

THE REPORT



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The Magazine of the International Institute of Marine Surveying

COULD NUCLEAR POWER WORK ON BOATS?

**THE REAL REASON
WHY ENCLOSED SPACE
DEATHS KEEP HAPPENING**

LIQUID CARGO SHORTAGES

**TECHNICAL FAILURES BEHIND
MOST BALLAST WATER DETENTIONS**

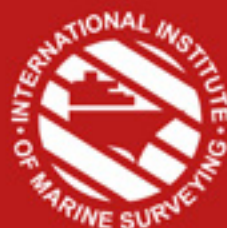
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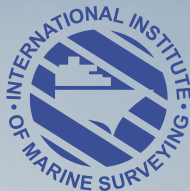
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EDITOR'S LETTER

Dear Member and Fellow Maritime Colleague

Welcome to Edition 116, The Report magazine June 2026.

Mid-summer is always a busy time for my colleagues and me at IIMS, and this year is no exception. This year's AGM is upon us; we will be manning our stand at the annual Seawork exhibition in Southampton and have the prospect of an impending ISO audit by DNV.

This year sees the changing of the guard as we bid a fond farewell to Capt Ruchin Dayal and welcome in new President, Mike Proudlove. This is a good time to say on behalf of all IIMS members, just how grateful we are to Ruchin. His vision and passion for the role have been plain for all to see, and he has carried out his role of President with humility. Ruchin's final column (page 5) and Mike's first introduction (page 7) are recommended reading.

It is always a pleasure to announce new Fellowship awards and this year we have three. Find out who the deserving trio are on page 24 and read their citations.

As always, I offer you a vibrant mix of news, stories and feature length articles. There is no doubt that

recent world events have somewhat skewed the maritime landscape and news agenda, but despite that work continue to push ahead with innovations.

Discussion around nuclear propulsion for yachts is not as new as one might imagine, but it is now coming under serious scrutiny. The article on page 84 entitled '*Could nuclear power work on boats?*' will give you more clarity. Sticking with new-fangled technological solutions, '*AI, analytics, and automation: The new currents in maritime operations*' by Yurii Biryukov is a reminder of what is awaiting around the next corner - see page 112. Hydrotreated Vegetable Oil (HVO) has been identified in research as the single most impactful way of reducing leisure marine industry emissions today, but what is preventing widespread adoption in the superyacht sector, known as a leader of new technologies? In his article on page 139 - '*Breaking down the barriers to HVO adoption*', Kim Hollamby goes in search of some answers.

Once again, I return to the topic of lithium-ion batteries in an attempt to broaden the understanding for those involved in the maritime sector. Worryingly incidents involving these batteries are increasing at sea and on land. Education is key, especially as the regulations around the globe do not currently align. My article on page 98 - '*Toys and lithium-ion powered devices can cause devastating marine fires*' is a sobering reminder of what can

happen when things go wrong and offers advice on what we can do to be aware of the risks. This is followed by a review of regulations relating to lithium-ion batteries by friend of IIMS, Marcus Jones. In the article entitled '*The road to trouble is paved with many good intentions*' (page 101), he highlights the many different standards and interpretations that currently exist. One can feel his sense of frustration!

The article by Capt Glenn Mathias on page 134 about the humble safety helmet looks at the urgent need for safety helmets used by crew and stevedores (and marine surveyors) involved in container vessel operations to be fit for purpose.

The lifestyle feature entitled '*The Fastest Boats in the World Pt. III - The End of the Monohull & The Rise of Hydroplanes*' by Richard Crowder (see page 146) takes a nostalgic and fascinating look back in time. It is also a reminder just how far the boating industry has evolved over the past century.

My good friend, Ray Bracken, is the subject of the '*A day in the life of*' feature on page 150.

Enjoy edition 116 of The Report magazine. Survey well,

Mike Schwarz
Chief Executive Officer



PRESIDENT'S COLUMN

Dear Members and fellow maritime colleagues,

As I sit to write my final column as President of the International Institute of Marine Surveying, I do so with a deep sense of pride - not just in having held this office for the past two years, but in the remarkable progress the Institute has made during this period.

