published an article about how to maintain hatch covers properly, in order to avoid claims related to water ingress.

According to Britannia, the lack of hatch cover maintenance and/or improper repairs to hatch covers has been shown to be the primary cause of water ingress into the cargo holds which can lead to serious cargo damage. In addition to financial and insurance claims, there are other potentially more serious consequences that need to be considered:

**Fire:** Is the cargo being carried likely to self-heat or combust when wet?

**Accelerated corrosion:** Is the cargo being carried reactive to moisture (e.g. sulphur)?

**Loss of stability:** Is the cargo being carried prone to liquefaction when wet?

Any one of the above could potentially lead to the loss of the vessel and possible loss of life.

## **General maintenance and routines**

Continuous monitoring of the condition of the hatch covers and their sealing arrangements is best done when the covers are being opened and closed during operations. This continuous monitoring serves as an early warning and hopefully will prevent the development of more serious problems.



The following is a list of the common defects found during ship inspections and cargo damage investigations. This list is by no means exhaustive, it is a list of inspection and maintenance items that should form part of the ship's regular routine.

- Before closing the hatch covers, ensure that the hatch coamings and double drainage channels are swept clean of any cargo debris. This will ensure that the coaming drain non-return valve remains clear and free as well as ensuring that no damage occurs to either the hatch cover rubber packing or the compression bar. It will also ensure that there is no obstruction to the correct and proper sealing of the hatch cover.
- Whilst cleaning, check for any damage to the coaming area, paying particular attention to the compression bars, wheels, wheel tracks and landing pads. Record details of any damages found for urgent or future remedial repairs as required. If temporary repairs are required, it must be ensured that these temporary measures are such that the ship's cargo worthiness will not be affected for the entirety of the voyage. Ensure that the moving parts (wheels, cross joint hinges, hydraulic ram bearings etc.) are greased at regular intervals.
- If the hatch cover design is such that the cover side panels and end plates are in 'steel to steel' contact with the hatch coaming tops when in the closed position, check whether the coaming tops are free from grooving or wear. This would indicate worn hatch sealing rubbers.
- Hatch cover landing pads should be maintained in a good condition at all times, ensuring that any corrosion is dealt with in a timely manner and that the pads are greased regularly.
- Grooved, corroded or worn down landing pads are to be either built up with welding and ground back to original dimensions or cropped off and replaced in their entirety.
- Check for any rust streaks on the inside of the coaming which would indicate water ingress from leaking hatch cover seals. Take remedial action and repair the seal and clean off the rust streaks.
- Check and clean the surface of the seals. This is particularly important if the cargo being carried is gritty or dusty.
- When cleaning the seals, check for signs of permanent deformation (a useful general rule is 30% of the seal thickness). If sections of sealing rubber are required to be replaced, the minimum length is 1m. However, it is often better to replace a full length of sealing rubber to ensure effective and even compression.
- Hold access hatches and ventilation covers need to be carefully scrutinised in the same manner as the hatch covers themselves, for signs of damage to the sealing areas, securing arrangements etc.
- The function of the cleats is to keep the hatch covers in position and maintain the seal's design compression. The excessive tightening of cleats will not improve weather tightness but will lead to the accelerated wear of the seals and the landing pads and could even distort the hatch cover. Cleats and their snugs should be inspected for any damage, ensure the rubber washer is intact and not perished and the tightening nut is free to move.
- Standard adjustment of the hatch cleats is to tighten the nut hand tight against the steel washer and then to further tighten by 360 degrees.
- Hauling wires/chains need to be inspected for correct adjustment and tension to avoid uneven seating and hatch cover distortion when closed.



# Things a survey cannot find

*By Jean Levine, SAMS AMS  
and Jeff Grossman, BSEE (and  
Jean's assistant on surveys)*






A photograph of a marina at sunset. Numerous sailboats are docked, their masts and rigging silhouetted against a vibrant orange and pink sky. The water is calm, creating clear reflections of the boats and the colorful sky. The overall mood is serene and picturesque.

**The marine surveying industry has changed dramatically over the almost 50 years we've been boating. Back in the early days there were not any standards or certifying organizations for surveyors. Those that had industry experience and connections just 'hung out their shingle'. Some were very good and some were very bad!**





By the late '70s and early '80s the industry (led by the mortgage and insurance companies) realized that being proactive with self-regulation would be good for the industry as a whole. There are now two major marine surveyor organizations in America that are both outstanding in their dedication and professionalism.

SAMS: Society of Accredited Marine Surveyors, founded in 1987 with its Accredited Marine Surveyor (AMS) designation to provide credentials to surveyors, and NAMS: National Association of Marine Surveyors introducing its Certified Marine Surveyor (CMS) designation in 1980. Since then, the International Institute of Marine Surveying (IIMS) was born in 1991 and has emerged as the leading worldwide professional body dedicated to excellence in marine surveying and offering professional qualifications to new surveyors. Additionally, it assesses each membership application intensely and wants to see objective evidence provided by the applicant of their skills and experience.

Though these professionals endeavour to uncover everything they can about the vessel being surveyed, there are things that just cannot be found in one day at the dock and a brief sea trial.

Marine surveys are a snapshot in time. They document the condition of the vessel AT THAT MOMENT. As one instructor at survey school noted "water is always working". If the broker of the boat you are buying says "you don't need a survey, the seller just had one done six months ago and you can read that," smile politely and go have a survey done that will reflect the condition of the vessel AT THAT MOMENT.

We frequently find ourselves in the unique position of surveying a vessel, and then a short time later getting back aboard with the new owners

for training, often while voyaging on the vessel to her new home. This certainly helps keep us focused on our surveying skills since we know any issues that we may have missed on the survey are likely to show themselves while we're aboard, which at the least would be embarrassing. It also has provided us with an insight into those things that just cannot be found on a survey due to its brevity and nature.

Note that marine surveyors are precluded from certain action, due to the extreme liability and lawsuit potentials. As an example, here is some of the standard boiler plate wording you will find in most professional surveys: "This vessel was surveyed without removal of any parts, including fittings, tacked carpet, screwed or nailed boards, anchors and chain, fixed partitions, instruments, clothing, spare parts and miscellaneous materials in the bilges and lockers, or other fixed or semi-fixed items."

When you buy your dream boat and have that "Best Surveyor in the World" examine her for you, be prepared to uncover a whole new set of problems once you start using the vessel. Here are some of the top examples that we have found. Note: Our focus is sailboats, so all of the examples are from sailing vessels between 30' and 65' long.

**Fuel gauges:** The Sea trial on a survey cannot run the vessel long enough to see if the fuel gauge moves. Also, very few fuel tanks have access ports on them, so it is unlikely the surveyor will be able to tell how much fuel is actually in the tank. At least half the newly purchased boats we get on for training have a fuel gauge that showed a reading when powered on but didn't move when motoring a long distance. In almost all cases it was a simple fix of removing the float sensor from the tank, cleaning it and replacing it. Sometimes the gauge will move, but the reading is way off. On one particular boat we surveyed the Aux Fuel tank gauge showed empty, and the seller told us it was empty. A week later getting ready to go voyaging we went to fill the 18gl tank and it overflowed after only 7gl going in, surprise! When fuelling up for the first time on a boat new to you, always keep a pile of diesel absorbing pads handy.

**Holding tanks:** Most sellers make sure the holding tanks are completely empty and flushed to minimize odour. There is not time on a survey to fill these tanks and make sure the system properly empties them. Heads can be tested, macerator pumps can be turned on to verify power up, but the end-to-end system can rarely be tested. Note: overboard systems are usually not tested on surveys since the vessels are almost always within the three mile limit. During the survey of a new 46' boat the holding tanks were empty during the survey, so it was verified that macerator pumps ran and seacocks and 'Y' valves worked. Later while on the initial voyage, we found that once the tanks were full, the macerators didn't pump overboard, they were failing under load.

Leaking Tanks (fuel, water, holding): Detecting a leak in a tank can be a surprising challenge. Most often, the undersides of tanks are not visible or accessible. The best that can be done is to inspect the bilges and holds for signs of leaks. Example situations are:

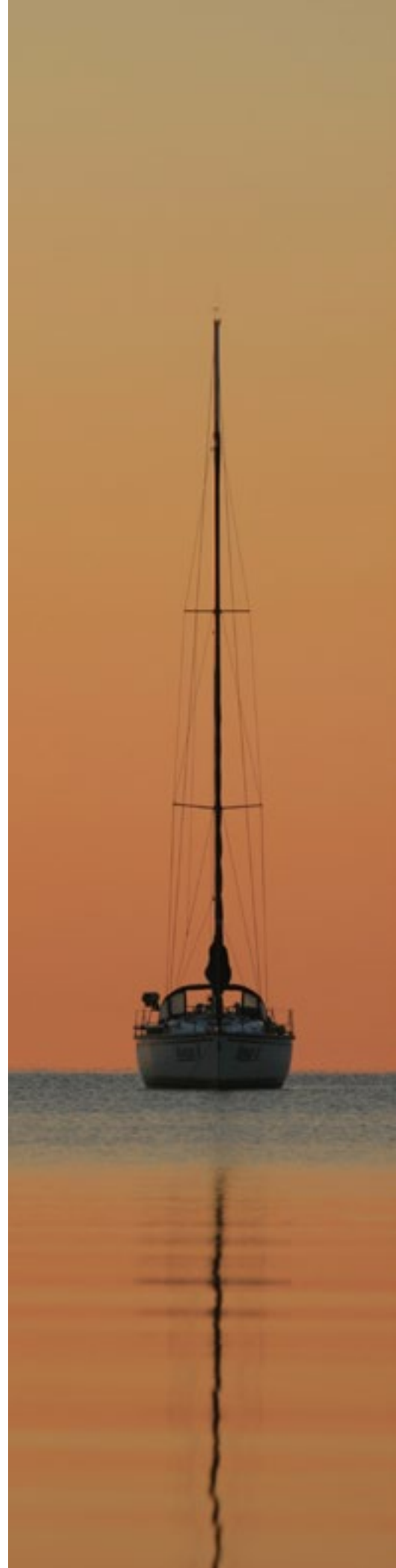
- The tank is empty. Surveyors do not run around and fill water, fuel and holding tanks. They have what they have when they arrive.
- The leak is on the top of the tank, and/or above the current fluid level in the tank. This leak won't be found until the tank is filled.
- The leak is in an inaccessible location and too small at survey time for the fluid to migrate to a visible location. If the vessel hasn't really been sailed in a long time, and you then take it right out on a 1,000 mile voyage home, that small leak may now work open to a larger one.
- The leak was small and "quick" patched by the seller to stop the leak short term, so no leaking during survey. Then you start sailing the boat and the fix fails and the leak reveals itself.

This is why we note things like: stainless steel tanks have a life span of 20 years. If we're surveying a boat with older stainless tanks, we're going to note that, beyond any leaks we may have found, the buyer should monitor and be ready to replace those tanks sooner rather than later. This is also an area where we see the intrinsic build quality of the vessel makes a difference. The higher quality vessels have tanks that are problem free for much longer

periods. While we have seen boats built to the "low cost market point" have tanks already leaking after only four years.

**Outboards:** When possible, we will start the outboard on our surveys. However, it is almost never possible to run them under load (eg actually run around the marina in the dinghy) and never possible to run them for any length of time. There have been times when the outboard started ok on the survey, but some weeks later, when tried for the first time by the buyer, it wouldn't stay running. Luckily, outboards are rather simple machines and if they'll start on the survey, any additional repairs are usually minor and it doesn't take much work to get them operational again. If the vessel is a power boat driven by large outboard(s) then we always direct the buyer to have an engine survey done by an outboard mechanic certified on those engines.

**Corrosion:** A good Surveyor will spot any clearly visible corroded parts and get a sense for the overall level of corrosion on a vessel. However, we surveyed one 1996 boat that had sat with no attention for two years in Florida. We noted to the buyers where we saw minor corrosion on wiring and some fittings and, that due to the vessel's age, they would likely find more as they started to use her. Some of the hose clamps looked fine, but as noted above, a Surveyor may feel a clamp by hand, but we don't (generally) put tools on things. As the new owners of the 1996 vessel started tightening hose clamps, that visually looked fine, many of the screws started to break off the clamps from corrosion. On a 39' sailboat that we surveyed, the overall corrosion level was minor, and the engine space hose clamps looked okay. About eight days into a 19 day trip from the West Coast of Florida to the Chesapeake Bay, we were doing our regular log checks of bilges, engines, etc and found water trickling into the bilge. When we checked the engine, we found the hose clamp holding the engine intake hose to the siphon loop had failed and popped off, this hose joint was the source of the water trickle. A quick replacement with a new clamp solved the problem. Even when you've had a great survey, bring proper spares and do regular checks, especially on the first voyage.







**Moisture:** If it is raining, or there is very high humidity, a moisture meter is not going to be usable on the deck and topsides. The phonolic hammer is used to listen and feel for any voids, but no matter how thorough a surveyor is, they cannot possibly tap every millimetre of the vessel. A hidden dime sized moisture spot on day of purchase can turn into a metre square area if the root leak isn't found and sealed. On the other hand, when we've done surveys in the rain, it has been easier to look for those leaks! On one 30 year old classic boat we surveyed, it was storming outside, and the boat had at least a half dozen leaks dripping into various compartments. These were noted, and we warned them that we could not check for moisture in the rain, and considering the number of leaks, to expect intrusion in a variety of places. They bought the boat and after purchase, they found moisture under the teak foredeck and a few other places.

**Bimini/Dodger:** If it is not raining hard on survey day, there is no way for the surveyor to know if the bimini/dodger is still waterproof. We have seen Bimini/Dodger canvas that visually looked fine with no tears, etc, yet, when on the voyage home, it started to pour down rain, the waterproofing was shot.

**Hidden Rigging:** The parts of the rigging covered under spreader boots, or huge layers of tape, cannot be inspected, and this should be noted in the survey. We recommend in our survey that the buyer should cut away all of that and inspect those sections. Chain plates sections that are hidden. Where the chain plates pass through the deck, or if the base of the plate is hidden behind cabinetry (becoming very common) or fibre glassed into the boat. We can inspect the visible portions and look for leaks, and get a good sense of overall condition. But if they are old, or show "tells" we'll recommend pulling all the chain plates for inspection and replace as needed. Yet, even younger chain plates, that are visually fine where one can see them, can fail from issues in the hidden areas. We once had the stem fitting fail on our 38' from an internal latent defect in the original casting that would only have shown under an X-ray exam...and the boat was already eight years old! No way would that have been found in any small boat survey.

#### **Electronic Communications:**

The SSB powered up fine and received, weakly, the WWV signal. This tells the surveyor that the SSB electronics unit itself is working. But the SSB is a system needing both a proper ground plane and antenna structure to fully operate. When we were voyaging this vessel a few weeks after the survey, we tried to transmit to a cruiser's net. It was found that corrosion in the ground plane and antenna connections were preventing proper Transmit (Tx). Most of the time, many of the connections for these ground and antenna planes are so buried in the vessel, it is impossible for the surveyor to put eyes on all of them.

**VHF Radio:** Most Surveyors only power up, and maybe try a Weather (WX) channel to hear something. We always do a radio check AND note how far away the test station was. It is not uncommon for us to survey a vessel and where a radio check to the marina office came in loud and clear, but a check to a station 15nm away, that should have worked, got nothing. In one case, a radio test to another station 5nm came in, but barely audible. This radio had serious antenna issues and would not help the owners if offshore more than 5nm.

**Cell Boosters:** A surveyor can only check if the system powers up and the proper lights are shown. Cell boosters only become active in a specific range from cell towers. Too close, and the booster drops offline since the ambient cell signal is very strong. Too far away from cell towers and there is no signal to boost. Unless the vessel is in a band of around 8 to 15 miles from the nearest cell tower, this system cannot be tested "end-to-end".

**AIS proper operation:** A surveyor can check power up, and can look to see if there are local returns showing. However, if the vessel is sitting in a remote location with no other traffic around, or if it is in a marina blocked by tall buildings, one may not see anything even though the system is working. It is also difficult to verify that the onboard AIS that is supposed to Transmit, is in fact transmitting, and doing so to the range it is supposed to. On a 50' vessel we surveyed the new AIS showed returns, but none further than 2nm. A check of the Web Site

(app) MarineTraffic.com showed other vessels in the harbour, but not ours. The installer waved his hands and said it was due to the tall condos surrounding the marina. Once underway offshore between Palm Beach and Ft. Lauderdale, we quickly verified (lots of traffic in these waters) that the AIS, both Receive (Rx) and Transmit (Tx), was limited to 2nm or less. The installers boss meet us in Ft. Lauderdale and replaced the connector splices in the AIS antenna run with a hard solder joint and we then Rx/Tx out to the expected 18nm ranges! Checking if AIS has proper range really has to be done at sea or in a busy bay with targets at the maximum ranges. If the vessel has a complicated electronics suite, consider having an electronics specialist survey those systems.

**What is wired to what:** Tracing unlabelled wiring is very time consuming and not something that a surveyor can typically do. The surveyor can test the device to make sure it works and that the device's On/Off switch or breaker is properly labelled, but what cable runs are used and possible terminal blocks or junctions are used between the switch and the device will be left for you to have fun tracing. This is especially "entertaining" when there are multiple charging systems. One vessel we surveyed had; Large engine alternator (85A), and second High Capacity Alternator (200A), Solar Panels, a Wind generator and a standard shore power charger (40A). The systems were owner installed and understanding the charging relationships to know if they were proper was impossible in the short time of a survey.

#### **Outlets (120v and 12v):**

Most surveyors do not look at the survey as a house inspection. It is a valuation and safety examination. Checking every single outlet for functionality can be very time consuming on a large vessel. One 44' catamaran we recently surveyed had 20 AC outlets and a dozen 12V ones. We tested samples of these and verified their operation, but with all the other high value complicated systems aboard needing testing, all we could do is visually inspect the wiring and test samples of the outlets. Even then, later when voyaging the vessel, we found a 12V outlet that had showed the proper 12.8V on a Voltmeter during the survey, yet had

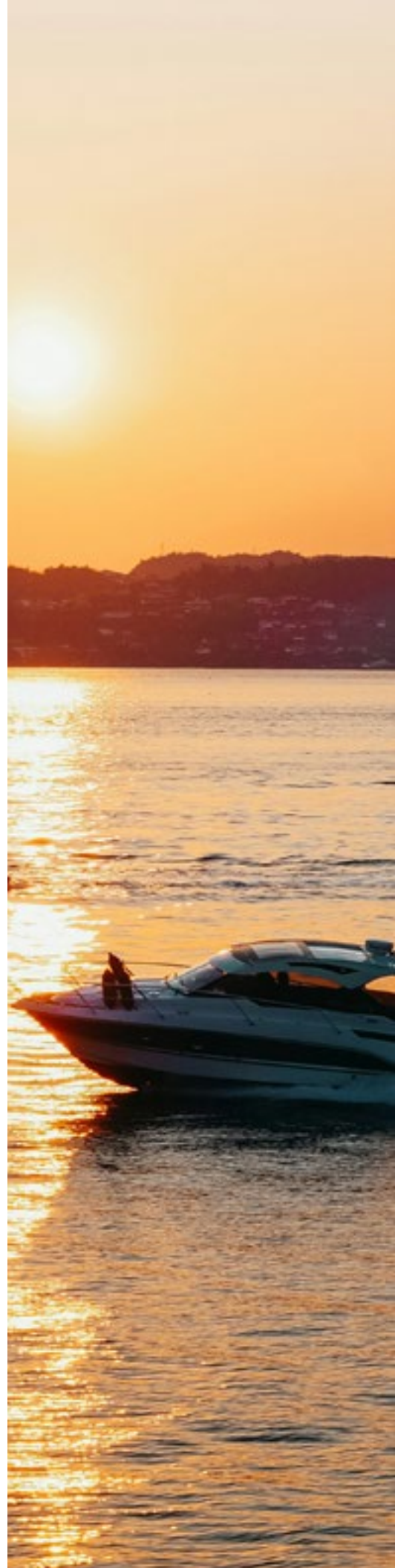
corrosion in a hidden connector that didn't allow enough current draw for the fan we plugged in.

#### **Battery deep cycle ability:**

Almost all boats undergoing in-the-water surveys are connected to shore power, and have been for sometime when the surveyor arrives. Even weak batteries will show a full charge. Voltage measurements can be taken to verify the charging systems are working, at least in the Float stage, but even disconnecting the shore power first thing, doesn't simulate how the batteries will respond when discharged over days of sailing and anchoring out. Sea Trials are never long enough to really know if the deep cycles are working, though the Sea Trial should be able to show if the alternator is putting out proper voltage. A surveyor will check the batteries to make sure they are properly secured, look clean and well cared for and may check voltage levels. What we will do is check the voltages upon boarding while hooked to shore power. At some point in the day, when the other systems needing shore power have been checked, the batteries are removed from charging and let sit for a bit of time, then the voltage is checked again. This can reveal batteries that are bad, but doesn't give a lot of insight into weak ones. As soon as you go voyaging for a few days, you'll learn how the batteries are doing.

#### **Sea Trials are short periods of operation:**

Usually an hour at most, and usually in fairly protected water. The Brokers that join us are often surprised that we actually sail the boat, not just put up sails to inspect their condition. We load up the rig close hauled on both port and starboard tacks and check; the mast stays in column, the rig tensions, any binding in the running rigging during a tack, and other sailing aspects. However, due to the short duration, and likely relatively calm conditions, anything hidden that will come loose when the vessel is stressed in a real sea may not be evident. The Surveyor should be able to identify any structural issues, so we're not talking about the boat coming apart. We're talking about things like: the previous owner ducked taped the speaker wires together and then pulled them into the cable run. The speakers worked at the dock and on the gentle Sea Trial,







but after the first voyage when the boat rocked an' rolled, the speakers didn't work anymore.

#### **Current Carrying Capacity of heavy load systems:**

Two examples here:

**One:** On a 42' we surveyed and then sailed from Florida to the Chesapeake, there was an added Aux Fuel tank in the bilge with a transfer pump that moved fuel from the Aux tank to the Main tank. The transfer pump powered on during the survey, but the Aux tank was empty, so the pump wasn't tested under load. While underway, testing with full Aux tank, the pump failed due to a partially corroded fuse buried in a circuit panel behind a bulkhead. When later diagnosing the failure it was found that the corrosion was such that with no load, 13V showed at the pump connections and enough current could pass to drive an unloaded pump. As soon as the pump was loaded and large current drawn, the corrosion caused a very large voltage drop and the pump did not operate. Not a chance of finding this on the survey!

**Two:** On a 44' Catamaran, during the survey the anchor windlass was tested at the dock. The windlass operated down and up with no apparent issues. But the only load was the chain going back and forth since the anchor was secured to the deck. The first morning anchored out, while voyaging this Catamaran to her new home, the windlass could not get enough current to pull the chain and 70lb anchor up, so we ended up doing it by hand. No connection or corrosion problems were sighted in any of the visible connections and 13V+ was measured at the windlass terminals when no load. It was eventually discovered that the windlass motor had the corrosion in its internal structure. When possible on a survey, we'll kick the anchor off the bow and drop it to the bottom and bring it back up for the windlass check, but this isn't possible on many of our surveys.

Sail handling systems, especially In-Mast Main furling systems: It is very common for the Sea Trial to be done on a calm or moderate day that may not reveal issues that can only be found when the wind is strong. One example is an In-Mast furling system that often has internal pawls

fail in the furling drum that cannot be detected until it is attempted to furl an already partially reefed main in the rest of the way in strong winds. On a 42' sloop, the furling system worked fine during the Sea Trial in 15-20kn air. During the vessels voyage to its new home the main was reefed about half way in. When the winds picked up to 30kn and we went to furl in all of the main, the whole sail came unfurled and flogged due to the problem with the furling system.

#### **Engines, Fuel and Oil systems:**

Some clients request an Oil test be done on the engine(s). These will come with a small additional charge for the time, processing and interpretation. Note that there is a key bit of data that must be provided for the oil test to have any meaning: how many engine hours has it been since the last oil change! If the boat has been well maintained and a proper maintenance log kept, this should be an easy answer. Sadly, most of the boats we've surveyed, the seller has no idea how many engine hours it has been since the last oil change. An oil test looks at the number of particles in the oil. Some particles will always work their way in and the longer the time from the last oil change, the more particles that can be expected. Thus, test results could be good for an engine that's been run 100 hours since the last oil change, while the same results would be a glaring failure for an engine with only two hours since the last change. Yes, there are failures that an oil test will show no matter how many hours, and these reflect serious issues with the engine. In most of these cases, the engines will have other "tells" indicating further investigation is warranted. Dirt in the bottom of the fuel tank. If the fuel in the tank is old, even if the vessel has been sailed on a regular basis, there maybe a layer of sludge on the bottom of the fuel tank. If the seller recently changed the fuel filter, so the bowl is clear, the sludge cannot be detected by a regular survey. The Sea Trial is unlikely to be long, or rough, enough to stir the sludge up into suspension. You will do that the moment you clear the Sea Buoy on your voyage to the vessels new home. Then you'll wonder why your engine is failing with clogged filters all the way home, even though the system surveyed out fine. We ALWAYS have our voyaging clients have the tanks cleaned and fuel polished on every boat that is

new to them before we will start the voyage to the vessels new home.

Think of your surveyor like a doctor who is a General Practitioner (GP), highly educated with a breadth of knowledge but not a specialist. Though it is not unusual for a surveyor to have "specialist" expertise in one particular field (eg: Jeff is an Electrical Engineer with marine electronics expertise) in general, surveyors, like GPs, need to have enough knowledge to recognize when a Specialist is needed. A good example is when looking at engines. It never hurts (except in the pocket book) to have a mechanic do an engine survey, but it usually isn't needed if the surveyor

visually inspects the engine and runs it through its paces on the sea trial and none of the warnings signals are seen. However, if the engine has been laid up for a long period of time, or if the surveyor sees warning "tells", such as oil dripping from the bottom of the engine after the sea trial, then the surveyor will recommend a mechanic do an engine survey.

Remember, these are just examples, there are many other things that you will find when you start sailing your new-to-you vessel. Stop and consider just what the issue was. Could this really have been found on the survey?



**FOOTNOTE:**

**Example of Boiler Plate limitations of survey noted in most professional surveys:**

No reference or information should be construed to indicate evaluation of the internal condition of the engine or the propulsion system's operating capacity. It is recommended that all diesel engines be surveyed by a qualified engine technician to determine the condition of the engines, gears and pumps, heat exchangers, coolers, etc. Electronic equipment was checked for "power up" only except where noted in the survey report.

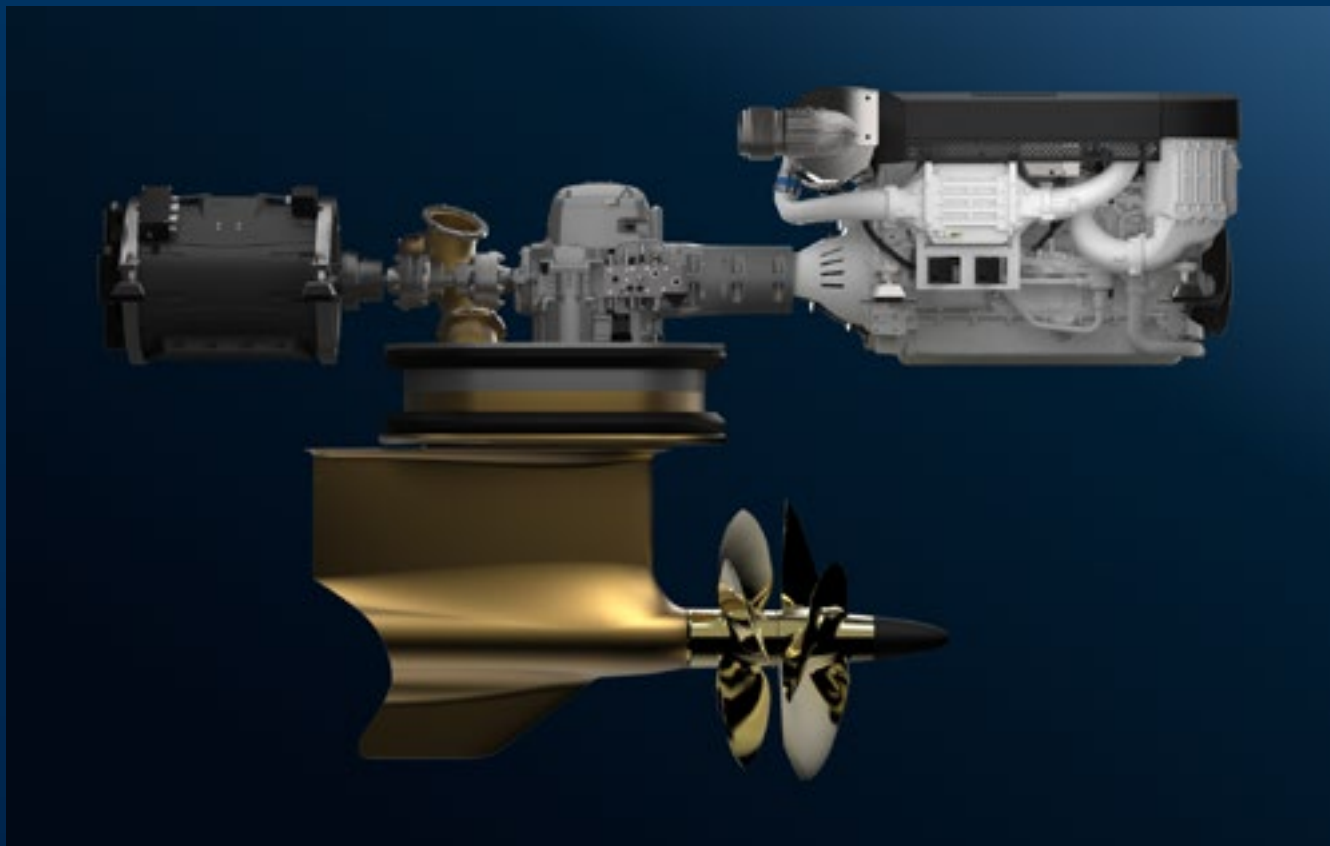
This vessel was surveyed without removals of any parts, including fittings, tacked carpet, screwed or nailed boards, anchors and chain, fixed partitions, instruments, clothing, spare parts and miscellaneous materials in the bilges and lockers, or other fixed or semi-fixed items. Locked compartments or otherwise inaccessible areas would also preclude inspection. Owner is advised to open up all such areas for further inspection. Further, no determination of stability characteristics or inherent structural integrity has been made and no opinion is expressed with respect thereto. This survey report represents the condition of the vessel on the above dates, and is the unbiased opinion of the undersigned, but it is not to be considered an inventory or a warranty either specified or implied.

**Website:** [www.TwoCanSail.com](http://www.TwoCanSail.com)

*This article has been lightly edited from the original supplied.*



# Volvo Penta advances intelligence and decarbonization at sea with IPS Professional Platform



**Volvo Penta** has unveiled its new IPS Professional Platform, the industry's most advanced technology and propulsion platform for superyachts and commercial marine vessels.

- It offers unparalleled flexibility for renewable fuels, hybrid and electric power in leisure and commercial vessels.
- It combines dual power propulsion and smart features ranging from eco mode to assisted docking to dynamic positioning - all integrated through an intelligent electronic vessel control system for a premium on-water experience.
- It delivers up to 30% savings in fuel efficiency and emissions, enabled by the technology.

**The Volvo Penta IPS Professional Platform** builds on the company's proven Inboard Performance System (IPS) and Electronic Vessel Control (EVC) technology with unique enhancements for larger vessels.

**The IPS Professional Platform** is the next evolution of Volvo Penta's fully integrated helm-to-propeller experience, designed to deliver unparalleled comfort, performance and sustainability for professional vessels and super yachts. The flexible platform enables a vessel to have up to eight power sources, and includes perfectly matched software, services and support, all integrated via the company's proprietary EVC technology. Highlights of the new platform include:

- An intelligent dual power drive system: Installed as a twin, triple or quad, the system enables each vessel to have four to eight power sources. The solution is prepared for a mix of power sources - from combustion engines running on renewable fuels to fully electric or hybrid solutions, enabling unparalleled efficiency and providing the option to combine traditional internal combustion engines (ICE)

with electric power sources - a unique approach to efficiency for this class of vessel.

- Intelligent technology features of the platform also include Volvo Penta Assisted Docking, Dynamic Positioning and a professional-level Glass Cockpit helm display on some models to ease manual operation and semi-automated features for every level of operator. Beyond the bridge, this system also offers remote diagnostics and improves maintenance.
- Future-Proof Vessels: The platform architecture can future-proof vessels through its versatile dual-power configuration. Vessels can be designed for the ultimate level of efficiency with today's ICE technology. Captains or technical engineers can then upgrade with hybrid and electric options in the near future without the need to redesign or scrap a vessel.

- Smart power sources: All Volvo Penta ICE engines can run on renewable diesel or bio-diesel today, enabling the path to sustainability to start immediately, even before fully electric power sources are ready for deployment.
- Getting eco smart: A new smart Eco Mode feature that automatically starts/stops individual engines based on the power needed for a given situation, optimizing fuel consumption and engine running hours. In addition to increasing the benefit of Volvo Penta IPS at lower speeds and reducing fuel consumption across the majority of the drive cycle, Eco Mode is visible through an interface at the helm. This makes it is easy for the captain or operator to monitor.
- New levels of efficiency: Together the Volvo Penta IPS driveline and Eco Mode ensure new levels of efficiency never seen in the industry - they complement each other.
- Commitment to sustainability: Volvo Penta has been committed to sustainability and decarbonization. With the complete system, users will experience up to 30% total fuel savings and emissions.

## A new approach to power

Commercially available in 2025, the Volvo Penta IPS Professional Platform was developed with ease of operation, versatility, and efficiency in mind. The first of its kind, the platform includes an innovative new concept in marine propulsion design built on the industry-leading Volvo Penta IPS system and developed for use with dual power inputs. This new design unlocks a range of possibilities for managing the power to the water in the most efficient way by enabling different combinations of power sources to be connected to one energy efficient drive. Depending on mission parameters, power combinations could include:

- Traditional ICE power sources, including renewable fuels such as HVO or Renewable Diesel
- A hybrid of ICE and electric power sources
- Fully electric power sources

Additionally, Volvo Penta's dual power input design is supported by a smart Eco Mode feature that will automatically manage and optimize the use of power based on real-time needs during operation. Eco Mode optimizes fuel consumption and engine running hours. Approximately 50% of the time, half of the power sources will be on standby. This gives the potential to operate a vessel with unrivalled new levels of efficiency and leads to extended service and maintenance intervals.

## Designed around the vessel operator

The Volvo Penta IPS Professional Platform is designed to deliver a seamless and intuitive experience, making operations easier, safer and more enjoyable for even the most seasoned professional. Intelligent features like Volvo Penta Assisted Docking, Dynamic Positioning and Volvo Penta's professional-level Glass Cockpit helm display, make manual operation easier. The system's innovative new design and dual power inputs unlock a range of possibilities for managing the power to the water in the most efficient way possible, increasing confidence and trust for every level of operator. Beyond the bridge, advanced connectivity enables predictive maintenance, remote diagnostics and remote monitoring, all contributing to premium level support and increased uptime.

"Our aim has long been the relentless pursuit of innovation. We are absolutely focused on delivering sustainable solutions that create an exceptional experience for our customers. Building on the success of the legendary Volvo Penta IPS system, this new Professional Platform will also provide new options for energy efficiency and aid in efforts to achieve decarbonization at sea in marine industries," said Johan Iden, president of Volvo Penta Marine. "We see this as a major step towards decarbonization in superyachts and commercial vessels between 25-55 meters."

## A history of innovation and trust

The complete Volvo Penta IPS Professional Platform is designed, developed, verified and serviced by one company - ensuring an optimized experience throughout the complete lifecycle of the vessel. Volvo Penta's EVC is available across the full range of Volvo Penta-powered vessels and offers a seamless on-water experience across a variety of marine applications. Backed by its worldwide authorized service network, Volvo Penta will offer global parts availability and 24/7 customer support - delivering peace of mind out on the water and beyond.



**Volvo Penta Glass Cockpit System - photo © Volvo Penta**





Promoting excellence in  
professional maritime standards

The purpose of the **Maritime Professional Council of the UK** is:

- To promote the professionalism and esteem within the British Merchant Navy and to those organisations directly concerned with the sector.
- To provide a central point from which professional opinion on maritime matters can be offered to the Maritime Community, Industry, Government and the Media.
- To provide independent expert advice and guidance based on our combined professional knowledge and experience unhindered by any financial or commercial interests.
- To provide guidance to regulators and employers on the professional training standards adequate for our maritime professionals.maritime standards

[www.mpc-uk.org](http://www.mpc-uk.org)









# Tips for effective cargo hold cleaning

**Britannia P&I Club has shared methods to ensure proper cargo hold cleaning is carried out that meets the regulatory standards with the aim of avoiding and preventing future claims.**

According to Britannia, ensuring cargo holds are cleaned to appropriate standards is essential for shipowners operating bulk carriers. Failure to meet these standards can lead to cargo damage, noncompliance with regulations, pollution, and significant delays in operations, all of which can lead to claims.

Understanding the hold cleanliness requirements is often instrumental when analysing major claims, Britannia has noted. The P&I club also presents suggestions including, but not being limited to, the following...

## **Hold inspections**

Regular inspections and maintenance of the cargo hold should be conducted as part of a documented planned maintenance system within the Safety Management System (SMS). After every discharge and subsequent cleaning, holds should also be inspected by a responsible officer with any defects noted and repaired promptly. Typical areas of inspection include:

- Hold framing
- Structural access points (ladders, handrails etc.)
- Condition of hatch covers and all associated parts (trackways, hatch rubbers etc.)
- Paint coating condition
- Bilge system
- Light fittings
- Tank top areas
- Pipework within the hold
- Fixed firefighting systems

Managers should establish effective practices for cleaning areas that may be difficult

to access or inspect, such as stiffeners under the deck in hold ends, which may require specialist equipment such as cherry pickers.

## **Cleanliness standards**

Figure 1 highlights industry standard cleanliness levels and their associations with various cargoes. These levels, such as Hospital clean (the highest), are crucial for compliance with Charterers' instructions and IMSBC Code standards. Hospital clean is typically achieved by vessels exclusively trading specific cargoes and is rare in tramp trades. Grain clean is a common requirement, especially when the ship is unfixed for the next cargo. Notably, adhering to load on top standards may leave cargo residues hindering a full hold inspection for damages. The text also outlines procedures for swept clean and shovel clean scenarios, emphasizing the need for proper residue disposal to meet delivery standards.



FIGURE 1

LEVEL OF CLEANLINESS	DEFINITION	CARGOES THAT MAY BE ASSOCIATED WITH THIS LEVEL OF CLEANLINESS
Hospital clean	Hospital clean requires the holds to be completely clean, dry, and free of all loose scale. It also requires fully intact paintwork of all surfaces in the hold.	<ul style="list-style-type: none"> <li>• Chrome Ore</li> <li>• Fertiliser</li> <li>• Fluorspar</li> <li>• Mineral sand</li> <li>• Rice in bulk</li> <li>• Soda Ash</li> </ul>
Grain clean	Completely clean, dry, odour-free, and gas-free. All loose scale is to be removed.	<ul style="list-style-type: none"> <li>• Cement</li> <li>• Fertiliser</li> <li>• Grain</li> <li>• Sugar</li> <li>• Seed cake</li> <li>• Sulphur</li> </ul>
Normal clean	Less rigorous than grain clean, but still requires the hold to be swept, clean, dry and free of any residues of the previous cargo.	<ul style="list-style-type: none"> <li>• Coal</li> <li>• Petcoke</li> <li>• Salt</li> <li>• Iron Ore</li> <li>• Bauxite</li> </ul>
Shovel clean	Cargo is removed by mechanical means, such as a grab, or manually via shovels. Several tonnes of the previous cargo may remain.	<ul style="list-style-type: none"> <li>• Iron Ore</li> </ul>
Load on top	Loading the same cargo on top of the residue of the previous shipment. This is only allowed for certain types of cargo, and the hold must be clean enough to prevent contamination of the new cargo.	<ul style="list-style-type: none"> <li>• Coal, if the same grade of coal has been contractually agreed to be carried over an extended period.</li> </ul>

### Hold washing

The process of hold washing on ships involves critical considerations for safety and effectiveness. A comprehensive risk assessment by the ship's master is essential, encompassing chemical usage, provision of accurate data (SDS), and adherence to safety measures. During paused cargo operations, crew members may access upper cargo hold areas after a risk assessment and permission from authorities.

Cleaning starts with hatch covers and deck areas, with attention to potential water entry and compliance with local wash water regulations. Sweeping debris, using appropriate cleaning chemicals, and considering cargo residues' impact on bilge systems are emphasized.

Adequate fresh water for a final rinse is crucial to prevent chloride traces, which can lead to failed cleanliness inspections and coating issues. The text provides a detailed guide for efficient and compliant hold washing procedures.

### Preventative measures

To protect their position and avoid disputes or claims, shipowners should consider the following:

- Conduct pre-loading inspections to ensure that the hold is clean and free from any residues or contaminants. This helps in identifying any potential issues before loading cargo.
- Maintain accurate records of hold cleaning activities, inspections, and any communication with charterers regarding hold cleanliness. These records can serve as evidence in case of disputes or claims.
- Maintain open and transparent communication with charterers regarding hold cleanliness. Inform them of the cleaning procedures followed, any issues identified during inspections, and any necessary remedial actions taken.
- Chartered entries should consider the differential in hold dimensions and hatch size when fixing a ship. The differential may mean

that both a grab and bulldozer are required to discharge the cargo, considerably increasing discharge time.

- Remove as much cargo residue as possible at the discharge port, with local and MAPROL regulations always considered. This will better prepare shipowners in the event unforeseen circumstances, such as adverse weather.
- Local requirements may be more stringent than those typically experienced. Australia and the US are known to be areas with more strict requirements and shipowners should consult their local agents for up-to-date information on requirements in discharge ports.





# Marine insurance in an increasingly volatile world

As we settle into 2024, Gard P&I Club has published its vision for the future of marine insurance in what is becoming an increasingly volatile world. More wars, increasing geopolitical tensions, unprovoked attacks on ships and more persistent inflation than expected. How is marine insurance likely to be impacted?

2022 was the year of increasing geopolitical tensions, war within Europe, and growing signs of a more divided world. Sadly, 2023 brought additional tragedies. The war in Ukraine persists, and on 7 October 2023, the world turned its eyes to yet another brutal conflict: Hamas launched a massive attack on Israel followed by large-scale retaliation in Gaza. Dark scenarios include a possible regional escalation in the Middle East as well as increased tensions in the South China Sea.

A more divided world also affects international trade, shipping, and thus marine insurance. This article focuses on the latter: how marine insurance has fared recently and what the crystal ball may signal about the future direction and challenges.

## Impacts on marine insurance

Wars and conflicts have injected more uncertainty about the future. Prices of real goods and capital have

increased, and inflation has persisted for longer than expected. However, the world economy is growing still, and most trade and shipping markets have remained buoyant.

Perhaps contrary to popular belief, war and geopolitical tensions do not necessarily lead to increased maritime claims (with the obvious exception of war risk claims, as recent attacks on ships linked to Israel have shown). The main driver of maritime accidents



remains total trade volumes, density of ship traffic in busy areas, as well as the speed applied, both literally and in decision-making, in the competition for freight. Maritime claims thus ebb and flow over time with a degree of randomness, especially as concerns large incidents and claims. Having financial strength and risk diversification as an insurer to withstand this volatility is key to ensure premium stability and predictability, which remains a key value proposition to members and clients.

Still, wars and geopolitical tensions have a direct impact on marine insurance through sanctions and insurers have been forced to invest heavily in compliance. However, to complicate matters further, sanctions are not universally imposed. Countries such as China and India continue to import significant quantities of oil and gas from Russia, facilitated by a so-called 'parallel' tanker fleet – often with limited or unknown insurance, leaving the environment and society at higher risk.

### **What to expect going forward?**

So, what can we expect as an industry looking ahead? The old saying is apt: "It is hard to predict, especially about the future!". However, there are some pretty clear signals on the radar.

### **Claims costs will remain volatile**

Inflation continues to be high. Maritime claims handlers need to have a high focus on cost exposure, and the 'swing factor' between best and worst-case outcomes. Use of lawyers, experts, and specialist contractors is an investment to achieve a better claims outcome. For high-severity cases, the daily burn cost needs to be considered while for more routine claims handling costs must not become disproportionate. It takes vigilant, competent and confident claims handlers to identify mitigation opportunities: In a recent loss of hire case, the handler managed to source a much speedier propeller shaft repair, leading to valuable saving of time.

### **Increasing severity and complexity of claims**

A relatively benign claims period should not be projected as the new norm. Looking ahead, we should expect cases of higher severity and increased complexity. More sophisticated and valuable assets make for higher loss exposures – both for vessels and fixed structures at sea and waterfronts. Ocean wind farms are growing in number and size. Together with other offshore surface and sub-sea structures they occupy more space in increasingly crowded offshore waters. Compensation demands in

liability claims are increasing, both for environmental damage and personal injuries (especially in the United States). Moreover, we see authorities in some states issue very large and wholly disproportionate fines against shipowners to boost compensation beyond available levels under international regimes. Add criminalization of both seafarers and shipowners, and it all makes for more adversarial, protracted, and expensive litigation.

In sum, we can expect more complexity in claims. As one response, marine insurers should continue to invest in outreach activities with a view to establishing trust and understanding with maritime authorities and other key stakeholders. Building trusting relationships before an accident happens can make a significant difference. Gard invests a lot in its global outreach program, specifically for this purpose.

### **Improved loss prevention**

As technology, digitalization, and artificial intelligence (AI) continues to develop, we expect much enhanced opportunities for improved loss prevention services. This is especially important when considering how long it can take to amend regulations in relation to changing risks. Shipboard fires, often originating in cargoes, continue to buck the





positive trend in maritime safety and sensors are just one example of technology that can help to detect problems before they escalate. This may become especially relevant for fires involving lithium-ion batteries. Digital twins can also run simulations to assist with early intervention and AI is already being trialled to support decision making onboard. Another example is the geo-tagging of bulk carriers heading for hot spots known for misdeclaration of bulk cargoes prone to liquify. Proactively helping owners to manage the risks can save lives, prevent environmental damage and protect valuable assets.

As always with new technology, the caveat is that tensions between humans and machines can bring new challenges, but overall, it seems safe to say that technology will help to improve safety and reduce the risk of accidents at sea.

### **Climate change and green transition**

Looking ahead, we should expect more claims related to extreme weather. Many insured assets are either stationary or can only be moved out of extreme weather paths if sufficient, reliable pre-warning is provided. Improved voyage planning to cater for weather risks will be expected, given improved availability of forecast weather data.

Decarbonization and the ongoing shift towards cleaner fuels will accelerate and likewise the need to understand risks associated with

this transition, e.g., toxicity, fire, pollution, and contractual or legal disputes. Crew will need upskilling, and the same goes for repair yards. Fewer qualified yards and workers, and longer delivery time for spares, may cause extended time of repairs. Casualty handling aspects, ranging from salvage, place of refuge and pollution clean-up, will need to adapt to the properties and risks of the fuels concerned.

Gard is working every day to prepare for these changes. Our partnership and collaboration with the Global Centre for Maritime Decarbonisation (GCMD) in Singapore and the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping in Denmark, helps to get pioneer knowledge and understanding to support our members and clients in their transition.

### **More focus on seafarers**

International trade relies on sufficient and competent seafarers. Crew safety and wellbeing is crucial in its own right and will also serve to mitigate risks of ship operations. Hence, supporting shipowners in improving crew safety and wellbeing should be a very high priority for marine insurers. Covid brought the challenges of seafarers into broad daylight, including mental health issues. While the pandemic has largely receded, many seafarers continue to face challenging conditions.

Of course, working and living on board ships can never be risk-free.

Still, it is a laudable objective to work with shipowners to mitigate risks such that one day there will have been a month or even a year without a seafarer losing his or her life on board ships insured with us.

The human rights of seafarers need to be universally strengthened. The 288 days that the 26 crew members of the HEROIC IDUN were detained in Equatorial Guinea and Nigeria serves as a stark reminder of how seafarers can be caught in the crossfire between governments and trade issues beyond their control. The recent attacks on ships in the Red and Black Seas are also examples of innocent crew members being harmed by military conflict.

This short article has touched on a wide range of issues that we have to focus and work on in our industry. And as conflict and regionalization seems to be gaining ground, the role of cross-industry collaboration, whether in the International Group of P&I Clubs (IG) or the International Union of Marine Insurers (IUMI), becomes even more important. The same goes for the UN and the International Maritime Organization. We need properly governed arenas where states, regardless of their other differences, can develop and agree on the legal frameworks needed to address challenges that transcend national and regional boundaries. Whether the purpose is to prevent and mitigate harmful incidents, ensure fair and predictable compensation, combat climate change, or protect the rights and interests of seafarers – on whom we all depend.





Dive into the benefits...

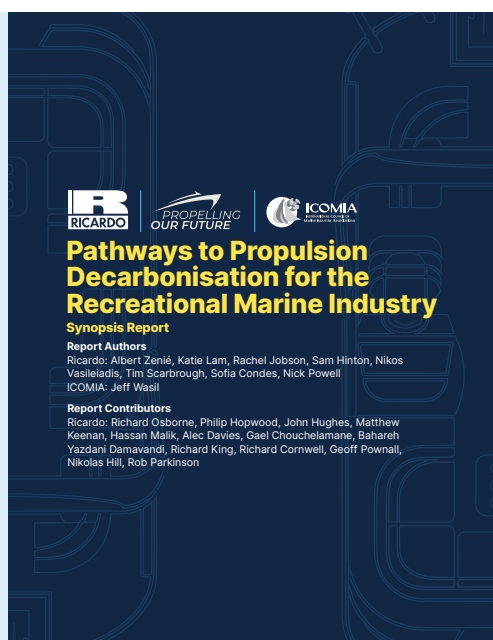
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# Global research identifies portfolio of existing technologies to help reduce carbon emissions



The International Council of Marine Industry Associations (ICOMIA), a global organisation representing the recreational marine industry with more than 100 members around the world, has shared further insights from its first-of-its-kind research outlining a portfolio of existing technologies best positioned to continue to propel the industry toward decarbonisation and outlined what this means for consumers. The research, which specifically looked at marine propulsion in boats under 24m in length, revealed that due to the unique on-water environment for recreational boating, and the varied interests of boaters and the experiences they seek, a variety of solutions must be considered to continue reducing carbon emissions from recreational boats.