Over the past two years, IIMS has continued to grow in both stature and industry relevance. Membership has strengthened, crossing important milestones; and what is even more encouraging is why people are choosing to join. Many new applicants describe IIMS as the most respected professional body in marine surveying, a platform that offers credibility, continuous learning, and alignment with global standards. That is powerful.

The launch of the IIMS Learning Portal last year has been a defining step forward, transforming how training is delivered and ensuring that professional development is no longer limited by geography or circumstance. At the same time, the Institute has taken a leading role in addressing emerging risks, particularly, most recently, in the area of lithium-ion battery fires, where the

work undertaken by Mike Schwarz and the team has brought clarity to a subject often oversimplified in mainstream discourse.

Our global events, from Baltimore to Goa, from Brisbane to Hamilton (Canada), have reinforced what IIMS does best: bringing surveyors together, fostering meaningful discussion, sharing knowledge, and strengthening professional standards across borders.

For all of this, immense credit must go to indefatigable Mike Schwarz and the Headquarters team, whose leadership, energy, and clarity of purpose have ensured that IIMS has not only remained relevant but has stayed ahead of the curve during what has been a decade of unprecedented change for our profession.

It has been both a privilege and an honour to serve as President during this time, and I remain deeply grateful to Mike, the Board, and the membership for placing their trust in me.

When I assumed this role, I had one clear objective - to try and create tangible value for the practicing marine surveyor.

We are, without doubt, a body of immense knowledge. We write papers, publish guidance, set standards, and host multiple events. But I often asked myself - *does this translate into real-world impact for the surveyor standing on the jetty, by the hatch cover, or in the cargo hold?*

This question led me to engage closely with P&I Clubs and their executives, first in London at the start of my tenure, and more recently in Singapore. The intent was simple. To explore whether the competence and credibility that IIMS represents could play a more direct role in the appointment of surveyors, particularly for critical surveys where safety is at stake.

The response I got was encouraging but also revealing.

While the Clubs fully recognise the value that IIMS brings, their operational model remains closely tied to correspondent networks, which in turn influences surveyor appointments. In many parts of the world, particularly in our region, this creates a structure where commercial familiarity can sometimes outweigh technical competence.

This is not criticism, but a reality.

And it leaves us with a challenge.



How do we ensure that for critical surveys, such as pre-loading sampling and testing of iron ore fines, coal, bauxite, nickel ore, and other mineral concentrates, for example, the most competent surveyor is engaged?

Because in such cases, the outcome is not commercial alone. It is directly linked to the safety of the vessel and the lives of seafarers.

I will be the first to admit I have not yet solved this conundrum!

But I firmly believe the idea is sound, and I hope that the incoming President and the Board will continue to pursue this dialogue. The opportunity for collaboration between IIMS and the insurance community remains one of the most meaningful ways we can influence safety at sea.

Alongside this, an important opportunity has become increasingly evident - the need to engage more closely with the Directorate General of Shipping in India, particularly in shaping structured approaches to surveyor competence and certification. There is also a growing yacht and small craft sector, which presents a clear gap that IIMS is well placed to support. While some initial steps have been taken, this is very much an area where continued effort and focus will be essential.

Perhaps one of the most important reminders during my tenure came from Mike himself when he said that many of our members work in isolation, and that IIMS can serve as a vital support network if they choose to engage.

That thought has stayed with me.

Because beyond qualifications and titles, what IIMS truly offers is community, credibility, and confidence.

As I step down from this role, I do so with immense pride and even greater optimism for the future.

The Institute is in strong hands. The profession is evolving. And the need for competence, integrity, and courage in marine surveying has never been greater than it is now.

I will continue to serve and support IIMS in every way I can.

Thank you for giving me this honour.

Survey well.