The report, titled *Pathways to Propulsion Decarbonisation for the Recreational Marine Industry*, was discussed by a panel of industry experts at Europe's biggest international consumer boat show, boot Düsseldorf, exploring what the research finds and what it means for end-users of recreational marine craft.

The *Pathways to Decarbonisation for the Recreational Marine Industry* report, commissioned by ICOMIA with leading global engineering consulting firm, Ricardo plc, investigated propulsion technologies across nine

common recreational watercraft to compare the impact of lifetime GHG emissions, financial costs, usability, performance, range and infrastructure implications.

The propulsion technologies investigated included:

- Battery electric (electric-powered boats and watercraft).
- Hybrid electric (internal combustion engines using liquid fuel and electric).
- Hydrogen (internal combustion engines or fuel cell).
- Internal combustion engines with sustainable marine fuels (sustainably produced liquid substitute for conventional fossil fuel).

- Internal combustion engines with gasoline or diesel.

Due to the diversity of the types of boats in use and the varied experiences sought by boating consumers from fishing to watersports to cruising, the research shows there is no universal, "one-size-fits-all" approach to decarbonise recreational boats. As a result, in addition to current internal combustion and fossil fuel-powered boats, ICOMIA recommends that end-users consider a portfolio of existing technologies, including:

Sustainable liquid marine fuels, such as renewable drop-in fuels, are expected to be the most suitable source of energy to decarbonise recreational boats by 2035 - by as much as 90% - without compromising the distance a boat can travel or its performance. Of the approximately 30 million recreational boats in use worldwide, with an average total lifecycle of 40 to 50 years and global annual sales making up approximately 2% of the size of the current market, there is great potential for increased decarbonisation of recreational boats with immediate, widespread adoption of sustainable marine fuels.

Hydrogen is an emerging technology and another potential source for reducing carbon emissions from boats, as long as its production process is optimised. Hydrogen, if produced via electrolysis with zero fossil fuel electricity, can reduce carbon emissions for certain craft categories.

Electric propulsion is part of the strategy to decarbonise, however, it is not universally suitable for all types of recreational craft and use cases. Electric-only propulsion may have a higher GHG contribution from raw materials and manufacturing than conventional propulsion systems. Watercraft types with lower utilisation are unlikely to find that battery electric systems yield a reduction in GHG compared to the baseline internal combustion engine. It is important to note that this study considers both battery lifetime in years and recharging cycles as battery performance is expected to degrade over time regardless of utilisation. This could impact watercrafts that have a long life span but are not frequently utilised as it may require several battery replacements throughout its lifetime.

Hybrid boats that use both electric and internal combustion engines powered by liquid fuels offer the potential for reducing carbon emissions from boats in certain scenarios—namely boats used for longer periods of time and for greater distances. As a result, hybrid technology provides the most potential for emissions reductions for boats that are used for rentals and other high-use environments.

Sustainable steps for consumers  
The report highlights there is more investment and work required to further reduce carbon emissions in the recreational marine industry. However, there are practical steps that end-users can take now to help reduce their own carbon emissions:

- Consider the most likely use case of their particular boating hobby to understand which is the best option to minimise the global warming impact of their boat.
- To discuss the best options for propulsion technologies with independent experts, (consumer's National Marine Industry Association) before committing to a new purchase or a refit or repowering of their current boat.
- Start to explore sources for sustainable drop in marine fuels
  - we need to demonstrate the demand, in order for the supply infrastructure to be created.
- Think about how best to operate their particular boat in order to minimize their impact on the local environment. This is more than just greenhouse gas, it's the prevention of pollution or damage to the environment from water disturbance (wake) noise and other potential harms.

- Maintain their boat responsibly in order to ensure safe and efficient operations for the full potential lifespan of their boat
- At the end of its working life dispose of their boat responsibly, to recycle and reuse as much as possible.

### The Industry's Response

Since the launch of Pathways to Propulsion Decarbonisation for the Recreational Marine Industry in November 2023, there has been a positive response from the industry. Darren Vaux, president of ICOMIA, said: "We have been amazed by the response that this report has generated. In particular, the huge demand from the number of regulators that we have shared the report with. Everyone is desperate for data-driven insights to make sensible guidelines and regulations to support our industry. That is exactly what this report provides."

### The Path Forward

The Pathways to Propulsion Decarbonisation for the Recreational Marine Industry report identifies technologies needed to further reduce carbon emissions for craft under 24m. ICOMIA recognises there is more work to be done to lead the industry to decarbonisation, however, and will be investing in further research in the future.

Vaux continued: "This is just the first step in our campaign called Propelling Our Future. We know that there is still a lot of research to do, new and emerging technologies to study and a body of knowledge that we aim to continue sharing across this global industry. We call on our industry partners everywhere to join our campaign, further our understanding and to share the results."

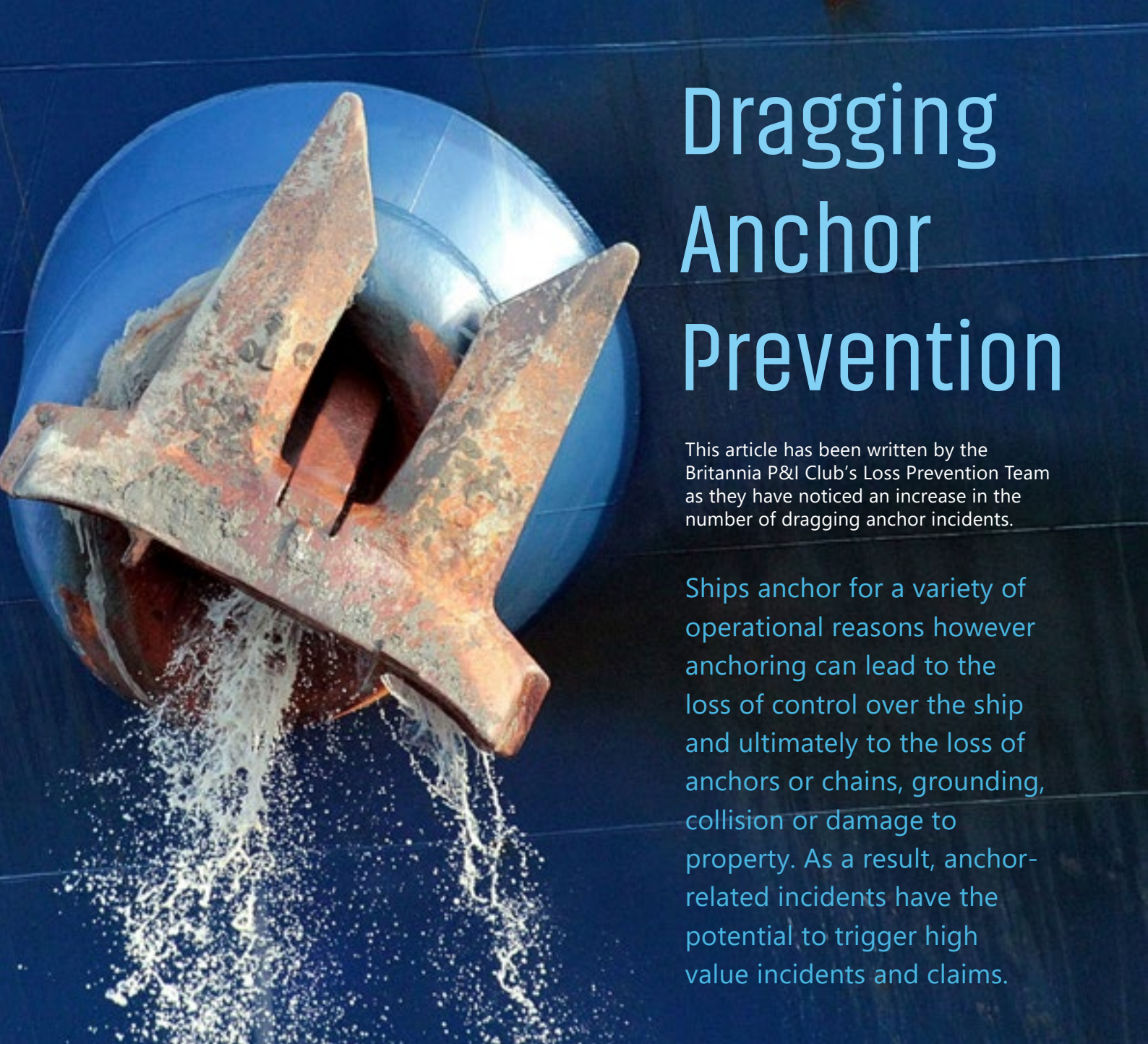
To support the report findings, ICOMIA, on behalf of the global recreational marine industry, has launched Propelling Our Future, an international campaign to educate and advance the industry on research-driven technology solutions:

<https://propellingourfuture.com/>

Download the  
report synopsis at

<https://bit.ly/3UcKqnj>





# Dragging Anchor Prevention

This article has been written by the Britannia P&I Club's Loss Prevention Team as they have noticed an increase in the number of dragging anchor incidents.

Ships anchor for a variety of operational reasons however anchoring can lead to the loss of control over the ship and ultimately to the loss of anchors or chains, grounding, collision or damage to property. As a result, anchor-related incidents have the potential to trigger high value incidents and claims.

## DRAGGING ANCHOR

Dragging anchor is defined as the loss of the holding power of the anchor system. If this loss is sudden, it may require an immediate reaction to retain control over the ship. Once the anchor starts dragging, the change in the ship's position may occur quite rapidly, especially in adverse weather and current.

It is important to note "dragging anchor" refers to unintended loss of holding power, however "dredging anchor", is intentional and can be used for manoeuvring purposes.

## CAUSES OF DRAGGING ANCHOR

In the publication "Anchoring Guidelines: A Risk-Based Approach", INTERTANKO summarises the root causes of anchoring incidents as *"mainly related to poor seamanship, lack of planning and mishandling of equipment"*.

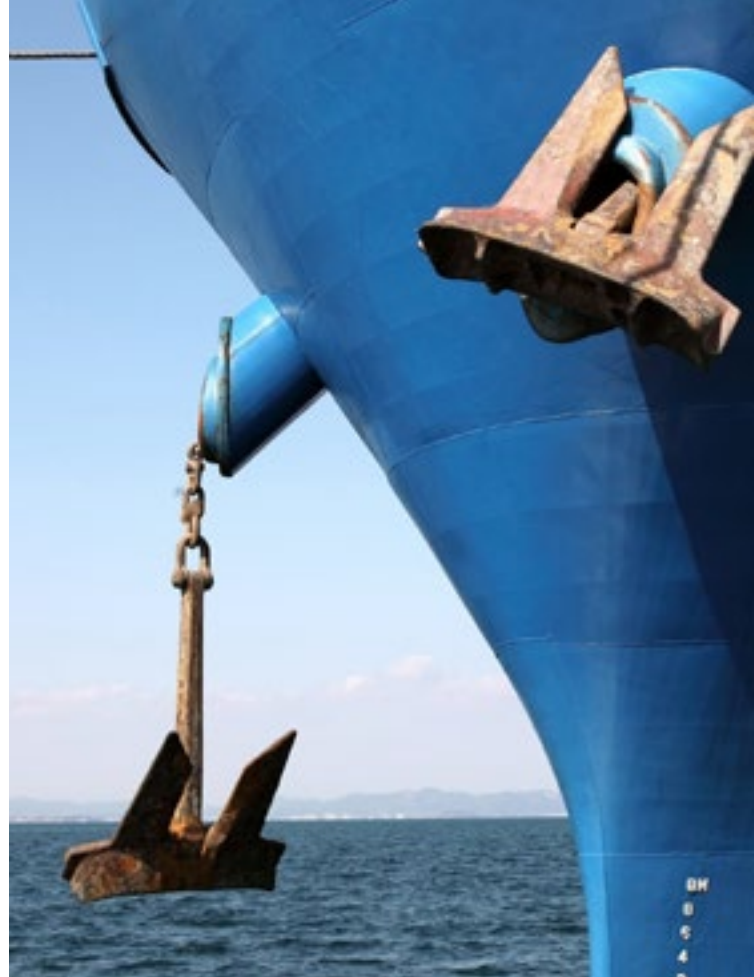
A frequent immediate cause for dragging anchor is rough weather, which results in exceeding the operational limits of the anchoring equipment. In heavy weather, it may be necessary to avoid anchoring altogether by proceeding to open sea. When anchoring under extreme conditions, for example in typhoon or area of high winds/swell, always consider that other ships in the anchorage are also likely to experience dragging anchor.

In case of weather deteriorating whilst in the anchorage, delaying the decision to depart from the anchorage for too long may result in a difficulty in recovering the anchor. Weighing the dragging anchor may require additional time. Furthermore, in heavy wave/swell, the risk of anchor loss at the time of heaving up from the bottom increases significantly – this is because the ship's vertical motion may result in rapid overloading of the anchor chain.

Dragging anchor might be manageable if the amount of space available to the ship allows for it. However, the ship is likely to be in proximity of other ships or navigational hazards and the tolerance for uncontrolled movement may be very low. As the speed of dragging anchor in strong wind may quickly reach about 4 knots, the amount of time available to regain control of the situation is typically very limited.

Dragging anchor is more likely to occur when the ship is light (in ballast condition) and has increased windage. Therefore, increasing the ship's draught and/or reducing the trim by the stern are effective precautions against dragging anchor. It may also be necessary to restrict other activities which increase windage, such as opening hatch covers or extending gantry cranes.

There have been cases where opening large hatch covers in strong wind became the ultimate trigger for dragging the anchor.



## PREPARING FOR THE ANCHORING OPERATION

The planning and assessment process of the anchoring operation will have a direct bearing on the likelihood of dragging anchor.

Like any critical operation, anchoring should be planned and subject to a robust risk assessment. Where applicable, these considerations should be an integral part of the passage planning process. It is strongly recommended that the Safety Management System (SMS) provides the necessary support in this regard.

The essential information which should be obtained and considered includes, but is not limited to:

- Assessment of the seabed as the holding ground
- Evaluation of depth and the topography of the bottom
- Proximity of hazards
- Amount of space available to the ship whilst anchoring; traffic conditions and any congestion
- Weather and tide conditions prevailing at the time of anchoring, as well as the forecast and tidal prediction for the duration of stay
- Any shelter provided by land in the vicinity
- Navigational marks or landmarks which could be used for terrestrial position fixing with sufficient accuracy for early detection of any movement
- Availability of navigational information – charts, sailing directions, local information.

The above information should be thoroughly assessed. It is recommended that a structured assessment process is in place and that the involved personnel are suitably trained. This process should then be subject to a periodical review, for example through the established navigational audit or navigational assessment programme.

If the ship's typical operational activities involve any special requirements, or if they are subject to change, they should be reflected in the assessment process and any additional technical, procedural or training should be addressed.

In result of the above assessment, the anchoring plan should be established for the operation. This should include any required tests and checks, the anchoring and the organisation of the bridge team and anchor party (i.e. personnel attending to the anchoring operation on forward deck), the planning of the subsequent anchor watch and the level of readiness/manning.

Prior to anchoring, the anchor party, in particular the team leader, should have adequate understanding of the plan as it may have direct bearing on the execution of the operation and personnel safety.

Shipboard operational instructions, as well as the SMS procedures should take the operational limits of the equipment into account. Additional familiarisation or training may need to be provided for ship officers. To maintain awareness, it is also highly recommended to display a bridge poster, such as the one collated by INTERTANKO.

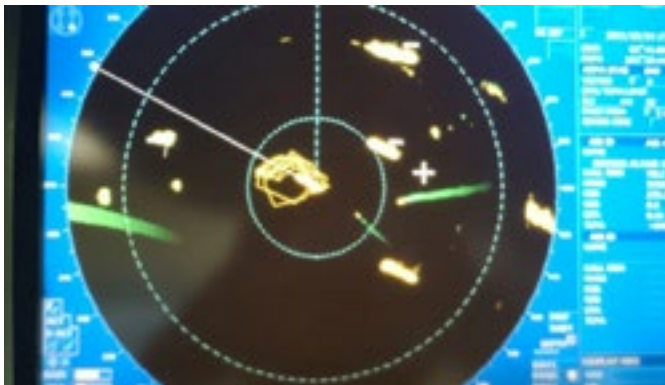
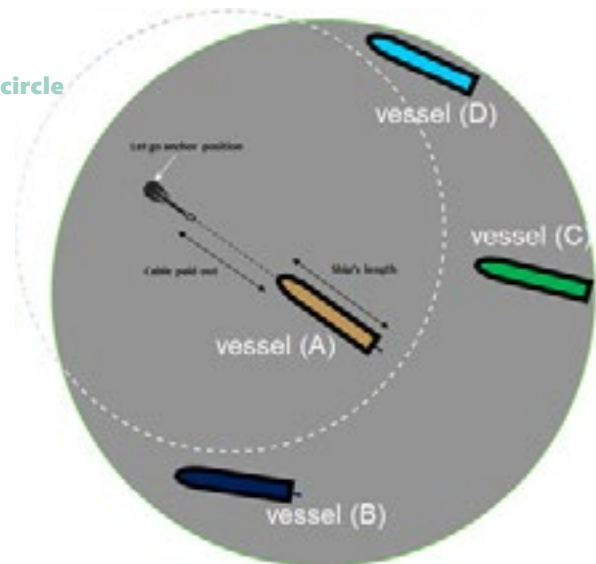


## DETECTION OF ANCHOR DRAGGING

In many cases, ships will experience a period of limited movement which indicates the imminent loss of holding power. Detecting and reporting this movement is critical to provide sufficient time to regain control of the ship.

Immediately after anchoring, the anchor drop position should be fixed and plotted, and the ship's swinging circle established (the track of the ship as it turns around the anchor position). It is also recommended that after anchoring, the main engine should remain in immediate readiness, until it has been confirmed the anchor is holding.

Anchor swinging circle



Position monitoring on radar

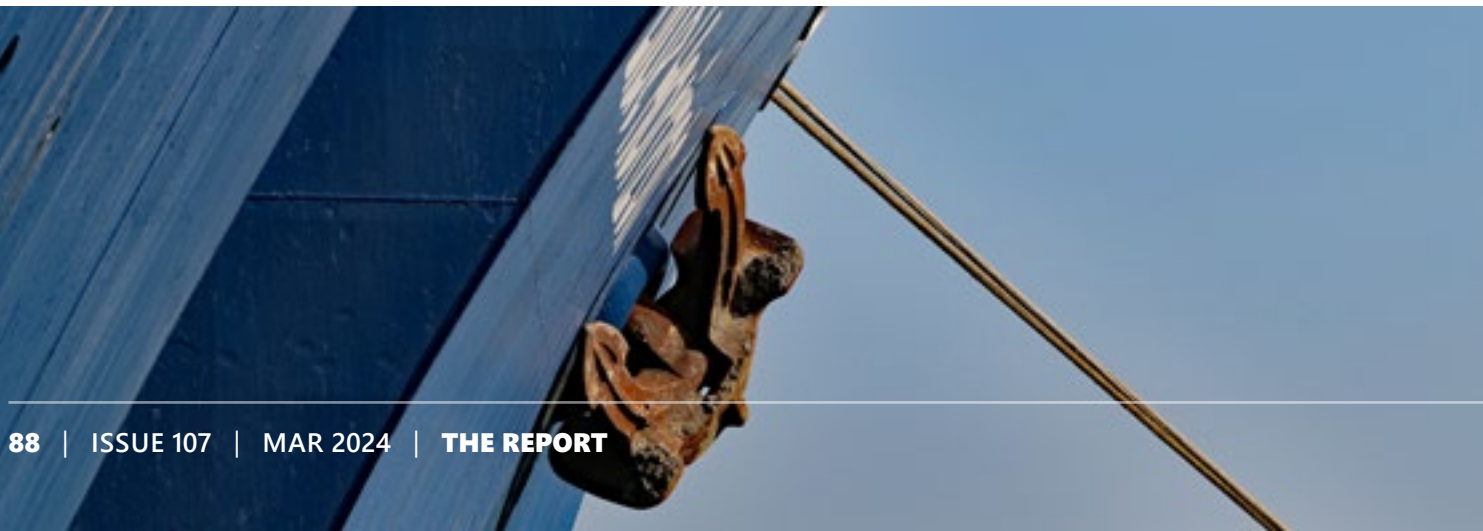
The position should be checked regularly, along with the distances from other ships and hazards in the vicinity. The combination of the position and heading at the time of the fix will enable tracking of the ship's position against the swinging circle. The level of alertness should be increased in adverse weather conditions, as well as in any situation which could result in a sudden loss of holding power: as an example, such conditions may occur at the time of tide change in a river, when the chain/anchor will re-align in the holding ground by around 180° after the tide turns.

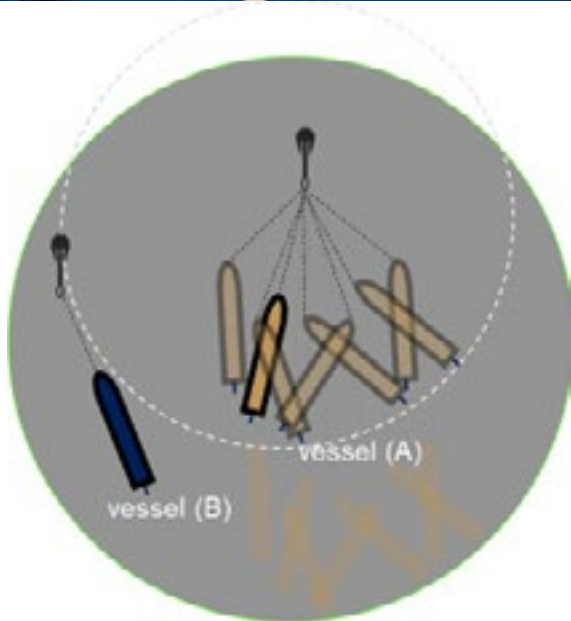
To enable regular checks with sufficient accuracy and frequency, it is necessary to follow good navigational practice, in particular utilise other position-fixing techniques rather than rely solely on GPS indications. Some terrestrial fixes are particularly suitable for position control, such as using two landmarks in a line as an immediate position line/reference.



Position monitoring on Electronic Chart Display and Information System

However, GPS plots and position trails on the Electronic Chart Display and Information System (ECDIS) screen may help view and control of the ship's movement. At a sufficiently large zoom level, you can easily track the yaw (rotation) and sway (sideways motion) of the anchored ship as it displays the shape of the ship's hull in scale. If the anchor is holding, the combination of these movements usually leaves a figure-of-eight trail whilst the ship yaws and sways side to side. If the anchor starts dragging, this pattern changes. Typically, the anchor drags for some time when the ship sways after a yaw move, the figure-of-eight pattern stretches and starts to resemble a zigzag. Such an observation should prompt a timely reaction before a complete loss of holding power occurs.





#### Position monitoring whilst at anchor – “zigzag” pattern observed

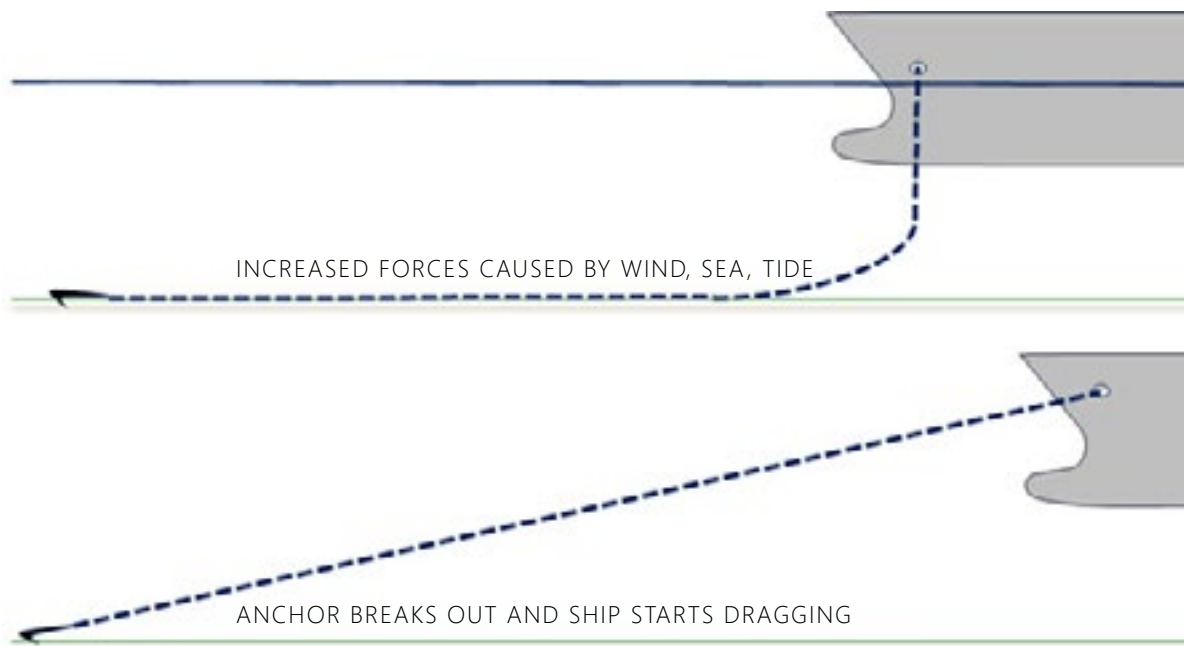
The pattern may only be visible if the loss of holding power is gradual. If there is a sudden and complete loss of holding power, the ship will leave a straight line. It is then necessary to react immediately and decisively to ensure the safety of the ship.

## MONITORING THE ANCHOR CHAIN

The probability of dragging anchor increases with the load on the anchoring system and position control. Therefore, it is necessary that the anchor watch is periodically and visually monitors the relative direction and tension of the anchor chain.

If the chain is leads “up and down” or stays at a short length (extends horizontally to only a small degree), this indicates the forces acting on the anchor and chain are low or moderate, and the likelihood of dragging anchor is reduced. However, if the chain is in a medium to long stay, it signifies that the force acting on the anchor system has increased to a level where the catenary curve formed by the chain becomes progressively shallower.

It may serve as a warning that the load on the chain and anchor has increased to a level where the loss of holding power is more likely or imminent, especially in the case of a very long stay. It is worth bearing in mind that as the catenary curve of the anchor chain flattens, the length of the chain adjacent to the anchor and remaining on the seabed becomes shorter. In result, the holding power decreases.



#### Anchor with maximum holding power and anchor with a loss of holding power

If the anchor is already dragging, the cable may interchangeably slack and re-tension. Whilst present on the forecable to monitor the chain, the anchor watch should also be aware of and report any sounds of the chain cable dragging on the bottom. These sounds are quite characteristic but may be missed, particularly in strong wind.





## IF DRAGGING ANCHOR IS DETECTED

In the event of a detected dragging anchor, or if other ships in the vicinity start dragging anchor, the officer of the watch should:

- Immediately report it to the master
- Contact the engine room or duty engineer to make the main engine, and any other required machinery ready
- Advise the designated anchor party to prepare the windlass and stand by
- Ensure the bridge is manned as required (helmsman and lookout)
- If applicable, advise other ships in the anchorage and the harbour authority. If pilotage is mandatory, it may add further complexity in case the ship needs to depart or re anchor.

The above steps should be a part of the established procedure. The level of readiness of both the main engine and the anchor party should be explicitly set by the master in advance, in proportion to the likelihood of dragging, and in consideration of the proximity of other ships and navigational hazards. The SMS should assist the master in this regard by providing clear guidance on the level of readiness and the manning/crew resources that need to be allocated.

## MEASURES AGAINST DRAGGING ANCHOR

There are two main courses of action against dragging anchor (which may be used concurrently):

- Pay out more chain to improve the holding power by increasing the contact length remaining on the seabed
- Use the main engine to decrease the load on the anchor and/or stabilise the ship to suppress yaw and sway.

The extension of the chain scope by paying out more links may have limits; this limitation could apply to congested anchorages (due to space restriction) or anchorages with relatively deep water (as it might require more chain than is available).

It may also be possible to use a configuration of two anchors to increase the holding power (in a two anchor mooring configuration, riding on two anchors or with the other anchor as a snubber), however each of these scenarios may carry further risks which should be subject to a careful assessment.

It may ultimately become necessary to heave up and re-anchor, or to depart from the anchorage

altogether. The urgency may be further increased by the proximity of hazards or underwater installations. Dragging the anchor over a cable or pipeline may result in further hazards to the crew and the ship, as well as an extensive damage to property.

## SAFETY CHECKLIST

Below are some of the practical safety tips for anchoring and dragging anchor:

### Anchoring

- Establish the depth of water, under keel clearance, nature of bottom, any subsea hazards, which anchor to use and how much cable to pay out based on the traffic conditions and the available sea room
- Select the position of the anchorage and plan the approach with the anchor party, taking into account the expected duration of stay at the anchorage
- Ensure the ship's swinging circle has been determined and plotted on the chart and ECDIS from the nearest land, ship and charted obstructions
- Mark out no-go-areas on nautical charts so that such areas are readily apparent to navigating officers in an emergency
- Monitor the prevailing and forecasted weather, tidal stream and flow changes
- Keep the anchor party and main engine on standby or on short notice

### Dragging Anchor

- Monitor the ship's position and movement of other ships in the vicinity, as well as the weather and sea conditions by keeping sharp lookout and using all available means such as radars or terrestrial objects
- Confirm whether the ship is dragging anchor by carefully monitoring the ship's past position trail, observing any zigzag pattern from the initial let-go anchor position, and ensuring the ship stays within the swinging circle
- Monitor the movements of adjacent ships and the scope of their anchor cable, and any decrease in their closest point of approach (CPA), bearing in mind that all ships do not have the same scope of swinging circle and do not swing uniformly
- Check the anchor cable leading regularly, examining for any slacking or vibration on the chain cables
- Keep the anchor not in use on standby, ready for immediate dropping when required
- Call the master whenever there are any changes in circumstances or when there is doubt of dragging anchor
- Execute the contingency plans as per Company's Safety Management System (SMS) to ensure rapid response times
- Get the anchor party to prepare the windlass and contact the engine room to get main engine for manoeuvring
- Inform ships in the vicinity and harbour authority of possibility of ship dragging anchor
- Request for pilot, if applicable, to re-anchor the ship and/or request for tugboat service to hold the ship in position

## CONSIDERATIONS

The master must consider all action points and determine whether these actions could further complicate the situation for the ship's safety.

- Increase drafts to reduce the effects of a "zigzag" motion, whilst considering any draft restrictions and stability concerns
- Consider trimming the ship by head to reduce the windage area. This will impact the ship's manoeuvrability, propeller submersion and may create stability concerns
- If there is enough sea room, increase the scope of the anchor chain to enhance holding power
- Drop the second anchor to improve holding power, either when initially at anchor, or when it is apparent one anchor is not holding. However, there is potential for fouling the anchors, when two are in use
- Utilise the bow thruster to reduce the oscillation whilst considering the load on the auxiliary engine
- Use of main engine to decrease the load on the anchor chain. When using the main engine in this way there is a possibility of the anchor breaking out from the ground and the ship will need to re-anchor
- Call for pilot and tugboat on standby to position the ship and prevent further dragging anchor

Dragging anchor incidents have the potential to escalate to high-risk incidents, involving groundings, collisions, allisions, pollution and damage to property. It is therefore essential that anchoring is always a well-planned operation which ensures the operational limits of the anchoring equipment are observed, and as a result minimise the likelihood of dragging anchor. The anchor watch should be carried out with due diligence and the officer should always be prepared to initiate the necessary actions if dragging is detected.

If required, additional training should be provided in order to increase the risk awareness, procedural knowledge and embed correct behaviours.

***IIMS is grateful to Britannia P&I Club for sharing this information.***







# Saving the Panama Canal will take years and cost billions

## *How will it be funded and who will pay?*

By **Peter Millard** and **Michael D McDonald**, Bloomberg

The vestiges of an ancient forest tell the story of just how bad things are at the drought-stricken Panama Canal. A few hundred feet from the massive ships hauling goods across the globe, gaunt tree stumps rise above the waterline. They're all that remains of a woodland flooded more than a century ago to create the canal. It's not unusual to see them at the height of the dry season - but now, in the immediate aftermath of what's usually the rainy period, they should be fully submerged.

They're a visible reminder of how parched conditions have crippled a waterway that handles \$270 billion a year in global trade. And there are no easy solutions. The Panama Canal Authority is weighing potential fixes that include an artificial lake to pump water into the canal and cloud seeding to boost rainfall, but both options would take years to implement, if they're even feasible.

With water levels languishing at six feet (1.8 meters) below normal, the canal authority capped the number of vessels that can cross. The limits imposed late last year were the strictest since 1989, when the conduit was shut as the US invaded Panama to extract its de facto ruler, Manuel Noriega. Some shippers are paying millions of dollars to jump the growing queue, while others are taking longer, costlier routes around Africa or South America.

The constraints were eased slightly due to a rainier than expected November, but at 24 ships a day, the maximum is still well below the pre-drought daily capacity of about 38. As the dry season takes hold, the bottleneck is poised to worsen again.

"As a canal, as a country, we need to take some measures because it isn't acceptable," Erick Córdoba, the manager of the water division at the canal authority, said in an interview. "We need to calibrate the system again."

The canal's travails reflect how climate change is altering global trade flows. Drought created chokepoints last year on the Mississippi River in the US and the Rhine in Europe. In the UK, rising sea levels are elevating the risk of flooding along the Thames. Melting ice is creating new shipping routes in the Arctic.

Under normal circumstances, the Panama Canal handles about 3% of global maritime trade volumes and 46% of containers moving from Northeast Asia to the US East Coast. The channel is Panama's biggest source of revenue, bringing in \$4.3 billion in 2022.

To allow for 24 vessels a day through the dry season, the canal will release water from Lake Alajuela, a secondary reservoir. If the rains begin to pick up in May, the canal might be able to start increasing traffic, according to Córdoba.

But those are short-term fixes. In the long term, the primary solution to chronic water shortages will be to dam up the Indio River and then drill a tunnel through a mountain to pipe fresh water 8 kilometers (5 miles) into Lake Gatún, the canal's main reservoir.

The project, along with additional conservation measures, will cost about \$2 billion, Córdoba estimates. He says it will take at least six years to dam up and fill the site. The US Army Corps of Engineers is conducting a feasibility study.

The Indio River reservoir would increase vessel traffic by 11 to 15 a day, enough to keep Panama's top moneymaker working at capacity while guaranteeing fresh water for Panama City, where developers have erected a mini-Miami of gleaming skyscrapers over the past two decades. The country will need to dam even more rivers to guarantee water through the end of the century.

Moving the proposal forward won't be easy. It will need congressional approval, and the thousands of farmers and ranchers whose lands would be flooded for the reservoir are already organizing to oppose it.

It's not the first time Panamanians are banding together to push back against a major infrastructure initiative. Last year, protesters regularly blocked roads after the government rushed to keep First Quantum Minerals Ltd.'s \$10 billion copper mine operating. Authorities have since said that they will shut the mine, a project many view as an ecological disaster.

Elizabeth Delgado, 38, lives in the last house along the road to the Indio River. It's one of the first that will get flooded if the reservoir is built. During major storms, the Indio rises enough to get within a few meters of her unpainted wooden home, where her family lives off of the rice, plantains and cassava she grows. She has no intention of moving.

"How are we supposed to survive someplace else where we won't know what to do?" Delgado said. "They've told us that we're going to have to leave, but we're going to stick with our land."

Another potential fix is decidedly more experimental. In November, a small plane operated by North Dakota-based Weather Modification Inc. arrived in Panama to test cloud seeding, the process of implanting large salt particles into clouds to boost the condensation that creates rain. But cloud seeding has mostly been deployed successfully in dry climates, not in tropical countries like Panama.

Some shippers have expressed frustration that the canal authority isn't moving faster to address low water levels.

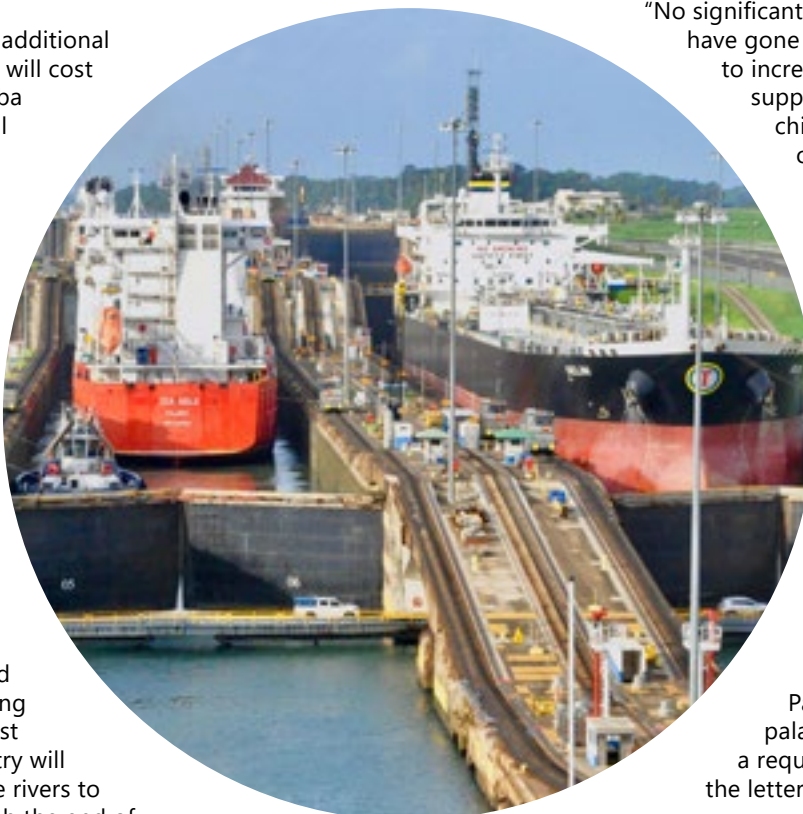
"No significant infrastructure projects have gone ahead in Panama to increase the fresh water supply," Jeremy Nixon, chief executive officer of Japanese container transportation company Ocean Network Express Holdings Ltd., or ONE, wrote in a letter to Panamanian President Laurentino Cortizo Cohen that was seen by Bloomberg. "We sincerely hope that as ONE, and on behalf of our customers, that some urgent action can now be taken."

Panama's presidential palace didn't respond to a request for comment on the letter.

A combination of climate change and infrastructure expansion are to blame for the canal's woes. The canal authority completed a new set of locks in 2016 to increase traffic and keep pace with the growing size of cargo ships. What it didn't do was build a new reservoir to pump in enough fresh water.

Then the drought hit. As of November, last year was the driest year on record at Barro Colorado Island in Lake Gatún, according to Steve Paton, the director of the physical monitoring program at the Smithsonian Tropical Research Institute. Global warming is intensifying the weather phenomenon known as El Niño, which has brought dry conditions to Panama and is expected to last at least through March in the Northern Hemisphere. Lake Gatún drains faster during severe dry seasons, and rising temperatures accelerate evaporation.

Last year was "totally different from the others," said Gabriel Alemán, the head of the Panama Canal Pilots' Association. He's steered ships through the canal for more than 30 years. "We haven't reached the peak of the impact."





In 2023 the trade winds never fully kicked in, which contributed to record water temperatures off the Pacific and Atlantic coasts of Panama. Weak winds also mean that rain clouds don't make it all the way to Gatún. On many days, it pours in Panama City while the lake only gets a few drops.

The crisis has set back available shipping routes by more than a century. When it began operating in 1914, the canal provided an alternative to the Suez Canal, the Cape of Good Hope and the Strait of Magellan to send goods between the Northern and Southern Hemispheres. Shippers are now returning to all three options to avert bottlenecks in Panama, although vessels have recently diverted from the Suez to avoid attacks from Yemen's Houthis rebels. While the Suez is a sea-level canal, the Panama is a freshwater channel reliant on artificial lakes, making it vulnerable to drought.

Jorge Luis Quijano, a consultant and former head of canal authority, says it could take a year to get back to normal volumes. Quijano says he saw the problem coming a decade ago, when he supervised the addition of a new set of locks to accommodate larger vessels in the canal. The locks are engineering marvels, but they're also water hogs.

Saltwater mixes with fresh water when the canal's locks fill up. To prevent the country's biggest source of potable water, Lake Gatún, from getting salty, the canal discharges enough lake water to fill up 76 Olympic-sized pools with each vessel. Giant basins inject some of this water back into the lake, but because this process increases salinity, it can only be used on a limited basis, Quijano said. Before his term ended, he lobbied the government to start construction of an additional reservoir, but to no avail.

As officials look for lasting solutions, local residents are feeling the effects of the prolonged drought. Raquel Luna, 70, has lived on the edge of Lake Gatún since she was 16. Five of her six adult children live up the road.

Most years, she charges visitors one US dollar a head to park at her shaded patch of lakefront. A row of palm trees is normally used to tie boats. But now, they're 20 feet from the water line. Visitors need to scramble across rocks and mud to get to the water. She's hardly getting any takers. "Nobody is coming," she said. "They like it when the water level is high."

*This article is republished with kind thanks to Bloomberg*







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# LIQUID CARGO CONTAMINATION CAN BE VERY COSTLY

By Gard P&I Club Senior Claims Executives **Satoru Yamashita** and **Cheryl Acker** who present the following best practices in order to avoid liquid cargo contamination claims.



**Be aware:** Costly liquid cargo contamination can arise when the last cargo onboard was coconut oil, palm oil, or other edible oils.

Gard has handled a number of liquid cargo contamination claims arising from previous cargo residues. These claims can be significant, not only entailing loss of value to the cargo, but also the cost of lost time and other related expenses. A review of just two recent claims illustrates the need for particular caution when the last cargo was edible oils, residues of which can be more difficult to remove before loading the next cargo due to a high melting point. Cargoes with high melting points are more likely to solidify at ambient/cold temperatures if not properly cared for.

## Contamination of gasoline additive

A product tanker was fully loaded in the US with gasoline additives valued at around USD 40 million. Prior to this, the vessel had carried previous cargoes of coconut and palm oil species, with melting points for some parcels at 24 degrees Celsius. Before loading the new cargo, tank cleaning was conducted using hot seawater and recirculation of alkaline cleaning chemicals which was in line with industry recommendations.

When arriving at the discharge port in the Far East, however, the full cargo was rejected by the consignee due to an alleged contamination. Expert investigation and sample analysis led to the conclusion

that the most likely source of contamination was residues of the previous cargoes of coconut and palm oils. The contaminant was especially problematic for the consignee given the intended use for automotive fuel. After many months of testing and deliberation, this high-value full cargo was sold to salvage buyers in Southeast Asia. This involved a ship-to-ship transfer with another vessel and a filtering exercise to remove the contaminant.

In addition to the consignee's claim for the depreciated cargo value, significant costs were incurred by the shipowners in storing the contaminated cargo while evaluating the best mitigation options and in arranging the transshipment and filtering. The total amount of cargo claim and costs exceeded USD 10 million.

## Contamination of caustic soda

Another case became even more costly. A product tanker was fully loaded with caustic soda valued in excess of USD 5 million. Prior to the subject voyage, the vessel had carried a previous cargo of vegetable oils. Tank cleaning before loading and heating of some tanks during the voyage were conducted in accordance with charterer's instructions.

When the vessel arrived at the discharge port in North America, however, particulate matter was found in all cargo tanks, except the few which had not been heated. The cargo in non-heated tanks was found to be on specification. Part of the contaminated cargo was discharged

into separate shore tanks, but there was not enough capacity for all the affected cargo. Onboard filtering of the particulate was rejected by the receivers, who took the view that the cargo was no longer fit for purpose. They therefore sold the contaminated cargo to a salvage buyer at a significantly reduced price.

Expert investigation and sample analysis established that the particulate matter had most likely been formed by the heated chemical combination of carbon from the heat exchangers and residues of the previous cargo, which was then circulated in the caustic soda cargo. Moreover, it appeared that the heat exchangers may not have been fully cleaned prior to loading.

The receiver's claim ran into millions of US dollars and included loss of market value, additional freight and storage costs, shore tank cleaning costs and other related expenses.

## Claims impact

While a certain degree of compromise was achieved during negotiations with cargo interests, the claim settlements and costs in the above cases left a significant blemish on the loss records for the Members concerned. The Members also incurred additional uninsured losses and potentially damaged relations with their customers.

## Lessons learned

After cleaning the cargo system between cargoes in the above cases, surveyors for charterers/shippers attended the vessels at the load ports and passed the tanks fit to load. Moreover, first foot samples were taken at the start of loading and did not reveal any visual indications of cargo contamination at that time. The crew should be aware that inspections by third parties are not a reliable indication that the vessel's complete cargo system is free of

contaminants, even after cleaning to required standards.

When cleaning tanks and lines after carrying high melting point cargoes, such as vegetable/edible oils, hot water washing will often be required and the crew should ensure that the water is sufficiently warm. The time between discharge and cleaning as well as the ambient air temperatures experienced may be relevant factors.

Whatever the charterers instructions are with regard to cleaning, owners should make sure that it will be effective in removing previous cargo residues. Holding charterers responsible for a subsequent problem is far from straight-forward and owners will usually have a non-delegable duty to cargo interests to provide a cargo-worthy vessel.

There should be a vessel-specific line cleaning procedure for each stage of washing (e.g. cold-water wash, hot-water wash and chemical recirculation) as well as inspection procedures to ensure all relevant parts of the cargo system are properly inspected and cleaned. Vessel-specific procedures were found to be lacking in one of the above cases.

The crew should also be fully familiar with what is required for proper cleaning and inspection of the cargo system. In one of the above cases the crew had newly joined and were unfamiliar with the system. A written record of the cleaning performed should be kept. Even after thorough cleaning, it remains important to perform a close-up inspection of tanks and lines to ensure no residues remain (always after following safe tank entry procedures).

It is possible that solidified/frozen residues will remain near the bends/elbows in lines, as well as in manifolds and crossovers. When cargo filtering was performed in the first case above, previous cargo residues were found in the manifold crossovers. Lines in these areas should be closely examined and opened up where possible to aid

inspection. Other parts of the system, such as the heat exchangers in the second case, should also be sufficiently inspected. Checklists may help for conducting inspections, but whatever is used, a written record should be kept of inspections performed.

Cargo residues can exist as a film along the inner walls of pipelines, which may be difficult to spot in wet conditions. In dry conditions after ventilating for a couple of hours, the solid film should be more visible to the naked eye. Ideally, the inspection should be carried out during daylight for better visibility.

Photographic evidence of tanks/lines after cleaning can assist in defending a claim and protecting the member's interests in the event of dispute.

Lines that will not be used for cargo operations should be properly isolated.

It is extremely important that the crew collect and retain samples during loading, including from the vessel's manifolds after flushing through the sampling point, and from the cargo tanks at first-foot stages, as well as after completion of loading. This will provide evidence of the cargo's condition throughout the loading operation. See this Gard Insight for further details on the importance of sampling liquid cargoes.

If any visible contamination of samples is noted during loading, operations should be suspended for investigation. If the cargo system does contain a contaminant, the quantity of cargo already loaded will be much less than for a full tank. The first indication of a problem from the shore side will usually be the vessel manifold samples and these should be taken at regular intervals during loading if there are any concerns with the quality of cargo. High melting point cargo residues can remain in sampling points which may contaminate the samples of cargoes next loaded. The crew should ensure that sampling points are thoroughly flushed through before collecting samples of the next loaded cargo.



# How well do you know the many colours of alternative fuels?

In the 1955 film *Pete Kelly's Blues*, Peggy Lee sang a song called 'I can sing a rainbow'.

The opening verse went as follows:

*Red and yellow and pink and green  
Purple and orange and blue  
I can sing a rainbow  
Sing a rainbow  
Sing a rainbow too ...*

How could she have known all those years ago that colours of the rainbow would be applied to alternative fuels in 2024?

Pink, green, white, brown, turquoise, blue and grey are all undeniably beautiful colours. But did you know that alternative fuels come in all these colours and many other forms too?

BIMCO has recently published a climate change glossary to clarify and harmonise definitions and terminology to ensure that the discussions around climate change and potential solutions for the shipping industry are based on a mutual understanding. This glossary includes the following terms relating to alternative fuels...



## Definitions related to alternative fuels:

### FOSSIL FUELS

Fossil fuels are carbon-based fuels from fossil hydrocarbon deposits, including coal, oil, and natural gas. (IPCC, 2018).

### ALTERNATIVE FUELS

Alternative fuels are fuels which serve, at least partly, as a substitute for traditionally used fossil fuels in the energy supply and which have the potential to contribute to decarbonisation. (European Parliament & Council of the European Union, 2021).

### ALTERNATIVE ENERGY

Alternative energy refers to renewable or non-renewable energy sources which in their nature may be non-combustible, combustible, or nuclear, and which have the potential to contribute to decarbonisation.

### BIOFUELS

Biofuels are liquid fuels produced from biomass. Biomass means the biodegradable fraction of products, waste, and residues from biological origin from agriculture, including plants, vegetables, and animal substances, from forestry and related industries, including fisheries and aquaculture, as well as the biodegradable fraction of waste, including industrial and municipal waste of biological origin. (European Parliament & Council of the European Union, 2018; Jeswani et al., 2020).

### SYNTHETIC FUELS

Synthetic fuel is a generic term applied to any manufactured fuel with the approximate composition and comparable specific energy of a natural fuel. It is primarily used to refer to carbon-based liquid or gaseous fuels manufactured, via chemical conversion processes, from a carbon source such as coal, carbon dioxide (CO<sub>2</sub>), natural gas, biogas, or biomass. This includes using established conventional fossil-based processes.

### ELECTROFUELS (EFUELS)

Electrofuels are advanced gaseous and liquid fuels normally produced from hydrogen and often captured carbon dioxide (CO<sub>2</sub>) and which use sustainable electricity as the principal power source for the generation of the fuel. The "e" refers to the method of production of the fuel.

## And now on to the colour definitions:

### GREY, BLACK AND BROWN FUELS

Grey, black and brown fuels are generated from traditional fossil fuels sources with the shades normally referring to the fossil fuel feedstock which is used in the process (eg brown/black for coal and grey for natural gas). The carbon dioxide (CO<sub>2</sub>) and any carbon monoxide (CO) generated during the process of fuel production are not recaptured.

### GREEN FUELS

Green fuels are those where the production employs electrolysis — the separation of hydrogen and oxygen molecules by applying electrical energy to water. To be a green fuel, renewable sources such as wind and solar power are used to generate the electricity for the separation process. When applied to fuels such as methanol, it normally means that the hydrogen is produced in this way and the carbon dioxide (CO<sub>2</sub>) used

has been captured from the air. For ammonia, it means the hydrogen has been produced in this way and the nitrogen used has been separated from air using renewable energy.