Capt. Ruchin C. Dayal, FIIMS
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INBOUND IIMS PRESIDENT

Dear Colleagues

Welcome from inbound IIMS President, Mike Proudlove FIIMS

I am honoured to take on the presidency of the IIMS, an institution which I have been a member of, and actively involved with, for twenty years. I would first like to thank Captain Ruchin Dayal, our outgoing President, for his commitment, dedication and contribution to the Institute - not only over the past two years, but throughout his membership. I know Ruchin will continue to be actively involved in the years to come behind the scenes. Thank you, Ruchin.

As Ruchin describes in his column, the IIMS is stronger than ever and this growth and strength comes not just from the talented Murrills House head office team and the Management Board, but from the contribution that all members make. Any professional body is only relevant and influential if it has a strong and active membership, whether that is a student member embarking on their first educational course, an experienced member refining their skills and staying up-to-date, or a member contributing their time to review reports or mentor colleagues. These are all areas where the Institute excels. It is this breadth of engagement that makes the IIMS

more than the sum of its parts. The respect shown to the IIMS by Flag States, P&I Clubs, regulators, surveying associations, insurers and underwriters, and maritime institutions around the globe is enhanced by our professional and active membership.

The worldwide reach of the IIMS is what sets the Institute apart from other surveying bodies and organisations. Whilst we take for granted the global mobility of large ships, the nature of modern, small, leisure and commercial vessels means a European flagged, twenty-four metre, crew transfer vessel may be found working in Trinidad on an oil and gas project, or an Australian twelve metre sailing yacht may circumnavigate the globe and spend a season in the Greek Islands. These vessels will probably need the services of a suitably experienced surveyor whilst not in their home country, and the owner or operator of that vessel can rely on IIMS members to perform such services. This is the global brand with an international reach that the IIMS has become.

As someone who works primarily with vessels under 500gt, I hope to increase the Institute's exposure to and penetration of, the small commercial vessel market, particularly in areas such as offshore renewables and marine civils. Owners and charterers of these

vessels are often faced with a complex, some would say unnecessarily repetitive, survey regime that is time consuming, expensive and in my opinion, does not ultimately improve safety.

The Institute's excellent work with IMCA (International Marine Contractors Association) over the last eleven years has developed a strong base of vessel inspectors and honed the eCMID (electronic Common Marine Inspection Document) to be a fit-for-purpose, global standard. It is now the duty of IIMS members and eCMID Accredited Vessel Inspectors, along with the IIMS management, to convince project developers and project owners that the eCMID is the only inspection required beyond Flag and Port State inspections. As anyone who works in this segment of the maritime sector knows, this will not be easy, but I am convinced that if any organisation can make this change, it is the IIMS.

The current position is analogous with the concern Ruchin raises about the situation with P&I Clubs: that "commercial familiarity can sometimes outweigh technical competence". I look forward to continuing Ruchin's work and challenging the status quo!

Best wishes.

Mike Proudlove FIIMS

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Fincantieri floats first hydrogen-powered cruise ship for Viking

Fincantieri marked another milestone in cruise ship development as it floated out the Viking Libra (54,300 gross tons), which is being billed as the "world's first hydrogen-powered cruise ship." It advanced the ambitions for zero-emission shipping and the long-held vision of Viking CEO Torstein Hagen to produce a hydrogen-powered ship.

According to the companies, the project has been developed with strong attention to environmental aspects to ensure the ship will be capable of navigating and operating with zero emissions, allowing it to access even the most environmentally sensitive areas. The Viking Libra will have a propulsion system based partially on liquefied hydrogen and fuel cells.



Ferretti Group's Convergence 2026 hailed a 'resounding success'

There was a high turnout and keen interest shown by participants at the 19th edition of the annual Convergence, which brought the captains and chief engineers of Ferretti Group yachts together in Italy. The focus of the 2026 event was on the new Ravenna shipyard and the Superyacht Yard in Ancona, two of the group's production hubs.

Captains and chief engineers from around the world had the chance to see the

shipyards first-hand, as well as the development and production processes used, all the result of significant investment in recent years. Convergence continues to be a key opportunity for the technical community of maritime professionals who work every day onboard the group's yachts to catch up with the latest developments.