### BLUE FUELS

Blue fuels are those which use hydrogen produced from traditional fossil fuels but where the carbon dioxide (CO<sub>2</sub>) from steam reforming is captured and stored- using carbon capture and storage (CCS). Blue ammonia therefore means that the carbon generated in the production of hydrogen has been captured and stored using industrial CCS. The term blue is also used when the gases used to generate the fuel have been recycled or are reused from another industrial purpose eg blue methanol.

### TURQUOISE FUELS

Turquoise fuels are those which use hydrogen that is generated from the decomposition of methane by pyrolysis (which creates hydrogen and solid carbon) and where the electricity used in the pyrolysis is generated by renewable energy sources.

### PINK FUELS

Pink fuels are those where the hydrogen used is generated through electrolysis powered by nuclear energy. Nuclear-produced hydrogen can also be referred to as purple hydrogen or red hydrogen.

### WHITE FUELS

White fuels are those where hydrogen, which is naturally occurring and geological found in underground deposits, is created through fracking. There are no strategies to exploit this hydrogen at present.

### YELLOW FUELS

Yellow fuels are those where the hydrogen used is generated through electrolysis using solar power.

The glossary of climate change definitions in relation to shipping by BIMCO can be downloaded at <https://bit.ly/48zGr8g>





# Guidelines for safe vessel operations in extreme cold conditions

Britannia P&I Club has prepared some essential guidance to assist anyone who is involved in operating vessels in extreme cold conditions. The Club reminds people involved in doing so that operating vessels in icy conditions requires a unique set of skills and precautions to ensure the safety of both the ship and crew.

In order to thoroughly prepare ships, crew, and cargo for extreme cold conditions, it is strongly recommended that classification societies, flag and coast states, equipment manufacturers, hull and machinery insurers, training facilities, and other relevant stakeholders are fully consulted with.

The International Maritime Organization (IMO) Polar Code entered into force on 1 January 2017. The arctic polar waters for which the Polar Code applies are defined in Safety of Life at Sea (SOLAS) Chapter XIV. Shipowners should not operate in areas where the Polar Code applies unless their ship is certified in accordance with its provisions. Even where not applicable, the provisions of the Polar Code may still be helpful and used as guidance when developing shipowners' procedures for operating in extreme cold areas.

The Oil Companies International Marine Forum (OCIMF) and the International Chamber of Shipping (ICS) have published the Guidelines for the Development of a Polar Water Operational Manual which provides advice on how to prepare an operational manual in accordance with the Polar Code.

The American Bureau of Shipping (ABS) Guide for Vessels Operating in low Temperature Environments provides more detailed operational and technical advice that could be taken into consideration. However, a ship's own classification society should also be consulted. The flag state of the ship should also be consulted to determine whether they have any special requirements for ships trading in extreme cold environments.

## Risk assessment

Before shipowners trade in these harsh environments, a comprehensive Risk Assessment should be completed. This should be accompanied by a Gap Analysis and action plan to ensure that necessary safety barriers are implemented to efficiently mitigate all identified risks. This may include procedural amendments, structural modifications and additional training. The Risk Assessment should consider the following (not to be deemed exhaustive):

## Expected ice conditions

Importantly, the crew needs to receive up to date weather information, including details on the extent of ice development in the area. Subsequently, the crew should be capable of analysing the information to then comprehend the progression of the ice development and assess how current weather conditions might impact it.

To determine the operational boundaries of the ship when navigating near ice, it is important to consult with the ship's classification society. Shipowners' operational procedures must address decisions around ice conditions and if they surpass the ship's design, emphasising the Master's ultimate authority.

## Local Requirements

According to Britannia, the crew must be adequately informed of any and all local requirements that apply. This includes the need for ice breaker assistance in certain winter periods, restrictions on docking/undocking during darkness and any additional equipment that may be required during ice passages, such as search lights. Additionally, the ship should have any local guides or other publications for navigating in ice and/or operating in extreme cold areas on board.

## Manoeuvring

Consideration should be given to the impact surrounding drifting ice, bergy waters and between floes. Astern manoeuvres in ice exposes the most vulnerable parts of the ship and should therefore be given extra consideration before attempted. Shipowners' operational procedures should contain guidance for manoeuvring in, or in the proximity of hazardous ice. The guidance should consider entering an ice edge, the safe speed for various grades of ice conditions, the use of the rudder, and its influence on the turning circle of the ship.

## Navigation

When navigating in or near ice, it is advisable to have an additional lookout or navigator to assist the duty officer. Detecting ice can be challenging, especially in the dark, and search lights may be required. Adjusting radar settings is important, as ice may make a poor radar target.

The ship's passage planning should adhere to IMO Resolution A. 893(21) Guidelines For Voyage Planning. The presence of sea ice along the planned route emphasises the importance of traditional passage planning, requiring continuous review throughout the voyage.

The publication Ice Navigation in Canadian Waters section 4.10 offers guidance on planning passages in areas with ice, which can also be applied in non-Canadian waters, especially in the absence of local guidance.

## Stability

Adherence to the IMO Stability Criteria is essential, with particular attention given to the risk of superstructure icing, which could compromise the stability of the ship. Superstructure icing is influenced by various factors such as meteorological conditions, condition of loading, and behaviour of the ship in stormy weather.

The Ice Navigation in Canadian Waters section 4.3.1 provides further advice on icing and precautions to minimise the development of superstructure icing.

## Cargo care

Attention should be given to the correct ventilation of the cargo during voyage, applying the commonly used practices of the Dew Point or Three Degree Rule. The cargo hold ventilation system should be able to operate in adverse weather conditions, considering potential snow or ice intake.

Consult the Classification Society and maker to ensure that the hatch covers can be operated in low temperatures. All hatch cover securing components should be maintained to prevent jamming in cold weather. Hatch cover gaskets should be suitable for extreme cold temperatures and prevent water from affecting their sealing ability. As a reminder, hose testing of hatch covers cannot be conducted in sub-zero temperatures. The ABS Guide for Vessels Operating in low Temperature Environments section 4.6 and 6.3 provides further guidance for Bulk Carriers.

## Deck/machinery equipment

Shipowners should ensure that all equipment is accessible and functional during the anticipated weather conditions and always consider the possibility of conditions being more severe than predicted. The equipment makers should be consulted to determine suitability of the equipment for cold weather and any special maintenance requirements. The classification society may also need to be consulted if any modifications are necessary.



Shipowners should include instructions in their operational procedures for preparing various equipment to withstand adverse cold weather conditions. These instructions should cover:

- Preparing navigation/communication equipment receivers, antennas and scanners
- Ensuring the readiness of mooring and anchoring systems
- Checking and preparing accommodation and pilot ladders
- Inspecting deck cranes
- Verifying the functionality of deck levers and valves
- Maintaining heat in storerooms
- Applying special polar resistant greasing to wires, davits and other moving parts that may require it
- Keeping air vents clear of ice accumulation
- Draining freshwater systems if necessary
- Checking and preparing hydraulic and electrical systems
- Ensuring ballast systems are functioning

Machinery instructions should include:

- Heating engine compartments
- Preventing ice development at the sea chest that could disrupt seawater intake to engine machinery
- Protecting batteries and other stored energy sources
- Ensuring proper functioning of combustion engines by addressing low-temperature air intake issues
- Maintaining the operational status of emergency generators and implementing precautions to prevent freezing of fuel and cooling water systems
- Draining domestic freshwater systems if necessary.

## Firefighting and life saving equipment

Shipowners must ensure that all fire firefighting equipment remains operational and readily available. This includes implementing heating in areas where essential firefighting equipment, such as fire pumps and fireman's outfits, is stored to protect

them from frost. Protection measures for the fire line should be in place to prevent any frost damage, including draining exposed sections when not in use. Regular testing of fire dampers is essential to confirm their operational status.

Lifesaving appliances must also be protected for full operational capability and accessibility. For lifeboats and rescue boats, a fuel capable of withstanding extreme low temperatures should be utilised, and engines must be able to start in extreme cold conditions. Consideration should be given to protecting essential survival equipment, such as water, food rations, and other necessities, from the impact of the cold climate. Maintenance of davits and launching appliances is crucial to prevent malfunctioning during low temperatures.

## Personal safety

Working in cold climates requires an understanding of the interplay between ambient temperature, wind speed, relative humidity, personnel protective equipment and the task at hand. All deck work activities, therefore, should be carefully planned and time outside should be limited to avoid any frost related injuries. The crew should be well-versed in wind chill and its effects on exposure, along with recommended outdoor working times at specific temperatures. The ABS Guide for Vessels Operating in low Temperature Environments offers guidance on these topics. Precautions to enhance personnel safety may include (but is not limited to):

- Carrying sufficient personal protection clothing suitable for extreme cold weather
- Keeping clothes dry; if exposed to water, change clothes
- Avoiding leaving any skin exposed
- Preventing bare skin from coming into contact with metallic objects
- Being aware of frostbites and hypothermia
- Working in pairs and keeping an eye out for each other
- Arctic salt or sand should be used to provide safe passageways and prevent slip injuries. However, certain salts may impact coatings, so vendors should be consulted before use.

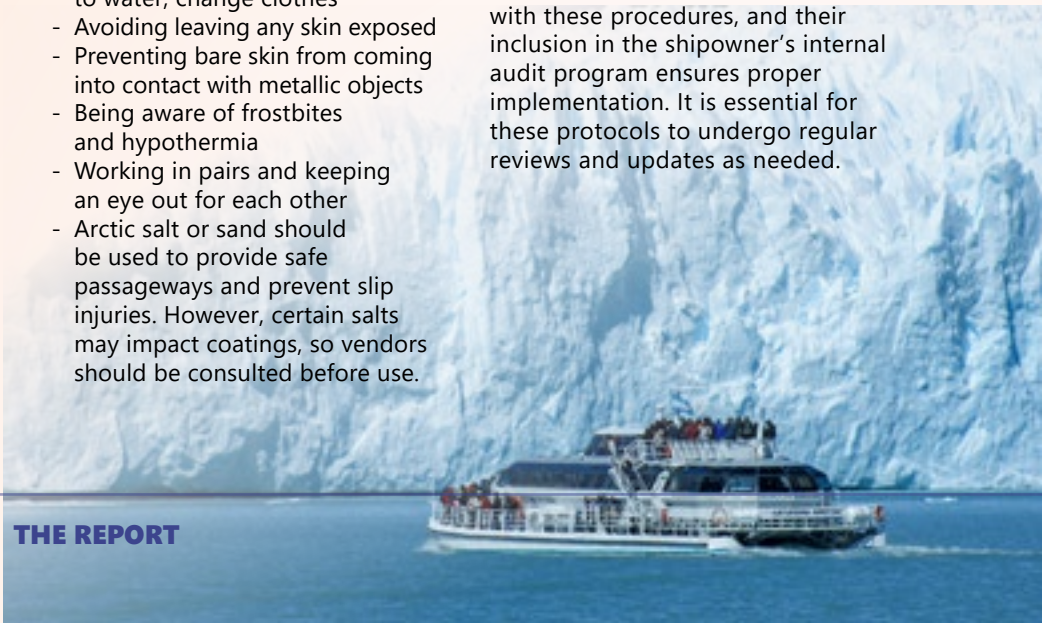
## Training

Shipowners should provide necessary training to both the crew and applicable shoreside personnel to enable them to support the ship adequately. The identified training may encompass:

- Navigation and manoeuvring in or near ice. This should be provided by an accredited training facility and may include simulator based training
- Meteorological training to understand and analyse ice development
- Appropriate training for engineers to understand the impact extreme cold weather can have on machinery and how to mitigate associated risks
- First aid training for frost bite, hyperthermia or other cold weather related injuries
- Familiarisation training in systems or equipment specifically related to the safe operation of the ship in cold climates
- Understanding and practicing appropriate behaviour while working on deck, considering the impact of wind chill etc.

## Safety management systems

Shipowners should ensure that an appropriate level of operational safety procedures and checklists are provided to the ship and shoreside personnel. These should be developed when assessing the risk identified in the above Risk Assessment and provide clear instructions to the crew on preparing and safely operating the ship in extreme cold climates. Crew members must be familiar with these procedures, and their inclusion in the shipowner's internal audit program ensures proper implementation. It is essential for these protocols to undergo regular reviews and updates as needed.



# Allianz Risk Barometer 2024:

## Cyber incidents are rising fast



Cyber incidents such as ransomware attacks, data breaches, and IT disruptions are the biggest worry for companies globally in 2024, according to the Allianz Risk Barometer 2024 report.

## Global trends overview

The closely interlinked peril of business interruption ranks second. Natural catastrophes are up from 6 to 3 year-on-year. Fire and explosion are up from 9 to #6). Political risks and violence move up from 10 to 8. These three concerns are the biggest risers in the latest compilation of the top global business risks, based on the insight of more than 3,000 risk management professionals.

Petros Papanikolaou, Allianz Commercial CEO, said, "The top risks and major risers in this year's Allianz Risk Barometer reflect the big issues facing companies around the world right now – digitalization, climate change and an uncertain geopolitical environment."

Large corporates, mid-size, and smaller businesses are united by the same risk concerns – they are all mostly worried about cyber, business interruption and natural catastrophes. However, the resilience gap between large and smaller companies is widening, as risk awareness among larger organizations has grown since the pandemic with a notable drive to upgrade resilience, the report notes.

"Many of these risks are already hitting home, with extreme weather, ransomware attacks and regional conflicts expected to test the resilience of supply chains

and business models further in 2024. Brokers and customers of insurance companies should be aware and adjust their insurance covers accordingly", continued Petros Papanikolaou.





## Ranked 1 Cyber activity

Cyber incidents (36% of overall responses) rank as the most important risk globally for the third year in a row and for the first time by a clear margin. It is the top peril in 17 countries, including Australia, France, Germany, India, Japan, the UK, and the USA. A data breach is seen as the most concerning cyber threat for Allianz Risk Barometer respondents (59%) followed by attacks on critical infrastructure and physical assets (53%).

The recent increase in ransomware attacks – 2023 saw a worrying resurgence in activity, with insurance claims activity up by more than 50% compared with 2022 – ranks third (53%).

“The growing number of incidents caused by poor cyber security, in mobile devices in particular, a shortage of millions of cyber security professionals, and the threat facing smaller companies because of their reliance on IT outsourcing are also expected to drive cyber activity in 2024,” explained Scott Sayce, Global Head of Cyber, Allianz Commercial.

According to research conducted by DNV, only 40% of maritime professionals think their organization is investing enough in cyber security at a time when vessels and other critical infrastructure are becoming increasingly networked and connected to IT systems.

## Ranked 2 Business interruption

Despite an easing of post-pandemic supply chain disruption in 2023, business interruption (31%) retains its position as the second biggest threat in the 2024 survey. This result reflects the interconnectedness in an increasingly volatile global business environment, as well as a strong reliance on supply chains for critical products or services. Improving business continuity management, identifying supply chain bottlenecks, and developing alternative suppliers continue to be key risk management priorities for companies in 2024.

## Ranked 3 Natural catastrophes

Natural catastrophes (26%) is one of the biggest movers this year and 2023 was a record-breaking year on several fronts. It was the hottest year since records began, while insured losses exceeded US\$100bn for the fourth consecutive year, driven by the highest ever damage bill of US\$60bn from severe thunderstorms.

Around the world, natural catastrophes is the number 1 risk in Croatia, Greece, Hong Kong, Hungary, Malaysia, Mexico, Morocco, Slovenia, and Thailand, many of which sustained some of the most significant events last year. In Greece, a wildfire near the city of Alexandroupolis in August was the largest ever recorded in the EU. Meanwhile, severe flooding in Slovenia resulted in one of the biggest supply chain events, causing production delays and parts shortages for European car manufacturers.

## Ranked 4 Changes in legislation and regulation

Despite vows to reduce bureaucracy, companies will still face new rules and regulations in 2024 that will not only require a high administrative burden but could also impose restrictions on their business activities, ensuring changes in legislation and regulation (19%) rises one place to 4 in the 2024 survey.

In the case of shipping organisations, one has to look no further than the revised 2023 IMO GHG Strategy, which includes an enhanced common ambition to reach net-zero GHG emissions from international shipping close to 2050, a commitment to ensure an uptake of alternative zero and near-zero GHG fuels by 2030, as well as indicative checkpoints for 2030 and 2040.

Furthermore, the EU has expanded the scope of the European Union Emissions Trading System (EU ETS) to include the maritime sector starting this year. This move has been raising

all sorts of reactions and thoughts on the implications for the shipping industry due to the challenges and opportunities it presents.

## Ranked 5 Macroeconomic developments

Despite the ongoing uncertain global economic outlook, rising insolvency levels (global insolvencies are forecast to increase by +8% in 2024) and still high interest rates, macroeconomic developments (19%), which ranked 3 last year, falls to 5 in 2024.

## Ranked 6 Fire and explosion

Ranking at 6 overall, fire and explosion (19%) is up from 9 last year. It is seen as a significant peril for companies and global supply chains, particularly where critical components are concentrated geographically and among a small number of suppliers.

In the shipping sector, the transportation of lithium ion batteries, especially in electric vehicles, has been increasing due to a rise in demand. However, the transportation of such batteries poses a significant safety challenge. For instance, the Fremantle Highway, a ship carrying 3,000 cars, caught fire off the Dutch island of Ameland on 25 July 2023. The ship was loaded with 2,500 cars and heavy cargo, including nearly 500 electric cars. The Dutch media reported 3,783 new cars on board, making electric car batteries more difficult to extinguish.

## Ranked 7 Climate change

Climate change (18%) may be a non-mover year-on-year at 7 but is among the top three business risks in countries such as Brazil, Greece, Italy, Turkey, and Mexico. Physical damage to corporate assets from more frequent and severe extreme weather events is a key threat. The utility, energy and industrial sectors are among the most exposed.

The severe impact of drought due to rising temperatures, which became very apparent to shipping organisations as the operation of one of the world's most crucial waterways, the Panama Canal, was affected. In addition, net zero transition and liability risks are expected to increase in future as companies invest in new, largely untested low-carbon technologies to transform their business models.

## Ranked 8 Political risks and violence

Unsurprisingly, given ongoing conflicts in the Middle East and Ukraine, and tensions between China and the US, political risks and violence (14%) is up to 8 from 10. 2024 is also a key election year. As much as 50% of the world's population could go to the polls, including in India, Russia, the US, and UK.

The persistent assaults on commercial ships navigating the Southern Red Sea represent a concerning pattern that has raised alarm within the industry, leading to changes in routes and disturbances in global supply chains.

Dissatisfaction with the potential outcomes, coupled with general economic uncertainty, the high cost

of living, and growing disinformation fuelled by social media, means societal polarization is expected to increase, triggering more social unrest in many countries.

## Ranked 9 Market developments

Protectionism is one of three paradigm shifts identified as being behind market developments (13%) rising to 9 in the top global risk rankings in 2024 from 11 the previous year.

However, there is some hope among Allianz Risk Barometer respondents that 2024 could see the wild economic ups and down experienced since the Covid-19 shock settle down, resulting in Macroeconomic developments (19%), falling to 5 from 3. Yet economic growth outlooks remain subdued at just over 2% globally in 2024, according to Allianz Research.

"This will give central banks some room to manoeuvre and lower interest rates are likely in the second half of the year. A caveat is the considerable number of elections in 2024 and the risk of further upheavals depending on certain outcomes," said Ludovic Subran, Chief Economist at Allianz.

## Ranked 10 Shortage of skilled workforce

In a global context, the shortage of skilled workforce (12%) is seen as a lower risk than in 2023, dropping from 8 to 10. However, businesses in Central and Eastern Europe, the UK and Australia identify it as a top five business risk.

Shipping is no exception, as an historic peak has been reached in the shortage of officer supply, and there are no anticipated improvements, resulting in an increase in manning costs, as indicated in the Manning Annual Review and Forecast 2023/2024 report by Drewry.

There is a need for the industry to train seafarers on the necessary skills and competencies for the successful implementation of new technologies related to decarbonization, such as alternative fuels and automation.

Given there is still record low unemployment in many countries around the globe, companies are looking to fill more jobs than there are people available to fill them. IT or data experts are seen as the most challenging to find, making this issue a critical aspect in the fight against cyber-crime.



**Allianz** 





# The EU ETS is an opportunity to create genuine change

Shipping's inclusion in the EU Emissions Trading System (EU ETS) has created countless conversations over the past 12 months, as the industry prepares to comply with the new regulation. The EU ETS is a 'cap-and-trade' system, whereby the EU will set a limit each year on how much CO<sub>2</sub> can be emitted, which decreases each year in line with the target to reduce emissions by 62% from 2005 to 2030. Companies will need to have a European Emission Allowance (EUA) for every tonne of CO<sub>2</sub> they emit within each calendar year. Operators will not be allowed to generate more greenhouse gas emissions than their EUAs can cover. If they do, heavy fines are imposed, creating both a financial and regulatory incentive to reduce emissions and improve efficiency.

*By Søren Meyer, CEO of ZeroNorth*

According to a Reuters survey, the cost of an EUA is forecast to be on average €83.55 a metric tonne in 2024 and €88.95 in 2025. Shipping companies will be responsible for paying for emissions reported in the previous year in a phased implementation. In 2024, only CO<sub>2</sub> emissions need to be covered by EUAs; in 2025, companies will pay for 40% of the emissions reported in 2024; in 2026, this rises to 70% of their emissions from 2025; and by 2027, they must cover 100% of their reported emissions.

A quarter of the revenue from maritime EUAs will go into the "Ocean Fund", funding innovative decarbonization projects in the EU, with the rest going to Member States to specifically pay for maritime decarbonization projects such as port modernization, alternative fuel trials or funding projects in developing countries.



The EU ETS revenue potential for shipping in 2024 is estimated to be in the range of €1.6bn, reach €5.5bn in 2025 and €8bn in 2026. However, the latter two figures are broader estimations as CH<sub>4</sub> and N<sub>2</sub>O gases will need to be accounted for in addition to CO<sub>2</sub> and the industry has no prior experience calculating these gases. While this is surely a step in the right direction, revenue from the EU carbon market is a drop in the ocean compared to what a global carbon tax could generate. The World Bank estimates this could be an estimated \$1 trillion to \$3.7 trillion by 2050, or \$40 – \$60 billion annually.

A global carbon tax may be the eventual goal for the shipping industry to accelerate decarbonization, but the EU ETS is a great first step. It addresses the sector's emissions, which have previously been exempt from carbon pricing mechanisms and, moreover, creates a set of rules that can be used immediately as a lever and generator of genuine change across the entire maritime value chain.

### Challenges of compliance

By design, compliance with the EU ETS will further ramp up regulatory challenges and environmental pressure, as well as increase costs for companies that exceed their emissions threshold. This will add complexity for owners and operators, requiring them to find the right solutions to adjust or face the significant financial risk of not meeting the requirements.

However, it is important not to dwell too much on these challenges. We should instead look at the EU ETS as a real opportunity to take a decisive leap forward for shipping's decarbonization, as by putting a price on carbon, the system directly incentivises emissions reductions.

This will encourage companies to invest in cleaner technologies and practices, improve vessel design, optimise operational efficiencies, and explore alternative fuels, fostering innovation and supporting both the EU's climate goals and shipping's journey towards zero emissions.

This outlines the opportunity that regulation brings, as it forces industry players to start thinking smarter about how they can drive more sustainable operations.

The good news is, there are solutions currently available on the market that can provide data-driven insights and analytics to optimise vessel performance and reduce emissions.

By connecting multiple data points across a single interface, software can interpret data to generate thousands of recommendations to optimise voyage plans and increase earnings. Organisations can therefore better predict and forecast performance, making decisions that will optimise the voyage, vessel, bunker, costs, and emissions. This means companies will also see the financial benefits that come from optimising their operations, such as reduced fuel consumption and costs, benefitting both profit and planet.

### Overcoming data fragmentation

Data will also play a pivotal role in managing EU ETS reporting, as accurate and reliable data is essential for assessing a vessel's environmental impact and progress towards sustainability. However, the maritime value chain still currently suffers from fragmentation when collecting and reporting data. Information is dispersed across the value chain, among various tech platforms, classification societies, and internal systems, leading to inefficiencies and challenges in obtaining a comprehensive view of the industry's operations.

Moreover, many companies employ single-function or in-house systems, which only address certain aspects of the emissions reporting process. As the diversity and number of data sources involved increase, so does the risk of errors in analysis and compliance.