Danish Royals visit Incat to view Europe's largest electric ferries

Incat Tasmania welcomed Their Majesties the King and Queen of Denmark to the Hobart shipyard, where they viewed construction of the world's most advanced battery-electric ferries. Their Majesties were joined by Prime Minister Anthony Albanese during the official visit, which showcased Incat's leadership in sustainable shipbuilding and highlighted the construction of three large battery-electric ferries for Danish operator Molslinjen.

During the visit, Their Majesties unveiled a commemorative plaque on the vehicle deck of Hull 102, the first of three 129-metre vessels currently under construction for Denmark. When delivered, the vessels will be Europe's largest battery-electric ferries and will operate across the busy Kattegat route between Jutland and Zealand, carrying thousands of passengers each day.



New DNV AI tool RuleAgent makes navigating maritime rules easier

DNV has launched RuleAgent, an AI-powered tool that helps maritime professionals access DNV's rules and standards faster and with greater clarity. Designed to reduce the time customers spend navigating regulatory material, it enables users to ask natural-language questions and receive targeted results. Fully connected to DNV's rules and standards database, this new tool provides complete traceability to DNV's official sources.



Maritime regulations are continuously evolving. Navigating the more than 30,000 pages of DNV's rules across multiple documents, chapters, and editions can be complex and time consuming. By presenting content in real time, RuleAgent enables users to identify the relevant rule paragraphs quickly, reducing the time spent searching across multiple documents.

RuleAgent works by searching directly in DNV's rules and standards database and highlighting relevant paragraphs for the user. It then provides short summaries and links to the official sources so that users can verify the content and apply their professional judgement to the results. When customer vessel information is available, the tool uses the specific vessel's ship type and class notations to narrow the search and present more targeted regulatory guidance.

RuleAgent covers Rules for Ships (RU SHIP), Rules for Offshore Units (RU OU), and reference documents such as Class Guidelines (CG), Class Programs (CP), Statutory Interpretations (SI), Standards (ST), Offshore Standards (OS), and Recommended Practices (RP), with further expansion planned. It has been piloted with selected customers to validate performance and refine the user experience.



GIT Coatings unlocks a new era of hull performance management

Maggie Kennedy, Director of Partnerships at GIT Coatings receiving the Type Approval certificate from Chris Pfisterer, LR VP Commercial

GIT Coatings, a global leader in sustainable high-performance marine coatings, has announced the launch of its next-generation graphene-base hard foul-release coating, XGIT-FORCE™. This launch marks a

fundamental shift in the maritime industry, moving beyond traditional biocide-based antifouling protection to a new era of hull performance management.

With first applications already underway across a global fleet, XGIT-FORCE™ is engineered to unlock up to 10% fuel savings and provide the highest return on investment of any antifouling coating on the market. With this launch, GIT Coatings is proving that peak operational efficiency no longer requires polluting the marine environment.

Being "cleanable by design," XGIT-FORCE™ aligns with the industry shift toward proactive hull cleaning as the most effective method for maintaining long-term vessel efficiency. This approach aims to keep hulls free from even light slime, which an IMO-published study has proven can increase fuel consumption by up to 25%.

While the innovative DPET technology provides antifouling protection during idling and releases fouling while sailing, its resilient surface is specifically built to tolerate regular grooming and reactive cleaning without the degradation typically seen in traditional soft-foul release or ablative coatings.



Alaska seeks interested buyer to save 63-year old historic ferry

Faced with the challenges of a mounting budget shortfall and an ageing fleet, the Alaska Marine Highway System has decided to part with the last of its historic ferries. It issued a Request for Information for the Disposition of the m/v Matanuska, but with a catch: it says the priority is to “dispose of the vessel in a manner that honours its historic significance while allowing it to continue serving Alaska in new innovative ways.”

The state is seeking letters of interest from qualified offerors to purchase, acquire, preserve, repurpose the ferry, which was built in Seattle in 1963. It says the focus is on preservation, adaptive reuse, or continued maritime service that respects the vessel’s legacy. It suggests uses for maritime training, tourism, community, or cultural use, education, museum, research, or heritage preservation, but says it will also accept letters proposing scrapping, dismantling, or scuttling.

As the oldest operating vessel of the fleet, she was given a gold-painted funnel and the designation of the “Queen of the Fleet” in her later years. The ships are famous for their medium blue livery, which earned them the popular nickname “blue canoe” in Alaska.

Gulf Craft expands leisure craft production



Gulf Craft is nearing the opening of a new dedicated production facility for its Leisure Craft division in the Emirate of Ajman, located near where the company was originally founded in 1982. The facility will manufacture models from the company’s leisure brands, including Oryx cabin cruisers and SilverCat power catamarans, supporting Gulf Craft’s response to growing global demand for versatile recreational boats and the expanding popularity of multihulls.

Strategically located directly on the Ajman waterfront, the new facility spans 10,000 sq m (107,000 sq ft). Immediate sea access allows vessels to be launched and sea-trialled directly from the yard, streamlining build cycles while supporting efficient testing, commissioning and delivery.

Linssen Yachts celebrates milestone with launch of 650th vessel

A Mystic Green Linssen Grand Sturdy took a bow at the Dutch yard’s Season Opening Boat Show in the Netherlands recently, ushering in a fresh generation of 9m-16m steel motor cruisers in a year that has known many records.

Linssen has been a market leader in the luxury steel motoryacht segment (9m-16m) since 1949. The yard is known for its craftsmanship, quiet cruising performance, timeless design and exceptional durability.



In 2026, it introduced the .1 series: a new generation of Linssen motoryachts. This is the next step in the natural evolution of everything Linssen stands for. The latest Linssen is recognisably Linssen albeit with a fresh, contemporary look and new material concepts, carefully composed colours, and interior styles to create a modern, luxurious ambience.

Sports icon Carlos Alcaraz to take delivery of a Sunreef Ultima 88

Carlos Alcaraz (pictured right) tours Sunreef's Gdansk facility. Photo credit: Sunreef



Asonautica joins ICOMIA

ICOMIA has announced that Asonautica, a Colombian trade association, has joined as a full member.

"Asonautico's membership of ICOMIA marks an important milestone for Colombia's nautical sector and opens new opportunities for international collaboration, knowledge exchange, and sustainable growth," said Meylin Carballo Salguado, executive director of Asonautica, in a statement.

Founded in 2015, Asonautico aims to enable growth and competitiveness in the Colombian marine industry and strengthen the nautical culture within the country, boosting activities such as marinas, yacht clubs, shipyards, distributors and boat dealers, among others.



Luxury catamaran builder Sunreef Yachts has announced that Carlos Alcaraz has commissioned a fully customised Sunreef Ultima 88, marking the tennis star's entry into the world of luxury yachting.

"I decided to order the ULTIMA 88 with Sunreef because I feel they are not only experts in luxury catamarans but true trendsetters. Building with them gives me confidence that this will be the perfect yacht to unwind and recharge. I feel that Sunreef and I share the same dynamic spirit - we are a great match," said Carlos Alcaraz

Alcaraz's yacht will be fully customised. The layout includes four guest cabins and a forward owner's suite on the main deck. The full-beam master stateroom will feature natural light and a large bathroom with a bathtub, creating a private retreat at sea.

Grand Banks celebrates 70 years of pioneering long-range cruising yachts



Grand Banks Yachts is celebrating its 70th Anniversary in 2026, marking seven decades of boatbuilding innovation that has shaped the modern power cruising yacht. The milestone celebration officially kicked off at the Palm Beach International Boat Show, launching a seven month global celebration honouring seven decades through global owner events, commemorative storytelling, and special editorial content honouring the company's remarkable journey, from its beginnings on the Hong Kong waterfront in 1956 to its position today as the leader in long-range cruising performance.

Few boatbuilders can claim a legacy as consequential as Grand Banks. Over seventy years, the company has introduced market-defining designs, pioneered new technologies, and cultivated a devoted global community of owners who value thoughtful craftsmanship and capable yachts built for serious cruising.