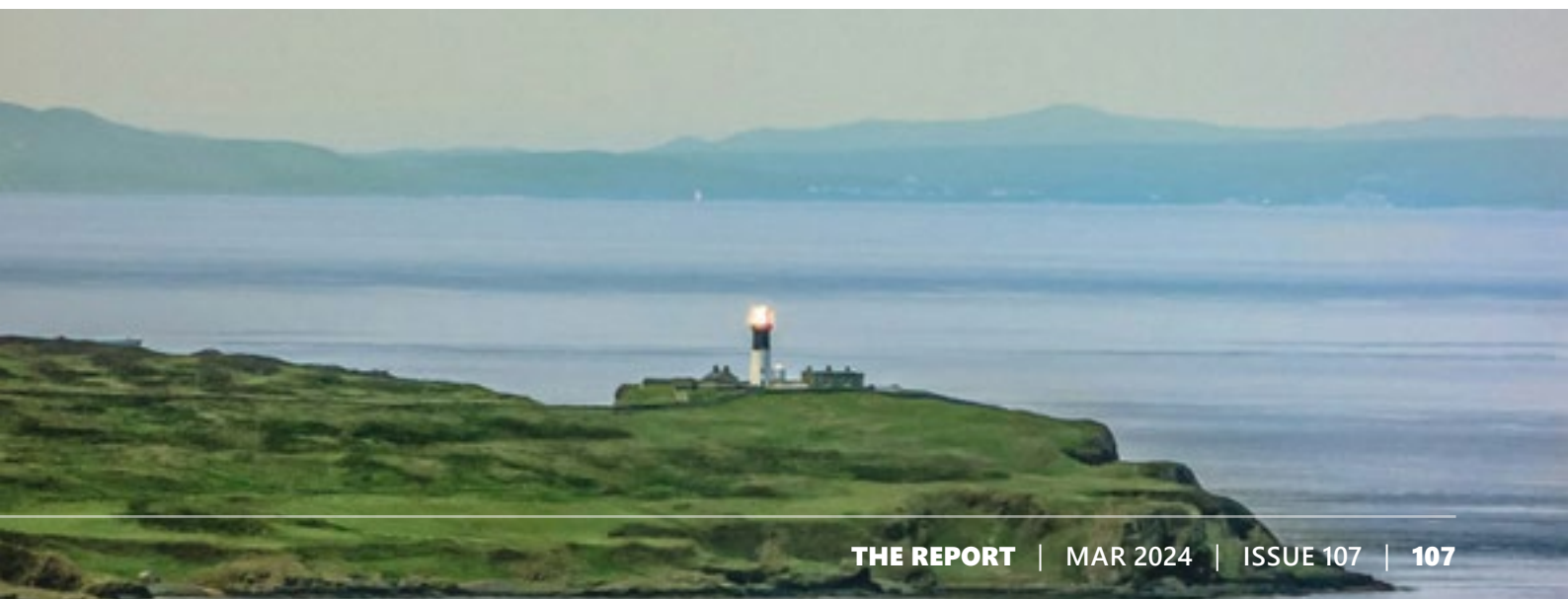
Failing to collect and validate emissions data throughout the year will lead to significant work burdens to meet end-of-year mandatory, regulatory reporting, and voluntary reporting requirements. Shippers and operators will then be forced to navigate complex data sources to ensure accuracy and compliance, which can be time-consuming and prone to human error. This burden not only hampers operational efficiency. It also diverts resources from core activities and undermines the ability to proactively manage emissions and EU ETS compliance.

By adopting a continuous data collection and validation approach, shippers can streamline workflows, alleviate year-end pressures, ensure compliance with the EU ETS, and focus on wider sustainability strategy planning.

### Maximizing progress

As shipping finds its feet, it must seize the opportunity that the EU ETS presents to ensure the adoption of long-lasting processes and tools. This will prepare us for the future, as regulations tighten further, and more rules for reaching zero emissions come into force. It is critical that solutions that bring together information across the value chain are prioritized, to deliver a comprehensive view of the industry's operations and enhance collaboration as we work together to make global trade green.

Website:  
<https://zeronorth.com>





# Futureproofing vessels: decarbonisation is inherently a design challenge



By **Guido Schulte**,  
Managing Director,  
Elomatic Maritime  
Technologies



Vessel owners are encountering new levels of complexity as previous ship designs are modified to integrate new clean technologies and adopt alternative fuels. In this scenario, it is essential that they select a design partner who can consult effectively on the challenge and dedicate the necessary resources.

The maritime industry is undergoing a transformative shift towards decarbonisation. It is clear that both the European Union and the International Maritime Organization (IMO) on a global scale are deeply committed to environmental protection, making decarbonisation a top priority.

The exposure to these regulations, carbon pricing, and CII ratings, will be essential commercial considerations for any ship owner or operator. They will need support in developing innovative and sustainable solutions to comply with tightening upcoming rules.

However, while much attention is given to fuel choices, decarbonisation is inherently a design challenge. Whether incorporating a new fuel, adopting innovative technologies, or enhancing existing vessel performance, addressing this challenge at the design stage is crucial. Decisions made during the design phase carry long-term implications, potentially determining a ship owner's viability over decades, given the regular lifespan of a vessel.

Hull optimisation stands out as the initial step in decarbonisation. Not only does it deliver efficiency benefits, but it also mitigates the high cost of future fuels. A typical cargo ship that operates every day throughout the year uses about 95% of its energy for propulsion, so propulsive efficiency is going to be fundamental for owners looking to win commercial advantage with their decarbonisation investments.

The development in ship hull optimisation has been rapid in recent years thanks to increased

computational power available and improved software quality. A major part of today's ship hull, appendage and propulsion optimisation can be done using computational fluid dynamics (CFD) simulations in big computer clusters.

In terms of energy efficiency, there are currently alternative devices available in the market and if properly designed and optimized, these have the potential to enhance vessel performance. Even a small piece of equipment, developed using advanced modelling, can deliver a major impact on GHG emissions. To provide an example, our Elogrid tunnel thrusters can achieve a noteworthy reduction in fuel consumption and improve the vessel's manoeuvrability by increased side thrust while also contributing to a substantial reduction in noise and vibration levels.

It is important that the existing fleet is not left behind in shipping's decarbonisation trajectory, so retrofitting is a pragmatic approach. We are currently helping to evaluate clean technology solutions, as reflected in a feasibility study with the Government of Åland in Finland to assess the viability of replacing the propulsion system of the archipelago ferry M/S Skarven. This ensures greater efficiency and CO2 emissions reduction through electrification. Additionally, alternative options are being explored as part of this study, such as converting the ferry into a hybrid vessel.

Furthermore, ensuring safety throughout the design process is crucial, especially with the introduction of new fuels and technologies. With

more varied fuels and technology on the horizon, more variables to simulate, and more options to test, the need for more significant, dedicated design resources becomes imperative. Simulating and analysing ship properties and processes provides all parties with a better understanding of the possibilities of operating the ship in an energy-efficient and safe manner. The ship's operational profile and its mission, as well as the ambient conditions of the operational area, set the boundaries of the analysis.

Future fuels will be less dense, and some will present more hazards, such as the high toxicity of ammonia. Because of this, they require more dedicated simulations for leak analysis, explosions, contamination, and other failure scenarios – especially on passenger vessels. Owners need a partner to scrutinize and ensure compliance in the light of current and future rules taking into consideration available and constantly maturing future technologies.

When embracing new technologies, meeting retrofitting requirements, and preparing vessels for future technologies, owners need partners who can provide effective consultation on the challenges and allocate the necessary resources to identify solutions.

It is therefore essential that at the design stage, a design partner can thoroughly evaluate all options, and model how they will perform. This requires significant, dedicated resources. After all, one small change at the design stage can have major impacts on operations for years to come.





# How to develop a culture of safety

**The UK Maritime and Coastguard Agency (MCA) has published a section in their Leading for Safety guidance, looking at why accidents happen, what really causes them and what can be done to create a safety culture in an organisation.**

Safety culture describes the way in which safety is managed within an organisation. It relates to the beliefs and attitudes, values, and perceptions that employees share regarding safety in the organisation. According to the MCA, to reduce the rate of incidents, we need a good understanding of:

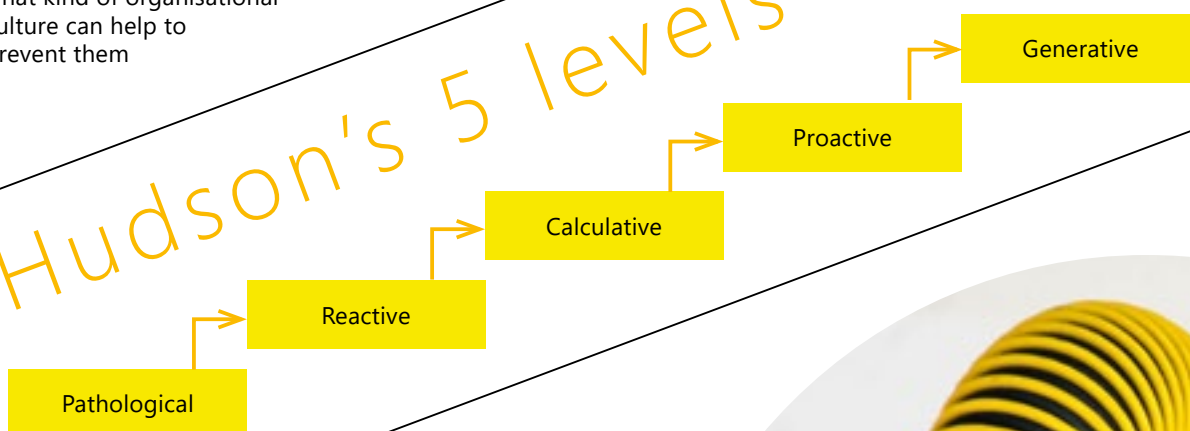
- why accidents happen
- what really causes them
- what kind of organisational culture can help to prevent them

It's important to recognise that while individual behaviour is influenced by many factors, the behaviour is an emergent property of the organisation. The safety culture of an organisation has a big impact on the actions of its employees and how seriously they take safety. Poor safety culture has been linked to many incidents in the maritime industry.

The figure below shows the various levels of safety culture as outlined by Hudson. Organisations can exist on or between any of the "rungs" and this can change

over time, as it takes continuous effort for an organisation to maintain a certain standard. It should be noted that it's not possible to reach the top of the ladder at the generative rung, without having gone through the other levels. So, an organisation will need to be at the proactive level before being able to work towards a generative culture.

## Hudson's 5 levels of safety



# 1 Pathological

- Who cares as long as we're not caught.
- No one cares about health and safety and are only driven by the threat of punishment.

## 2 Reactive

- Safety is important. We do a lot every time there is an accident.
- Safety is only taken seriously when things go wrong.

## 3 Calculative

- We have systems in place to manage hazards.
- There is a focus on data collection and higher analysis regarding safety. Higher numbers of audits take place. The information is not always shared in a useful manner.

## 4 Proactive

- Safety leadership and values drive continuous improvement.
- Everyone who works for the organisation is engaged in its safety. The organisation recognises the value of continuous improvement.

## 5 Generative

- Health and safety is how we do business around here.

The organisation sets high standards and expects to exceed them. Accidents, incidents and near misses are used for learning. Time is invested in continuous learning for all. There is an understanding that mistakes are inevitable and so preparation is key.

Reaching any of the higher levels on the ladder relies on commitment from managers and all seafarers. Several individual, environmental and organisational factors can influence our perception of risk and risk-taking behaviour.

When an organisation encourages continuous improvement, it strengthens its ability to deal effectively with inevitable incidents. The International Safety Management (ISM) Code is designed to encourage continual improvement – through the company's safety management system (SMS), it encourages the self-regulation of safety. The critical link to accomplishing effective self-regulation is by setting safety goals and targets.

### Culture of compliance

While a culture of compliance is certainly better than a culture of non-compliance, rules and regulations only define the minimum standards that should be met. In safety-critical organisations, new risks can arise at any moment.

### Culture of continual improvement

An organisational culture that values continual improvement should constantly be seeking out information and ideas to improve safety onboard, to make risks in the working environment as low as reasonably practicable.

Continuous improvement means that:

- scenarios are anticipated and planned for in advance;
- fewer emergency responses are needed as proactive management is in place;
- complacency is reduced because risks are continuously monitored and new ways of dealing with things are considered.

Measurement is an important step in any management process and forms the basis of continual improvement. If measurement is not carried out correctly, the effectiveness of the health and SMS is undermined and there is no reliable information on how well the health and safety risks are controlled.

Safety officials should be given relevant information such as industry guidance as well as:

- findings of the risk assessment and measures for protection in place;
- information on any other factors affecting the health and safety of those working on the ship;
- statistical information that needs to be considered when conducting risk assessments.

Learning culture arises from a culture of reporting, and focuses on how people, organisations and entire industries learn from past incidents and near misses, as well as successes, to become safer. The simple argument is that if you have just culture, you get good reporting, and if you have good reporting you can learn to be safer, which leads to a better safety culture.

Leaders can develop and encourage the use of a reporting system by:

- identifying staff who can champion the reporting system;
- providing relevant training on the reporting system;
- being open to feedback from your team, ensuring that concerns are taken seriously, and changes are made accordingly;
- taking safety committees and the role of safety officials seriously.

Developing a positive safety culture and achieving high standards of safety depend on whole-hearted support of management and all



seafarers. Those with specific safety responsibilities are more likely to perform well when management is clearly committed to health and safety. It's also important that procedures are in place so that all seafarers can cooperate in establishing and maintaining safe working conditions and practices.

Seafarers on board, or their elected representatives, must be allowed to make representations to the company or their employer about health and safety matters. They need to be able to do so without risk of disadvantage to themselves. Such representations should be considered, perhaps in conjunction with the safety committee, and any agreed measures to improve safety put in place as soon as possible.

## Risk assessments

The safety officer should be familiar with the principles and practice of risk assessment and should be available to advise those preparing and reviewing risk assessments. Where the safety officer also has other responsibilities (for example, a chief officer) they may well conduct risk assessments themselves. However, the general principle is that the safety officer takes an independent view of safety on behalf of the company. Appointing the Master as the safety officer is not generally advised. This is because the safety officer is required, among other duties, to make representations and recommendations on health and safety to the Master.

Seafarers, and in particular leaders, should be given tools to assess current attitudes and behaviours they possess and gaps that need to be addressed. This should aim to improve:

- operator and manager behaviour;
- safe working;
- supervisory behaviour;
- rule-breaking;
- situational awareness;
- understanding and assessing personal risk;
- managing change and making change last;
- seeing yourself as others see you;
- understanding own organisational culture.

Research by Dr Little in 2004 found that there was more emphasis on technical skills than on leadership abilities in the training provided and in promotion criteria through the ranks, all the way up to master. Training quality was generally regarded to be low, suffering in particular from cost-reduction drives, which put pressure on training providers to reduce the scope and length of training courses.

A lack of investment in training can contribute to a poor safety culture. So, it's important for seafarers to have access to personal and external resources, as well as appropriate training to conduct their tasks safely.

## Just culture

A just culture is founded on 2 principles that apply simultaneously to everyone in the organisation. These are that:

- human error is inevitable, and the organisation's policies, processes and interfaces must be continually monitored and improved to accommodate those errors;
- individuals should be accountable for their actions if they knowingly violate safety procedures or policies.

In a just culture there is a high level of trust between workers and managers. Workers are encouraged or even rewarded for providing essential safety-related information. When incidents occur, the focus is on preventing them from occurring again. A just culture leads to a learning culture.

"Just culture" is a term used by many, but it may not work well in your

organisation, depending on a variety of factors. There are many terms that reflect differing approaches to safety culture, and this is just one. So please use what is useful from this section and do your own research to work out what kind of organisational culture would best address any problems you have within your organisation.

Incidents, errors and near misses are inevitable from time to time, but in a just culture these are treated as learning opportunities and although workers are held accountable for their actions, dismissals only occur if the incident was a direct result of an action intended to cause harm. Otherwise, the factors that contributed to the problem are identified, and workers are supported in their work environments to ensure the incident does not occur again.

## Changing culture - Proactive steps:

1. Get to know your workplace and the habits and attitudes of those employed in it.
2. Look and listen to what's happening and be prepared to ask questions.
3. Take on the responsibility of a safety official, or proactively listen to and encourage those that have the role.
4. Contribute to lesson learning by being honest about mistakes, and always try to understand others.



# Rethinking Post-construction Assessment

A discussion paper of interest to UK inland waterways narrowboat surveyors and brokers  
by Tom Keeling CMarEng MIMarEST and  
Peter Brookes CEng, MIET, AffIIIMS.

IIMS statement: This article is a lite version and brief synopsis extracted from the much greater volume of work contained in the main document which can be downloaded at the end. IIMS is grateful and supports the immense time and detailed research that Tom and Peter have jointly put into making their argument in an attempt to stimulate debate and bring clarity to an area that is still shrouded in mystery and confusion for many. Once you have read and digested the content and are involved in this particular sector, Tom and Peter are very keen to hear your thoughts and feedback by email at [info@smallcraftservices.com](mailto:info@smallcraftservices.com) or [peter@technicalsupport.ltd.uk](mailto:peter@technicalsupport.ltd.uk) before deciding on their next course of action which IIMS is keen to support.

## Abstract

The authors present arguments that suggest the UK inland waterways sector has, since 1998, been led to conflate sailaway narrowboats with own-built boats. The Recreational Craft Regulations 2017 (RCR 2017) confirms there is a difference, and this paper outlines that there are three kinds of vessel that need consideration against the RCR 2017. They are own-built, manufactured sailaway boats, and manufactured completed boats.

Developing this point, the scope of the RCR 2017 is considered, particularly how this is clearly defined as applying to manufacturers, distributors and importers of boats. An argument follows that the RCR 2017 does not apply to a manufactured boat once in private ownership and that the current understanding of the scope of the legislation requires revisiting. Continuing on from this, if the RCR 2017 does not apply to manufactured boats once in private ownership, then

neither can any of the requirements of Post-construction Assessment (PCA). Furthermore, the legislation states PCA applies to a product when 'first placed on the market' or 'first put into service'. The logic of applying this "first" only process (as defined by the legislation itself) a second time to privately sold and owned used vessels is questioned.

Further to this, recent claims that brokers of privately sold used vessels have responsibility for RCR 2017 conformity is dispelled, and the distinction between brokers of privately owned used boats and distributors of manufactured new products is discussed.

Subsequently, brokers and marine surveyors involved in the used boat market are cleared of any responsibility to consider RCR 2017 conformity, or whether PCA is required.

What remains is to try and understand how the sector has got to where it is with this legislation.

## Introduction

The Recreational Craft Regulations 2017 (RCR 2017) sets out conformity requirements for new and imported recreational craft, and obligations for manufacturers, their authorised representatives, importers and distributors. HM Govt. RCR guidance (2021, 2023) explains the purpose of the legislation is to ensure safe products are placed on the GB market by requiring manufacturers to show how their products meet the 'essential requirements' listed in Schedule 1 of RCR 2017.

The RCR mirrors the EU's Recreational Craft Directive (RCD) which first became law in 1996 (RCR 1996 / Directive 94/25/EC), being fully implemented in 1998 after a two-year introductory period. The RCR 2017 is essentially the GB version of the latest RCD release (Directive 2013/53/EU).

Within the RCR 2017 is a requirement to complete Post-construction Assessment (PCA) of a boat when



certain conditions are met, for example if it is imported into GB. In some cases, if a Major Craft Conversion (MCC) has occurred, this can trigger the PCA process. PCA can only be completed by a specialist notified or approved body and concern is mounting in the sector regarding when and what triggers the PCA process. There is confusion and uncertainty amongst brokers and marine surveyors alike. This paper sets out to provide a wider understanding of their obligations when faced with a potential PCA case. In doing so the wider scope of the RCR 2017 is also discussed.

A recent presentation to brokers contained emotive phrases such as “an armada of non-CE marked boats were plying the inland waterways – the authorities didn’t like it”, yet this concern does not have a referenced source, nor is it matched by real-world experience. Further worrying is the possibility that the scope of both the RCD and RCR has been exaggerated and misinterpreted since inception, some 25 years. Sailaways and own-built boats appear to have been conflated yet they are now described as different things. This paper outlines what has happened and where this leaves the sector.

## Background research

The paper looks back to the origin and intention of the RCD as a set of regulations intended to govern the behaviour of economic operators, being manufacturers, distributors and importers. EU guidance makes clear in their “Blue Guide” that this sort of consumer legislation does not impose any requirements on a private citizen or product end user. This crucial factor relating to the scope of the legislation is for the first time explored and is found to have been previously overlooked in understanding how the RCD or RCR applies in the UK. This raises significant implications for the sector.

## OPSS view

The Office for Product Safety and Standards (OPSS) / Department for Business and Trade were contacted to ask for guidance regarding PCA / MCC and in particular applicability to used vessels. Dealing with a huge portfolio of product legislation, it was hoped they would be able to answer queries directly, but ultimately, they recommended answers might be best sought from a legal specialist.

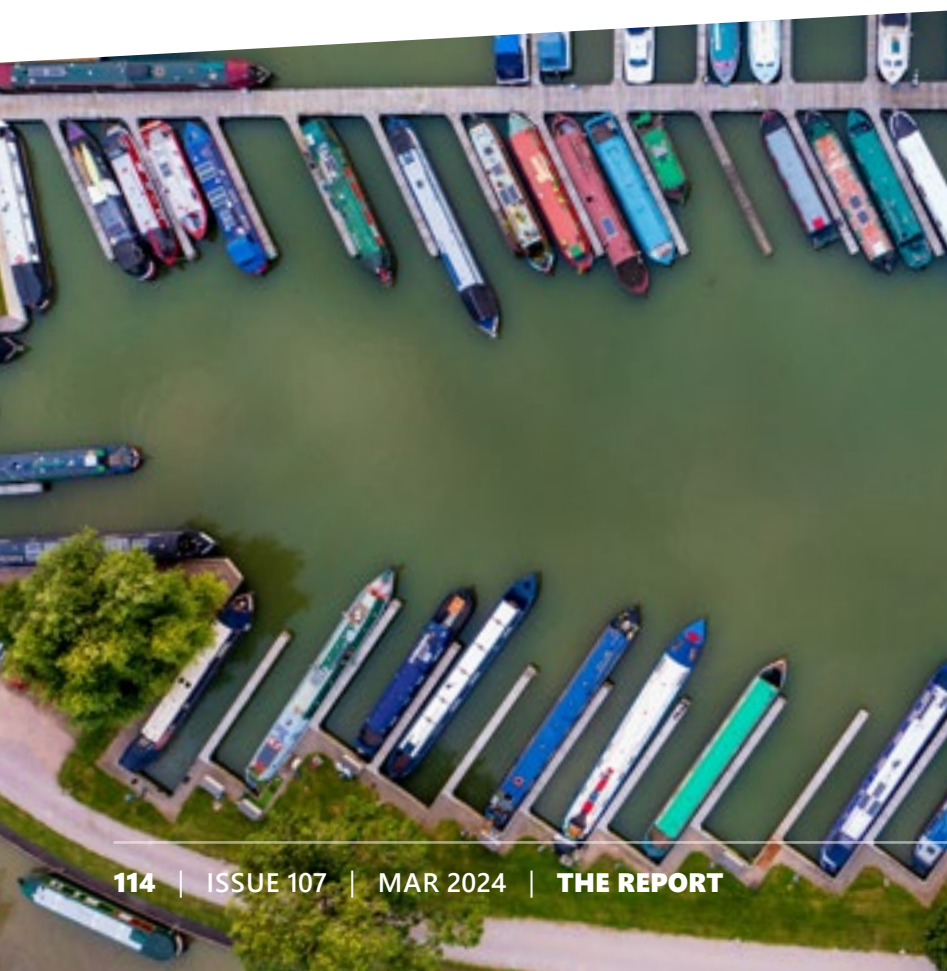
When the scope of RCR 2017 was discussed, they did confirm that it applies to newly manufactured products. However, there seems to be a familiar conflict in that OPSS make clear the scope applies to new products only, however there is the ambiguous statement made relating to how a used boat that has been modified “could” be considered “new”; this seems to match the issues experienced in the industry. When considered against the EC Blue Guide, the OPSS must surely mean the same; that a used boat being made available by a ‘person’ e.g economic operator in scope of RCR 2017 should be considered as new and in scope of RCR 2017. A further interesting point made was that OPSS directed that any requirement for PCA of a used product would be the decision of the owner.

## Considering liability for alterations to watercraft

The RCR 2017 references that a change is only relevant if the vessel may no longer meet the essential requirements, and this seems to be subjective and ambiguous.

Take this example where it is not relevant; a gas-free boat is modified and fitted with an LPG system. The system is fitted by a registered gas engineer and is compliant with ISO 10239:2017. The gas engineer issues a gas safety certificate. The relevant essential requirement in RCR 2017 is listed at clause 5.5 in Schedule 1, which covers gas systems on boats. This states that all gas systems must be suitable for use, installed correctly, and tested after installation.

The gas engineer achieves this anyway, and the gas safety certificate provides the proof of legitimacy. A gas system is not a benign change; it’s a major system with potentially catastrophic consequences if something goes wrong. However clearly nothing has occurred that contravenes the essential requirements and brokers and marine surveyors are likely to have no issue. Furthermore, there seems to be no value in having the change (a gas system installed by a registered gas engineer) assessed by a 3rd party who is possibly not gas registered themselves.



Another example could be a vessel that has undergone structural amendment, for example a 2018 narrowboat that is stretched (lengthened). Recent claims that PCA is required include one narrowboat being offered for sale at a brokerage, and the vendor being told MCC has occurred because they have stretched the vessel. They receive information that they have to follow the PCA process (presumably because the changes have altered the watercraft to 'such an extent that it may not meet the applicable essential requirements').

This presents a real concern for a broker, who does not want to be pursued by a future owner or Trading Standards for selling a product not in conformity; some brokers (following industry guidance issued in 2023 and 2024) seem to be worried they are "distributors" and that used boats are "products" in scope of RCR 2017.

Marine surveyors sensibly seem to have caveats that state they do not consider any conformity with RCR, so therefore PCA is not a consideration. However, some are nervous about not mentioning to a buyer that the vessel changes could, by some, be considered a barrier to purchase unless conformity is proven.

There is now an escalating fear growing; if the 2018 stretched boat above was presented at a brokerage who don't care about potential PCA, and a surveyor also doesn't consider it, the second owner is blissfully unaware. They then go to resell but this time a brokerage says to the second owner that a PCA is required because of previous MCC. The accusation is that this privately owned used boat has somehow been illegally placed on the market and that the second owner and / or the broker has liability for this.