"People who know me well know I'm not someone who spends much time looking in the rearview mirror," said Mark Richards, CEO and Chief Designer of Grand Banks. "But when you reach a milestone like this, it's worth pausing to recognise the pioneers, craftsmen, designers, and owners who built something truly special. Grand Banks didn't just build boats; it helped define what long-range cruising could be. The responsibility we carry today is to honour that spirit of innovation while continuing to push forward."

SYDNEY BOAT SHOW

Sydney Boat Show delivery team appointed

The Boating Industry Association announced Exhibitions and Trade Fairs have been appointed as the event delivery partner for the Sydney Boat Show 2026, bringing more than three decades of experience in delivering world-class exhibitions and conferences.

BIA CEO Andrew Fielding said Exhibitions and Trade Fairs (ETF) had stood out in a strong field of event organisers competing for the opportunity to deliver industry boat shows.

"We were impressed by the quality team at ETF who have an outstanding pedigree in event delivery led by Managing Director Kieron Haycock," Fielding said.

"This appointment will now supercharge efforts to deliver the Sydney Boat Show 2026 at Sydney Show Ground, Sydney Olympic Park set to run from 30 July to 2 August."

Exhibitions and Trade Fairs (ETF) are a full-service exhibition and conference organiser which has delivered successful events for over 35 years. With offices in Sydney and Melbourne, they manage and deliver events across Australia and around the world.



Photo credit: Metstrade

Show enhancements announced for Metstrade 2026

Organisers of Metstrade said that after the record-breaking 2025 show last fall, demand for stand space is higher than it has ever been this early in the year. "Any brands looking to exhibit outside the Country Pavilions but haven't yet registered are encouraged to do so as soon as possible to avoid disappointment," a Metstrade statement said.

For Metstrade 2026, there will be a host of changes to offer increased clarity for visitors and more commercial opportunities for exhibitors.

"Metstrade 2026 will have a layout that maximises spaces and allows for an even better experience — both for visitors and exhibitors," Metstrade director Niels Klarenbeek said in the statement. "These adjustments have been developed in close collaboration with our key stakeholders, including ICOMIA, SYBass, and the Exhibition Committee."

The marine equipment and accessories show will take place from 17-19 November 2026 at RAI Amsterdam.



Work on the hull and deck of the Swan Alloy 44 is underway

Finland's Nautor Swan has begun construction of the Swan Alloy 44, the largest sailing yacht ever created by the Finnish shipyard and the first aluminium yacht in its 60-year history. The project also introduces the Swan Alloy line, a new series of aluminium sailing yachts exceeding 40m, signalling the brand's entry into the superyacht sector.

Construction began at Gouwerok Shipyard in the Netherlands, a facility specialising in aluminium yacht fabrication. Initial work includes welding structural sections such as the keel and engine room foundations. Once the hull and deck are completed, the yacht will be transported to Viareggio, Italy, for outfitting and delivery, with the launch scheduled for 2028.



New Zealand updates entry rules for visiting yachts and superyachts

The updated Temporary Import of Small Craft Guide, produced by NZ Marine with support from New Zealand Customs, aims to help international yacht operators better understand the requirements for entering New Zealand and the process surrounding temporary importation.

As part of the update, New Zealand Customs is trialling a new process that allows visiting vessels to submit more detailed information about their yacht and voyage ahead of arrival. The initiative is intended to streamline entry procedures and improve compliance with customs regulations.

Each year, around 500 cruising yachts and superyachts classified as small craft visit New Zealand. Many arrive as part of the South Pacific cruising season, with owners taking the opportunity to explore the country while undertaking maintenance, refit, and technical works.

Seaquip Milan, Italy's new B2B nautical event, sets sights on 2027

The Italian Seaquip trade show held its first edition in Milan earlier this year. This new B2B event dedicated to marine equipment is already announcing a more ambitious 2027 edition. The organizers are reporting higher-than-expected trade attendance.

Seaquip is positioned as a trade show focused on the marine supply chain. The event brings together component manufacturers, equipment suppliers, engineering firms and shipyard representatives. The show is held at Fiera Milano Rho, a well-known exhibition centre for international industrial events. The aim is to create a meeting place for technical suppliers and shipbuilders. According to organizer Easyfairs, over 3,000 professionals took part in this first edition.

Unlike consumer boat shows, Seaquip is aimed exclusively at professionals. Visitors include naval architects, engineers and captains, as well as design and R&D teams working for shipyards.



Japanese tour company admits to shortcomings that led to fatal capsizings off Okinawa

A Japanese tour company has issued a statement apologising for and acknowledging shortcomings that resulted in twin incidents that left two people dead off the coast of Okinawa prefecture.

The Japan Coast Guard has suspected that the ill-fated vessels, identified as Fukutsu and Heiwa Maru, overturned as a result of being struck by large waves.

The Japan News said that the two vessels were not properly registered for commercial passenger transport and that the captain of one of the boats decided to set sail despite being aware that a wave advisory indicating rough conditions had been issued for the area earlier that same day.



Spanish boat registrations up in first quarter

Data for the first quarter of 2026 show a contrasting trend in the Spanish yachting market, with growth in new boats, an adjustment in pre-owned boats and a steady rise in rental boats.

Between January and March 2026, 967 new boats were registered in Spain, compared with 831 a year earlier, an increase of 16.4%. In Catalonia, the increase was 20.2%, with 149 units compared with 124 over the same

period. The private-label market grew by 16.7% nationwide, while the rental segment increased by 15.7%. In Catalonia, the dynamic is different. The individual segment grew by 7.7%, while the rental segment recorded an increase of 41.3%. The rental market accounts for 29.8% of registrations in Spain. In Catalonia, it represents 43.6% of the total.

This level reflects a change in practices, with a growing proportion of users favouring use over ownership. For professionals, this implies an adaptation of business models, with increased demand for fleets adapted to intensive operation.



Winners of the AFBE 2025-2026 Awards for electric boating revealed

The winners of the AFBE 2025-2026 Awards, organised by the French Electric Boat Association (AFBE), were announced during last month's Nice Boating Tomorrow show in Nice, France. BlueNav claimed first prize, with Millikan Boats and SeaZen completing the podium. Additionally, Weenav and E-Nav Systems received special recognition.

The awards were presented as part of Nice Boating Tomorrow, the first-ever event entirely dedicated to eco-navigation. A jury of professionals –including specialised journalists, design experts, and boat builders – along with the event sponsor, Banque Populaire Méditerranée, selected the winners. An online public vote also determined the recipient of the "Lightning of Lightning" prize. All awards celebrated proven, mature, and commercially available technologies.

"These trophies embody the innovation capacity of the electric boating industry," said Michel Nave, president of the AFBE. "Each year, the submitted projects demonstrate that the transition to electric or hybrid-electric propulsion is mature. These solutions not only offer better environmental performance but also reduce operational costs, making it easier to offset the higher initial investment. This trend is further supported by the continuous decline in battery costs."



Singapore Yachting Festival joins IFBSO

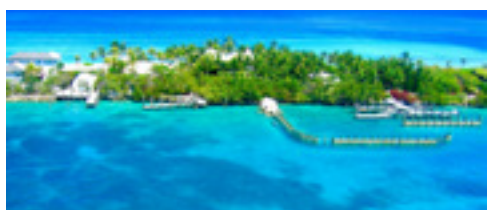
The International Federation of Boat Show Organisers (IFBSO) has announced the Singapore Yachting Festival (SYF) as its newest member, bringing one of Southeast Asia's prominent marine events into its global network. The addition comes as the industry continues to evaluate evolving formats for marine events in 2026.

Suntex Marina Investors merges with Windward Marina Group

Suntex Marina Investors has merged with Windward Marina Group in Florida, taking Suntex's total marina properties past 100, including 34 locations across Florida.