British Marine guidance has recently (Marinetalk, Jan 2024) instructed brokers to look for a CE plate and WIN, because "if these items cannot be found it is highly likely the vessel is not legal"; however a boat is a product like any other, so it can be modified at will in private ownership.

A consumer with a toaster disposes of the box, conformity paperwork etc, but can still sell it second hand without restriction. There is also the risk that boats never required to be subject to the RCR 2017, such as an own-built boat, will be made to have a PCA completed by an unknowing broker, when it was excluded from the regulations in the first place. This places the broker at risk.

The paper presents arguments that show the marine surveyor and broker do not have any liability for any legal status or changes to a privately owned used watercraft.

## Review

At the time of publication, it is pleasing to report that British Marine has commissioned what is understood to be an "independent legal review" into the subject, to the undertaken by a marine law firm. A brokers' group has formed, who have separately engaged the services of a specialist product lawyer; initial briefings report that the paper has been found to be logically sound and correct. The results from the BM commission are eagerly awaited and this proactive approach is laudable.

## Proposal

The paper is in its first published iteration as a working draft and makes a significant proposal made up of 9 key statements that redefine the industry's understanding of the scope and application of RCR 2017. These focus on the clear application of the legislation to economic operators; however, following engagement with stakeholders it is likely these will be updated.

## Summary

The notions of major craft conversion and post-construction assessment seem like new concepts, and as such there has been

confusion as to how and when it is necessary or applies. Brokers and marine surveyors are unclear if they have a responsibility and need guidance and an agreed industry position. There has been too much noise and not enough clarity.

It is entirely within reason that the uncertainty surrounding the RCR and the RCD has historically resulted in unnecessary application of requirements and unnecessary costs to boaters. Furthermore, the sector's understanding of what an own-built boat is has seemingly been misdirected since 1998, and sailaway vessels incorrectly categorised. As a result, over-application of the legislation and allied processes has occurred. It is feasible to conclude that the reason present understanding of this legislation is wrong is that it was predicated on misunderstanding from the start.

A boat in private ownership is not in the scope of RCR 2017, and as such is free to be modified without regulation as the owner sees fit.

This paper presents evidenced arguments that are widely supported in the sector. As yet, no UK organisation or group has presented any reliable independent guidance to the sector, leaving the uncertainty as described in this paper that benefits nobody. It is hoped that this paper will encourage others to be constructive, to read the legislation and where necessary seek expert guidance to correct misunderstanding.

The authors welcome authoritative, unbiased and informed conversation regarding this hugely important topic and hope to see evidenced responses forthcoming.

Until such time as a credible and definitive guide is produced relevant to the RCR 2017, and in particular PCA / MCC, this evidenced and referenced paper supports the position outlined in the proposal and seeks to get agreement for adoption from marine surveyors and brokers alike.

Your observations, comments and thoughts are welcomed by email to [info@smallcraftservices.com](mailto:info@smallcraftservices.com) or [peter@technicalsupport.ltd.uk](mailto:peter@technicalsupport.ltd.uk)

The full paper is freely available to download at <https://bit.ly/3SXVZ0R>.





**Image credit:**  
**NorthStandard Club**

# SURGE IN DEMAND FOR LITHIUM RAISES STABILITY CONCERNS

Attention should be given to the potential liquefaction risk and structural stress issues arising from extraordinary growth in spodumene shipments – that’s the advice from John Southam, Loss Prevention Senior Executive, NorthStandard (Greece) and Lee Stenhouse, Managing Director, Roxburgh. The global demand for lithium for use in batteries has led to an increase in shipments of spodumene, a cargo which possess shifting and/or liquefaction risks.

## ***What is spodumene?***

Spodumene is a lithium aluminium silicate and is the world’s most abundant commercially viable lithium mineral. Rapid global increase in lithium demand due to the advent of the electric vehicle battery industry has led to the mineral sources of lithium being increasingly developed and exploited, with spodumene being the most important.

The IMSBC Code includes a schedule for spodumene (upgraded) where it is described as an odourless and tasteless off-white to beige sand, containing a mixture of naturally occurring silicates and quartz. It is

categorised as a Group A cargo, which means that this cargo may liquefy if shipped at a moisture content in excess of its transportable moisture limit.

Alternative names declared by shippers include ‘Lithium Mineral Concentrate’, ‘Lithium Alumina Silicate’, ‘Spodumene Concentrate SC6.0’ and ‘Alpha Spodumene’.

## ***Trade routes***

There are significant deposits in Australia (which currently has the highest existing annual production), South America and Canada. There is also a growing African export sector (Zimbabwe, Namibia, Democratic Republic of Congo and Mali), which

is anticipated to be increasingly important due to its large reserves.

Currently, the destination of spodumene concentrates is almost exclusively to China, typically discharging in ports within the Sichuan and Jiangsu provinces.

## ***Coarse product shipments***

The source rock (spodumene pegmatite) is typically upgraded to a spodumene concentrate for shipping purposes. But it can also be shipped in its natural coarse state, which can consist of large cobbles or even boulders, sometimes in palletised form, and is similar in appearance to an aggregate material.

The large particle size and relatively low friction means that, if improperly loaded in the ship's hold, there is risk that the cargo as a whole (or individual rocks) could shift, creating stability issues, causing damage to vessel or stress being applied to the structure of the vessel.

Coarse material shipments have up until recently been considered uneconomic; as such it has no individual schedule in the IMSBC Code 2022 edition. However, the increase in lithium prices has made coarse product shipments a more viable economic option, especially from mining operations that are remote or trying to develop early revenue streams before their concentrate processing facilities become operational.

## ***Fines and concentrates***

In some regions, especially in Southern African countries such as Namibia and Zimbabwe, there is a focus to control the natural resources. They aim to control the export of raw materials by promoting value-added local concentrate processing. In some cases, full or partial bans have been put on the export of unprocessed (coarse) spodumene pegmatite.

It is anticipated by mining and material experts Roxburgh that a pragmatic approach will be adopted and there will be a mix of ore and concentrates shipped out of these regions as the industry demand increases.

It is expected that the spodumene (upgraded) concentrate processing facilities that are currently under construction near mines and quarries will become operational in the near future. This process will involve spodumene pegmatites (raw coarse state) undergoing initial concentration via crushing and grinding to a fine particle size before the valuable minerals are separated and a waste product is produced, which may present shipping issues such as liquefaction, dynamic separation or cargo shift.

The upgraded lithium concentrate (also known as SC6) is then processed further to produce a sand containing naturally occurring quartz and silicates as well as the valuable spodumene.

## ***Carriage risks***

As with other mineral concentrates, the potential risk of material failure during shipping, such as liquefaction, will be controlled by the cargo's particle size distribution, mineralogy, and moisture content.

Therefore, before commencing loading, the shipper must provide the ship's master with accurate information on the specific properties of the cargo to allow for safe stowage and shipment. The shipper should provide evidence that a proper technical assessment for the potential Group A properties of the cargo has been undertaken. Also, the subsequent procedures for sampling, testing and moisture management of the cargo are to be reviewed and approved by the competent authority at the port of loading.

In some of the developing regions exporting this cargo, there are concerns that procedures for sampling and testing may not have had proper consideration or oversight.

Shippers are recommended to ensure they are provided with the relevant documentation well in advance of loading to allow for a proper review.



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# What is a pipe?

ORIGINAL AUTHOR/S UNKNOWN

Prepared by Peter Broad,  
President of the International  
Institute of Marine Surveying

## A clearer understanding

I would like to provide you with a technical insight into the complexity of pipes. We are always striving to be more professional in our understanding of industry and how we should provide clear and concise reporting. The information provided below may assist you in your understanding of this subject and help you in communicating accurately the specifications of pipes.

- 1 All pipe is to be made of a long hole, surrounded by metal or plastic, centered around the hole.
- 2 All pipe is to be hollow throughout the entire length - do not use holes of different length than the pipe.
- 3 The ID (inside diameter) of all pipes must not exceed their OD (outside diameter) - otherwise the hole will be on the outside.
- 4 The pipe is supplied with nothing in the hole, so that water, steam or other stuff can be put inside at a later date.
- 5 All pipe is to be supplied without rust; this can be more readily applied at the job site.
- NOTE:** Some vendors are now able to supply pre-rusted pipes. If available in your area, this product is recommended, as it will save a great deal of time at the job site.
- 6 All pipe over 150m in length should have the words "LONG PIPE" clearly painted on each side and end, so the contractor will know it's a long pipe.
- 7 Pipe over 3000m in length must also have the words "LONG PIPE" painted in the middle so the contractor will not have to walk the entire length of the pipe to determine whether it is a long or short pipe.
- 8 All pipe over 1.8m in diameter must have the words "LARGE PIPE" painted on it, so the contractor won't mistake it for a small pipe.
- 9 Flanges can be used on pipes. Flanges must have holes for bolts, quite separate from the big hole in the middle.
- 10 When ordering 90 or 30 degree elbows, be sure to specify left-hand or right-hand, otherwise you will end up going the wrong way.
- 11 Be sure to specify to your vendor whether you want level, uphill or downhill pipe. If you use downhill pipe for going uphill, the water will flow the wrong way.
- 12 All couplings should have either right-hand or left-hand threads, but do not mix the threads, otherwise, as the coupling is being screwed onto one pipe, it is being unscrewed from the other.
- 13 All pipes shorter than 3mm are very uneconomical in use, requiring many joints. They are generally known as washers.
- 14 Joints in pipes for water must be watertight. Those pipes for compressed air, however, need only be airtight.
- 15 Lengths of pipes may be welded or soldered together. This method is not recommended for concrete or earthenware pipes.
- 16 Other commodities are often confused with pipes. These include conduit, tube, tunnel, and drain. Use only genuine pipes.
- 17 "The pipe draws wisdom from the lips of the philosopher and shuts up the mouth of the foolish; it generates a style of conversation, contemplative, thoughtful, benevolent, and unaffected." ~ William Makepeace Thackeray

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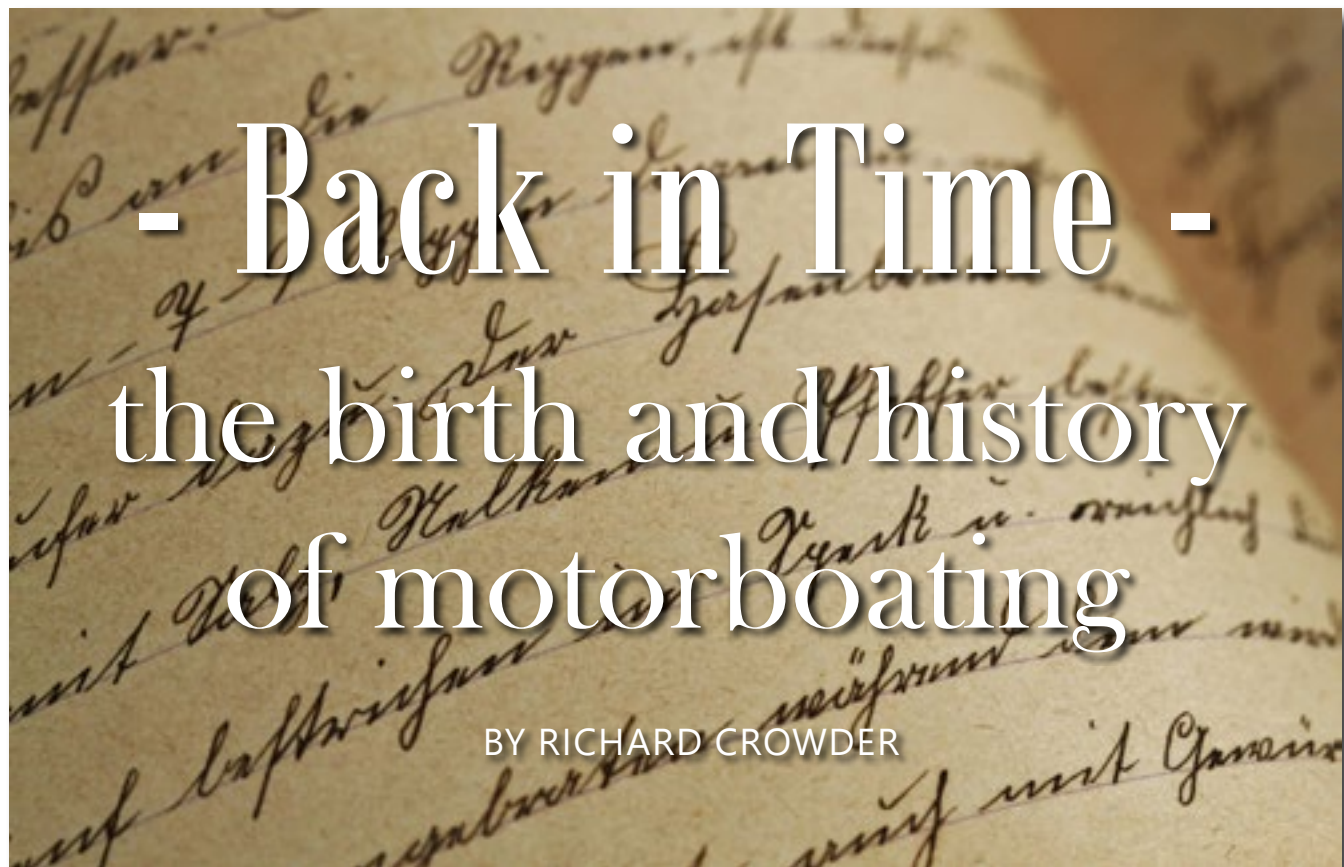
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# - Back in Time - the birth and history of motorboating

BY RICHARD CROWDER



*Dorothy Levitt helming the Napier motor yacht 1903. This is assumed to be Poole Harbour or possibly Cork Harbour. Image credit: Wikipedia*

Adding a motor to a boat is said to have started in the late 1700s when Scottish inventor James Watt, often erroneously credited with the invention of the steam engine, placed one such engine in a boat in Birmingham, England. Many steam-powered boats followed, some using a screw-type propeller to create motion as Watt did but most utilizing paddlewheels.

Except for recent developments in battery-electric power, pleasure boating has relied upon the internal combustion engine (ICE) as the source of power. There are many interesting iterations of the ICE and we will ignore some of them such as the gas turbine engine and rocket engines as their contribution to the sport, although most fascinating indeed, has been minimal.

The development of the ICE came bit by bit starting in the late 1700s. French engineers are credited with installing a prototype of their ICE in a boat around 1800-1810. There is little information available about that boat, the engine, or its inventors. Aside from an American patent for a turpentine-fuelled ICE in 1826 which never went into production, it seems there was little other reported progress during the balance of that century.

Then in 1886, German inventors Gottlieb Daimler and Wilhelm Maybach installed their one-cylinder, petroleum-derivative powered ICE into an open double-ender skiff-type boat on a lake near Stuttgart. This roughly half-litre displacement engine weighed almost 60 kilograms (roughly 133 lbs) and developed a little over one horsepower at around 700 RPM.

The boat, named Rems, had been commissioned from the German

shipyard of Friedrich Lürssen, a yard that would eventually become today's Lürssen Yachts. Rems would be remembered and credited as the first motorboat, even if indeed it had not exactly been the first.

It seems that the first sizeable production of motorboats was by Priestman Brothers of England which tested its first ICE-powered boat in 1888. Priestman IC engines utilized kerosene and a high-voltage spark-type ignition system patented by Karl Benz in 1888. Many of Priestman's boats were used commercially to move goods on England's canal system.

Frederick Lanchester of England had by 1897 developed a new ICE design with an innovative wick-fed carburettor utilizing benzene in a boat with a reversible propeller. This engine received much praise as being "high-revving" while attaining the unimaginable peak of 800 RPM. Many Lanchester boats were used as ferries on the Thames River and elsewhere.

Both pleasure and commercial motorboating was growing exponentially into the turn of the 20th century, both in Europe and America. And of course, where there are motors, there are those wanting to race and claim victory. In 1903, the Marine Motor Association was started

in England, followed months later in the United States by the American Power Boat Association (APBA), both with the objective to create rules for boat racing by delineating classes of boats and engines.

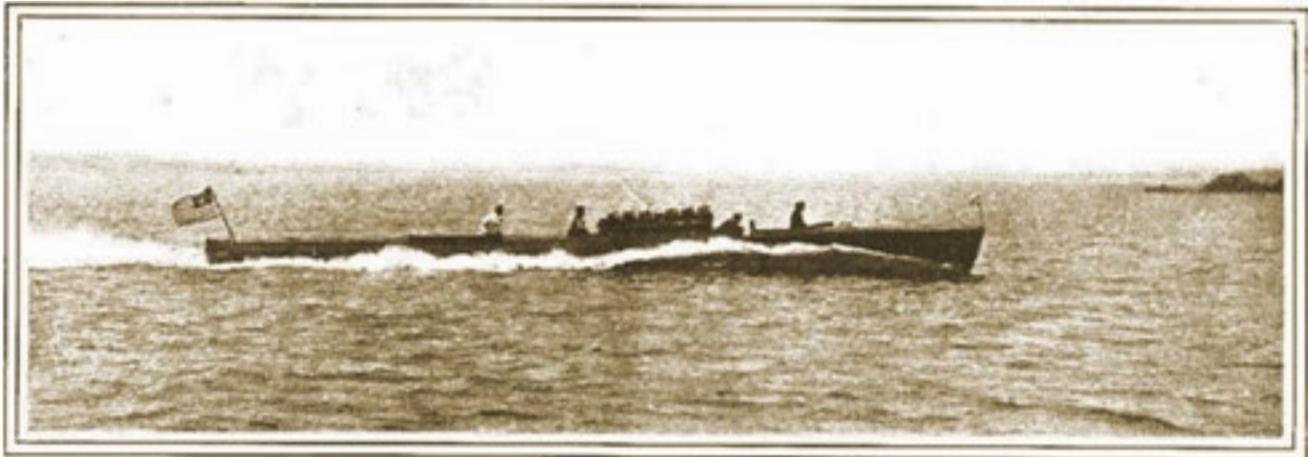
Also in 1903, Mr. Alfred Harmsworth donated the Harmsworth Cup for international powerboat competition. There were few rules, but the boat and engine had to be designed and built in the country being represented. The first race for the Harmsworth Cup was won by the 40-foot Napier I, designed and built as a race boat by Napier and Company of England and driven by Dorothy Levitt. The hull was steel and the four-cylinder Napier engine developed 66 horsepower -- providing a top speed of 21 mph, thus setting the world's first speed record.

One year later, in 1904, APBA created The Challenge Cup which has been known since as the Gold Cup. The first race, on the Hudson River in New York, was won by the nearly 60-foot-long Standard having an average speed of less than 25 mph from its 110-horsepower Standard engine. Boat racing was forever changed in 1911 when the Gold Cup was won by a hydroplane design, which of course was a planing hull as opposed to the displacement hull designs up until that time.



*The 1886 Lürssen Yachts 'Rems'*





*Standard – the 60-ft Winner of the First Gold Cup in 1904. Photo credit: Thousand Islands Life Magazine*

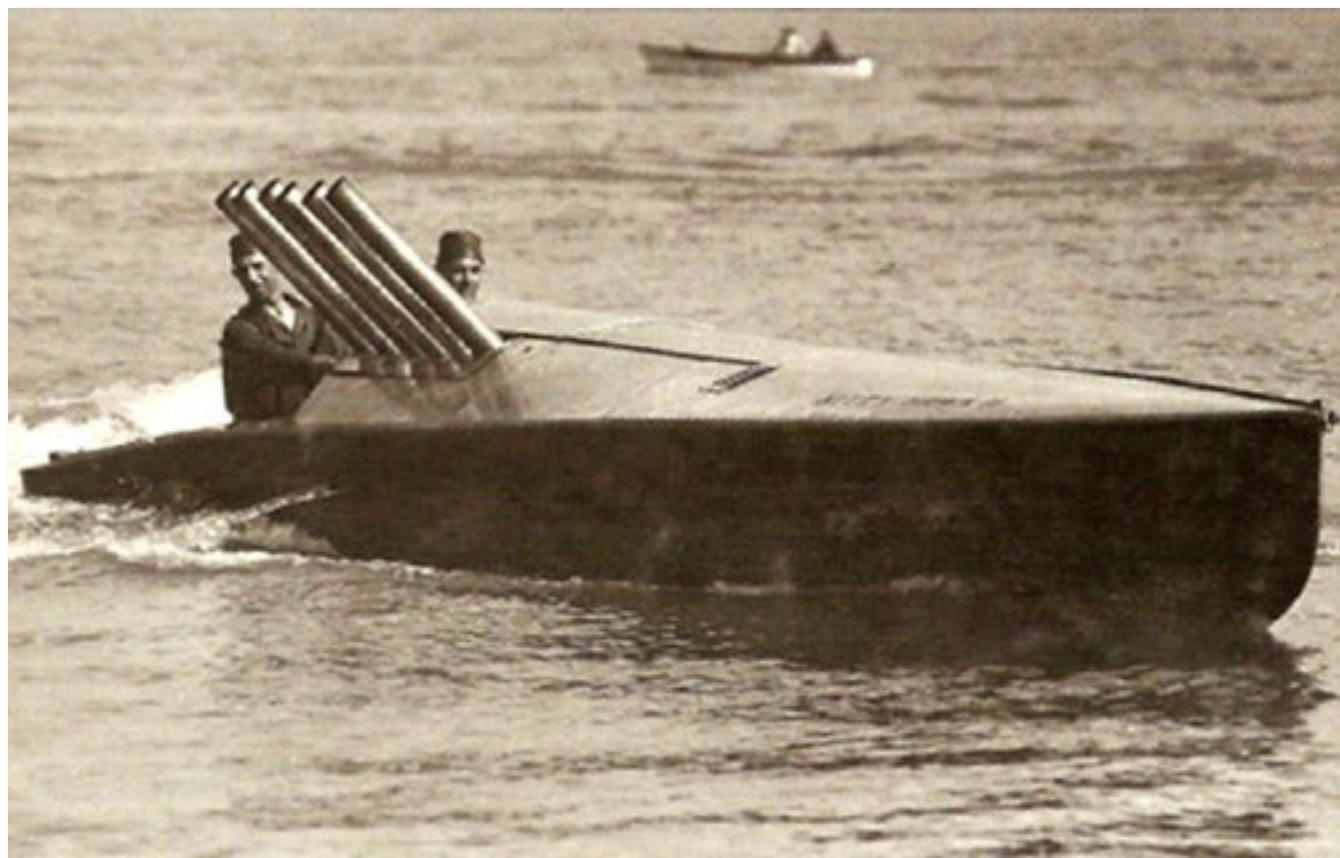
It was John L. Hacker who had earned accreditation as a marine designer at age 22 and focused his efforts on making boats go faster. Five years later, in 1904, his revolutionary Au Revoir with a shallow V-bottom design as opposed to a round bottom, set the record as the world's fastest boat. Then in 1908, he purchased the Detroit Launch and Power Company and changed its name to the Hacker Boat Company.

In 1911, Hacker designed and built Kitty Hawk, the first stepped-hull

hydroplane design which not only won the APBA Gold Cup that year but set an unthinkable world speed record over 50 mph. It held the record of the world's fastest boat from 1911 to 1915. Top speed and average speeds rose almost yearly for both Harmsworth and Gold Cup events right into the 21st century.

There are a couple of interesting notes, however. America first won England's Harmsworth Cup in 1907, and then every year from 1920 to 1933 mostly by the indomitable Gar

Wood who later owned Chris-Craft Boats. Meanwhile, Chris Smith had built his first Chris-Craft race boat in 1905 achieving an ultra-impressive speed of 25 mph. Chris-Craft went on to win the Gold Cup for eight consecutive years. Much later, the Canadian owned, designed, and built hydroplane, Miss Supertest III entered only four races before it was retired, but it won all four races – the 1959 Detroit Memorial Regatta, and the 1959, 1960, and 1961 Harmsworth Cup races. The Union Internationale



*John L. Hacker's Kitty Hawk, World's Fastest Boat 1911-1915. Photo credit: WikiMedia*

Motonautique (UIM) was established in 1922 in Belgium and headquartered in Monaco -- an emerging and now constant hotbed of powerboat racing. To this day, UIM is the overall governing body for all powerboat racing in the world. Regional associations such as the APBA in America and the Canadian Boating Federation (CBF) utilize UIM standards and categories for racing and for verifying world records and championships.

But, back to the progress in recreational powerboating. German engineer Rudolf Diesel invented the diesel engine in 1893. By 1903, Diesel had perfected the four-stroke compression-ignition internal combustion diesel engine. The first engine produced 25 horsepower and was an immediate commercial success. Diesel is still the choice of power for commercial shipping and larger pleasure yachts over 40 feet. In the modern era it has been "cleaned" up and lightened up to be installed inboard in smaller pleasure boats and, most recently, as the powerhead in several brands of outboard motors. That detail provides an interesting segue. Up until 1900, the ICE delivered its power, except for paddlewheels, by means of a screw-type propeller on the end of a shaft colloquially called a prop shaft. This prop shaft would extend from the inboard-mounted engine on a slight downward angle and protrude through the bottom of the boat near the stern. Aft of the propeller was the rudder. There were two configurations based on the placement of the engine in the boat: the straight drive inboard and the V-drive inboard.

These two configurations were the power arrangement of choice for almost all pleasure boats. But, such an arrangement in small boats, punts, and skiffs was too expensive for the average family. Thus, powered pleasure boating was only within the realm of the rich. This changed with the invention and commercialization of the outboard motor. Credit for the development of the first outboard motor is very sketchy. It may have been Gustave Trouve in France in 1881, or it may have been later in America by the American Motor Company of Long Island, New York.

Then in 1903, American Cameron Waterman connected an air-cooled motorcycle engine to a propeller by

means of sprockets. Patented and put into production in 1906 and redesigned to be water-cooled in 1907, some 3000 Waterman Porto outboard motors were sold. This is credited as the first commercially successful outboard motor.

With this development, outboard motors became accessible to the average family. They also became commercially viable and mechanically reliable in North America, and shortly thereafter throughout the world when engine tinkerer Ole Evinrude patented his 1.5 horsepower outboard motor in 1909 from his shop in Milwaukee. Good marketing from his wife Bess and a good product saw sales grow exponentially year over year.

Poor health forced Evinrude to sell out in 1913, but he kept inventing. In 1919, unable to use his own name on the motor, he established the Elto (Evinrude Light Twin Outboard) Motor Company in Milwaukee to produce a lightweight twin-cylinder, 3-horsepower outboard motor. It quickly outsold local competitors Evinrude and Johnson. But Johnson, which had introduced diecast aluminium production, kept developing increasingly bigger horsepower motors to satisfy the growing need for speed. It soon began to outsell both Evinrude and Elto. The horsepower game had begun. The Johnson 6-horsepower Big Twin of 1926 set a world outboard speed record of 23 mph. Over the years, many new outboard motor brands became available.

Several decades later came the almost literal combination of both inboard and outboard power delivery. Jim Wynne was an American marine engineer, boat designer, a perfecter of the deep-vee hull design, and one of the first offshore racers. As a racer, he was able to see the advantages and disadvantages of both outboard and inboard powered boats. In his garage in his spare time, he set about trying to marry the best parts of the two concepts. Wynne created, tested, and patented the marine sterndrive, also known as the inboard-outboard.

Volvo Penta quickly purchased the rights to its manufacture from Wynne and introduced the Aquamatic Sterndrive to worldwide acclaim at the 1959 New York Boat Show. It combined the benefits of both the

inboard and outboard propulsion units in one package -- a higher horsepower engine located inside the boat protected from the elements, and a steerable and trimmable propeller unit (the outdrive) located outside the boat.

The post-WWII economic boom gave a huge boost to the pleasure boat industry worldwide. The sizes and styles of boats, the methods and materials of manufacture, and the available niche marketing to satisfy the growing demand was huge. Nonetheless, shallow water was still the Achilles heel of the propeller.

To solve this, Keenan Hanley of Prospect, Ohio designed a waterjet -- basically a centrifugal pump which would take water in one end and expel it out the other end at a greater speed. He established Hanley Hydrojet and partnered with Kermath Manufacturing of Detroit to adapt it for pleasure boat use. The Hanley-Kermath Hydro-Jet coupled to an inboard engine and protruding only slightly below the hull was installed on a 17-foot runabout and hit the 1953 boat show circuit. It didn't cause much excitement.

By 1954, Sir William Hamilton of New Zealand had been tinkering with the water jet idea. He modified the Hanley design to expel the water stream through a steerable nozzle above the waterline, thus removing any part of the waterjet from below the hull. This became the first Hamilton Waterjet. Hamilton Jet, along with several other water jet makers, have since grown and expanded to provide water jets to almost every sector of both pleasure boating and commercial shipping.

Other methods of delivering the power to the water include surface drives, perhaps the most notable one being the Arneson Surface Drive. There are other makers of surface drives too. One recent drive development in pleasure boats is the pod drive.

This article has only scratched the surface of the development of a huge industry but suffice it to say that powerboating has come a long way since Daimler and Maybach first installed an ICE in a boat.

*Article first published on the BoatBlurb website and republished here with our thanks. See <https://www.boatblurb.com>*



## ePropulsion has launched a new line of electric outboard motors

The ePropulsion team has also developed the X Series to be able to plug in to renewables, and have already enabled commercial users in poorer countries to harness energy from onboard solar panels. The X Series has been designed for a tough life. The X40, for example, is waterproof to IP67 standards (1m immersion for 30 minutes) and has been built to a minimum service life of 5,000 hours.

"The X Series is the result of extensive R&D. We are always looking to go above and beyond the industry standards," said CEO, Danny Tao. "With the advanced X Series, we deliver more than electric propulsion. It's an intelligent and integrated platform accessible for consumers and OEM clients, ensuring a quieter, cleaner boating experience."

The streamlined and futuristic-looking motors boast 88% efficiency at the prop, and are available in three models – the X12, X20 and X40. As the names suggest, the outputs are 12kW (15.6hp), 20kW (26hp) and 40kW (52hp) respectively. The new models also feature an electric steering system that operates through the company's proprietary CANbus network, eSSA (ePropulsion Smart System Architecture).

The electric steering not only frees the installation from hydraulic rams and hoses, it also enables advanced position holding and other semi-automatic pilotage functions.



## Simrad launches world's first fully featured ultrawide marine display



Simrad Yachting has launched the NSX ULTRAWIDE marine display, the first fully featured digital display to reach the market. The ULTRAWIDE provides the benefits of dual screens within a single setup and is up to 63% wider than the standard NSX display. The ultrawide display arrangement also provides a more streamlined experience by combining multiple features and visual data into a single screen.

"With a show-stopping aesthetic and enhanced functionality, the NSX ULTRAWIDE is setting a new standard in the marketplace, and we are proud to pave the way," said Kevin Steinbraker, VP and General Manager, Digital Systems of Navico Group in a press release.

"Whether in their cars, computer monitor at work, or the TVs in their homes, consumers have grown accustomed to and love the benefits of ultrawide screens. Now they can have those same experiences at the helm with immersive graphics and flexible viewing splits. The NSX ULTRAWIDE offers a new perspective on boating that consumers won't want to go without."

## Mercury Marine unveils two more Avator Outboards

As part of the company's pledge to offer five new Avator electric motors by the end of 2024, Mercury has been steadily increasing the power of the lineup. With the 7.5e, 20e, and 35e now on the market, the company chose tech industry event to unveil the all-new 75e and 110e additions.

"We are thrilled to unveil the Avator 75e and 110e on a world stage at CES," said John Buelow, Mercury Marine president. "As we deliver on our commitment to introduce five low-voltage electric outboards, we are also excited to provide a concept of a high-voltage electric propulsion system. This concept, along with our incredible internal combustion products which have redefined outboard performance, continue to position us as the innovation leader in the marine industry."

Mercury has made a series of significant investments into electrification over the last three years. The industry leader brought the Avator 20e and 35e outboards, which correspond to roughly 9.0 hp and 15.0 hp, to the market in April 2023. The first Avator was the 7.5e (3 hp) launched in February 2022.

Mercury Marine has unveiled two new Avator electric outboards at the CES 2024 show in Las Vegas.



## Dometic expands inboard electric steering line

Global onboard equipment manufacturer, Dometic Marine, has expanded its lineup of electric marine steering systems with the introduction of its new Optimus 3000 Series electric steering system for single and twin-rudder inboard powered vessels under 40ft.

The company says its 12V steering solution delivers faster steering response, precision control and exclusive steering intelligence to single- and dual-rudder inboard powered yachts, cabin cruisers, catamarans and sportfishing yachts. It is also envisioned as an ideal complement to vessels with electric propulsion systems by addressing sustainability in its design and manufacture.

Developed with both OEM and refit sectors in kind, the Optimus 3000 Series controllers are said to provide smooth steering at all speeds, zero free play at the helm, instant steering response and a predictable steering feel that is the same from port to starboard. Lock-to-lock turns vary from 3.5 to 8.5 based on speed and application. Steering parameters can also be set by the installer to match user preference and vessel handling characteristics, using the simple colour LCD CANtrak display.



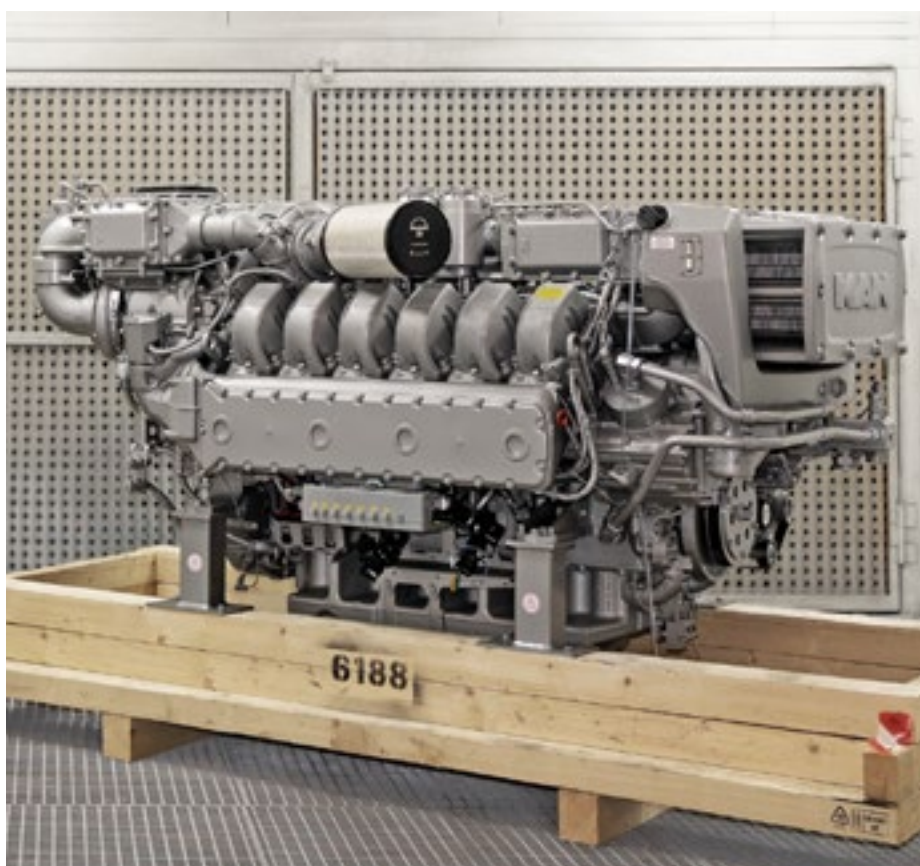
## MAN expands marine offering with D3872 engine series

According to the company the newly developed V12 engine displaces 30 litres and generates an output of 1,650 hp (1,213 kW) at 2,100 rpm in the LE432 variant for medium-duty applications. The high power-to-weight ratio is said to make the new engine particularly attractive for medium-duty work boats, with potential further applications in larger recreational vessels.

"MAN engines have always stood for a low power-to-weight ratio," said MAN Engines head of sales, Reiner Roessner. "With the MAN D3872, we offer an even better solution for demanding applications with more power and larger displacement."

The MAN D3872 is based on a completely new basic engine that benefits from the findings of the established MAN D2862 V12 engine series. Changes include an increase in the wall thicknesses of the crankcase, optimised bolting and a new crankshaft with larger bearing diameters. A new coolant pump and an optimised thermostat housing provide an improved coolant supply and a long engine life. The engine offers optional outer skin cooling instead of the closed cooling circuit.

German engine builder MAN Engines has announced the company is expanding its existing engine portfolio for marine applications with its new D3872 engine series. MAN's D3872 uses a new common rail injection system and other improvements to achieve high power with low fuel consumption and emissions.





## Yamaha unveils newly designed F350

Yamaha has unveiled a newly designed F350 outboard along with new Helm Master EX features and more pitch options for Saltwater Series II propellers. "The F350 is the perfect big-power, lightweight option for a wide variety of applications," Ben Speciale, president, Yamaha U.S. Marine Business Unit, said in a statement. "In addition, we expanded Helm Master EX variable-speed bow thruster integration for single through quint configurations to give more boaters access to the ultimate in boat control. We also added new pitches to the reliable Saltwater Series II propeller line, giving a broader array of boats access to great performance and fuel economy."

The 4.3-litre V6 F350 has larger intake and exhaust valves than the F300 and uses the same diameter electronic throttle valve as the 450-hp 5.6-liter V8 XTO. A new crankshaft design offers a longer compression stroke, which should provide more torque at lower speeds. The engine has an 11-to-1 compression ratio, and tailored intake manifolds have surge tanks that are 40% larger than those on the F300. The 81mm electronic throttle valve is 8% larger than the 300's valve and is center mounted.



New MX4 is a four-blade evolution of the company's flagship series

The MX4 is a four-blade evolution of Sharrow Marine's flagship MX propeller series, first introduced in 2020, and uses the same True Advance technology to deliver maximum efficiency and performance, now for larger and heavier boats.

Unlike traditional four-blade propellers that compromise top-end speed, the MX4 propeller is said to outperform even the fastest three-blade options on the market. In a recent test on the MJM 43z powered by triple 300hp Mercurys, results showed that the MX4 was faster than conventional three-blade propellers at every RPM from idle to WOT.

## New ECO Pro thrusters from Max Power

Max Power, the Lalizas-owned thruster manufacturer from Italy, has launched its new ECO Proportional range of brushless thrusters.

Max Power describes the ECO Pro series as an "evolution in the market of thrusters" due to its AC brushless electric motor, resulting in reduced power consumption. It consists of three models based on their thrust – the ECO Pro 90, ECO Pro 110 and ECO Pro 130 for boats from 28ft-60ft in length.

The AC brushless motors offer numerous advantages compared to traditional DC ones, says Lalizas, including increased energy efficiency, power density, durability, reliability, less noise, less vibration during operation and no maintenance.

Due to the high efficiency of the AC brushless motor, ECO Pro thrusters consume much less energy of what the DC conventional thrusters do. Offering more than 95% efficiency means that the motor does not generate heat, so the temperature is almost stable, and the motor can work for a long period of time.



# Iain Wilson: Surveying a future beyond Lloyds Register



Following a career that spans four decades across seven countries, Lloyd's Register's (LR) Chief Surveyor Iain Wilson has set a date to retire. He talks about his life as a surveyor and how the industry has changed during that time.

From the rise of Chinese shipbuilding to the advent of digitalisation, LR's Chief Surveyor, Iain Wilson, has been on the ground (or ship) to witness first-hand some of the biggest changes in shipping over the last 42 years.

His career took him to China when the country was emerging as a shipbuilding giant. And he has seen surveying move from analogue, paper-based reporting, to the use of remote surveys.

Despite the depth and breadth of his career, Wilson never had his sights on becoming Chief Surveyor. "I would have been quite happy with being a Regional Manager," he said during an interview with Horizons. But it seems that Lloyd's Register had other plans for him.

A proponent of remote surveys in certain scenarios, Wilson is not afraid to use technology to enhance processes and improve safety. He sees the advantages of digital reporting

systems and how they provide easy access and assurance to clients.

It's communication, however, that has been the "biggest game changer I've seen" he told Horizons. "There are distinct positives and negatives. It's great to be able to contact a colleague and get advice, but it also encourages us not to be accountable and to avoid making decisions on our own."

That said, he acknowledges that today's vessels are far more complex,





making it more difficult for a surveyor to rely entirely on their knowledge.

The increasing technological advancements applied to vessels have also led to a more complex statutory landscape, observed Wilson. "Regulations such as SOLAS and MARPOL have obviously had a positive influence on ship safety, however, whilst new regulations have come into force fairly quickly, very few have been taken away."

He points to tank coatings and the introduction of Common Structural Rules, which have significantly improved the condition of the ballast tanks and improved safety to such an extent that Wilson feels it's time to consider relaxing younger ships' tank inspections during routine surveys.

Looking forward, however, Wilson believes that the biggest disruptor is yet to come – decarbonisation.

"There is a huge amount to be done and we have only really just started," he told Horizons. "The industry will have to move from a standardised bunkering system, to one that involves multiple fuels with as yet little infrastructure to support them. Crew still need to be trained and assets must be retrofitted to use new fuels. It's not just a technical challenge, it's a commercial and economic one".

It may be a challenge, but it's also an opportunity, he observes, adding that these new developments make it an incredibly exciting time to become a class surveyor. "It's a job that's taken me around the world," said Wilson, "and it involves genuine hands on engineering."

For all the talk of technology and changing business landscapes, when it comes to succeeding as a surveyor, Wilson says it's about how you interact with people. "It's about communicating and influencing. You often have to tell someone that's something's not right, but there are ways of doing it that bring the best outcomes. And that's what makes a surveyor stand out."



*Iain Wilson  
on a survey  
in Samsung  
on the BP  
H-Class  
Project*

## A life in shipping

Wilson's career in maritime stems from growing up in Glasgow, with the River Clyde on its doorstep.

"Offshore was big in Scotland at the time I entered university," he explained, "so it made sense to pursue a career in it". After a false start with a naval architect degree at University of Strathclyde, he was lured away by a scholarship trainee programme at Ford Motor Company. However, after six months on industry rotation at the company's Dagenham site, Wilson realised he "never wanted to work in a factory again!"

He went back to naval architecture, and a year before graduating from Strathclyde, was offered an internship with LR. After completing his degree in 1982, he went to work at 71 Fenchurch Street, London.

The four-year programme was formed of two years training and two years development. Training complete, mainly delivered in London and Liverpool, the recently married Wilson set off for his first overseas placement in Singapore. He would not be based in the UK for the next 24 years.

He spent two years in Singapore, working across all vessel types, including war damaged vessels from the Gulf and other repairs at Sembawang Shipyard.

"It was a very big and busy office, with 27 surveyors, and a lot of tankers. It was a great opportunity to work hard and pick up experience," he said.

After two years Wilson left Singapore with his wife and one-year-old son, having achieved the title Surveyor in Development.

He was sent to Trinidad where he was part of a two-person team covering everything from super yachts to VLCCs. "Clients included the Government of Trinidad and Tobago who operated ferries and tankers and a UK-based shipping company that ran small tankers around the Caribbean.

At the time ABS did not have exclusive surveyors in the area and so LR acted on their behalf as well. It was a period that Wilson says shaped him as a surveyor. "We were on our own in a small office without the benefits of modern communications," he said. "It taught me to think on my feet, draw on the local experience and then make a considered judgement."

From Trinidad to Hong Kong, which had a large client base of 500 ships. "We carried out a lot of periodical surveys for many European clients' ships calling at the port," explained Wilson, "but we didn't not see much repair or newbuild work as Hong Kong has limited yard capacity. Much of the time was spent dealing with Hong Kong-based client queries and issues. In many ways this was a forerunner to the technical help desk model that LR has since adopted."

It was at this point in Wilson's career that he set himself the aspiration to achieve the title of Regional Manager. "It was also my first encounter with

Roy Thompson, who at the time (1994) was Principal Surveyor for Hong Kong. Roy would go on to influence the second half of my career."

For the next 14 years Wilson would move between Korea, Taiwan, China and then back to Korea. Two of these positions were initiated by Roy and "took me from being a surveyor in charge in a small office in Kaoshiung to managing two of our biggest countries. These career moves set me up for the positions that followed."

Fast forward to 2008, and following four years in Busan, Korea, Wilson returned to London as the Fleet Services Manager to work on a Fleet Quality Improvement project. It was a short-lived homecoming, however, as by 2011, he was back in Singapore as Regional Manager for Asia. According to Wilson, "that would have been enough," but opportunities kept presenting themselves.

Wilson moved back to Southampton in 2015 and whilst he still travels regularly as part of his job, since then there has been "no more living abroad," he told Horizons.

The following year he was promoted to Chief Surveyor, with responsibility for the technical governance functions of the Marine and Offshore activities, then later taking on the responsibility for the Central Services team, consisting of the Technical Investigation Department (TID), Ship Emergency Response Service (SERS) and the Fuel Oil Bunker Analysis and Advisory Service (FOBAS).

"In this role I run the various departments, trouble shoot operational issues, manage client issues and support local teams globally. Projects vary in scope and size and can range from a small ferry in Canada and to major issues on a large gas ship's containment systems."

Soon Wilson will swap his hard hat for a round of golf as he returns to Scotland to embark on the next chapter of his life. He plans to enjoy time with his wife, two children and grandson.

His advice for the next generation of surveyors is, "never stop learning. There is always something new to discover."



Iain Wilson (second left) in 1982 along with the other trainees that joined LR that same year.



## Repurposing old ships

LR's chief surveyor Iain Wilson finds the challenging projects the most interesting.

"Conversions are always more challenging and therefore in my opinion more interesting than newbuilds because of the time pressure you are under to complete the work," he told Horizons. "Shipowners don't like vessel downtime and look to yards and class societies to help get their vessels commercially active as soon as possible."

Wilson recounts one of his most interesting projects, which formed part of a multi-engine room swap for Spanish shipping company, Elcano.

The story begins with two steam powered oil takers built around 1976/77 which were re-engined by building two new engine rooms. The two vessels were separated and went on to be part of four conversion projects (two bulk carriers and oil tankers) that took place in the mid-1980s.

One of these four ships – bulk carrier Castillo de la Luz – had a new bulk carrier front end and one of the original steam engine rooms. This front would then go on to be fitted to the engine room of the Castillo de Monteatagon to form the Castillo de Belmonte – a conversion project that Wilson worked on in 1996, when he was in the Republic of Korea.

Wilson recalls how the insides of the two different parts of the vessel did not fit, "as they were built at different yards with different tank arrangements at the forward end of the engine room where the join was," he said. "It was incredibly challenging as we only had 40 days to complete the work and we really had to think on our feet. It really stands out as one of the most exciting projects in my career."

*The article was originally published in Lloyd's Register's Horizons Magazine and is republished here with their permission and our thanks. Horizons can be read online at <https://bit.ly/41yiUck>.*

## Working his way up

LR chief surveyor Iain Wilson spent the majority of his career in Asia and attributes his biggest career moves to a more senior colleague, Roy Thompson, who put him at the heart of Chinese shipbuilding during the boom years.

In 1995, Wilson moved from Hong Kong to the Republic of Korea to gain experience in new construction in the Korean yards which had started flourishing in the early 1970s and had by this time overtaken Japan, noted Wilson.

However initially he spent several months Hyundai Mipo Dockyard in Ulsan on some "fabulous conversions" before being given his first management position as SIC during a temporary assignment to Xingang, China. On return to Korea he moved to Koje working on a BP Project and an FPSO for Woodside in Samsung Heavy Industries. Then in 2000 he was sent to Taiwan as Surveyor in Charge in Kaohsiung. "In May the following year I got a call from Roy," he recalls, "who asked me to move to Shanghai as manager for Central China, in a role that see me responsible for a team of 20 surveyors. I arrived in July 2001, with my wife and two children."

Three months later Roy left to go to Korea and Wilson was promptly promoted to fill Roy's position as marine manager for China and almost overnight became responsible for around 50-plus surveyors and to build and recruit the team there to meet the increasing shipbuilding and repair work

"It was around the time when Chinese shipbuilding really started taking off," he explained. The number of Chinese yards expanded rapidly with many became serious players and "and so between 2000 to 2008, LR expanded considerably in the region."

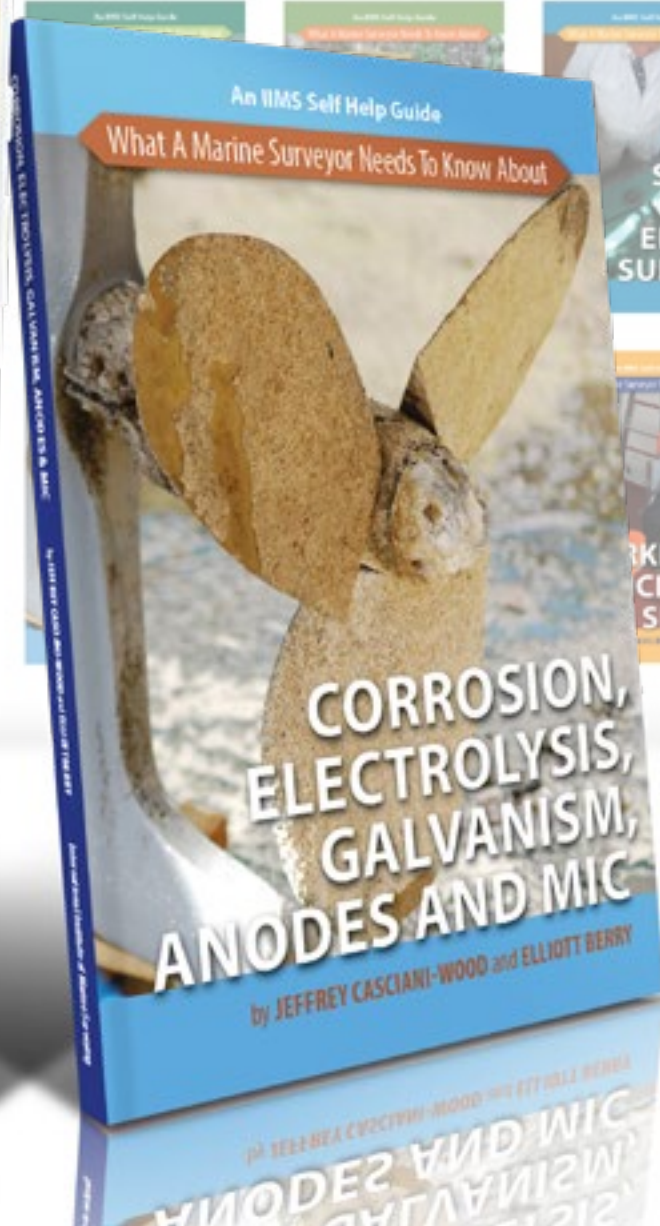
Another call from Roy came at the end of 2004 and Wilson moved back to Korea, to manage Korea through one of its busiest periods.

He spent four years in Busan before moving back to Southampton, UK, and has worked there until now.



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