The strategic merger, through a joint venture with Centerbridge Partners, adds Windward's 13 marinas and more than 3,000 berths to Suntex's portfolio.

The newly added marinas span Amelia Island, Jacksonville Beach, St. Augustine, Port Orange, Micco, Fort Pierce, Port Charlotte, Englewood, Panacea, and Pensacola, offering diverse boating experiences across Florida's Atlantic Coast, Gulf Coast, and Panhandle. These destinations support a broad range of boating lifestyles from fishing and cruising to sailing.



Bahamas reviewing its 2025 boating fee hike

The government of the Bahamas is reviewing its 2025 move increasing boating fees and related regulation as island residents express grave concerns about the impact on the tourism economy for which they rely. Senator Randy Rolloe, representing Bimini and the Berry Islands, spoke during recent debate on the Value Added Tax (VAT) amendments legislation, saying his constituents are voicing strong opposition.

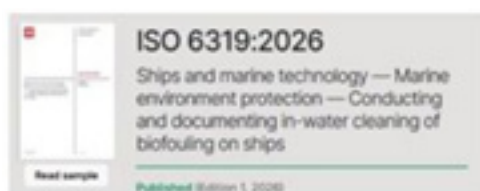
New ISO standard for in-water hull cleaning published

A new standard on in-water cleaning of vessel hulls has been launched. Preventing and removing biofouling on hulls of ships limits the introduction and spread of invasive aquatic species (IAS). This in turn threatens coastal environments by disrupting ecological systems, which can also negatively affect fisheries, aquaculture and tourism. Biofouling is also estimated to increase a ship's fuel consumption by on average 9 % – this added fuel consumption costs the shipping industry billions of USD. Therefore, improving biofouling management across the global shipping fleet will have considerable benefits, both from an environmental and economic standpoint.

ISO 6319 provides requirements and best practices for planning, conducting and documenting in-water cleaning operations safely, efficiently and in an environmentally sound manner. It provides requirements and best practices for reporting on the effectiveness of IWC operations.

The standard addresses all forms of in-water cleaning of external submerged surfaces, which are hull and niche areas, all types and levels of biofouling, which means biofilms, microfouling and macrofouling, conducted both with or without capture. However, it does not address internal piping.

The document has been established to inform ports, regulatory agencies, ship biofouling IWC service providers, inspection service providers, IWC equipment manufacturers, coating manufacturers, shipowners, ship managers, ship operators and other relevant stakeholders.



New ISO standard for in-water cleaning of ships' hulls

"The recent burden on boaters has had a real impact on the local economy," Rolle said. "If tourism drives Bimini's economy, then our policies must support people who depend on it."

The changes last year increased costs for visiting vessels including higher cruising permit fees, new anchorage fees and monthly fishing permit charges, which sparked concern across the boating tourism interests. Popular boating destinations such as Bimini, Abaco, and The Exumas have reported steep declines in winter tourism activity, with many reporting tourism traffic as "significantly below" recent years.

York Marina employs new oil spill clean-up equipment

York Marina in the UK is using the Wavecleaner VAC to enable its staff to quickly clean up any accidental spills of oil, diesel or other pollutants.

The Wavecleaner VAC system is designed to remove floating debris, hydrocarbons, algae, and other pollutants – including microplastics – directly from the water. Manufactured by Wave International, the specialist portable marina vacuum works by pumping contaminated water through a sediment strainer and two Lloyds Register Type Approved Wavestream System 2 filters. These remove pollutants including microplastics ensuring only clean water, to 5ppm standard, is discharged back into the waterway or surface drains.



Survey responses paint grim picture about whether PPE is fit for UK boatbuilders

A new safety standard aimed at making personal protective equipment (PPE) more inclusive has been introduced across the UK. But for many boatbuilders, especially women, the reality on the workshop floor has yet to catch up. A survey by Women in Boat Building (WIBB) suggests poorly fitting gloves, masks and overalls remain commonplace, potentially compromising both safety and productivity.

In terms of PPE, WIBB found that respiratory protective equipment (RPE – or masks) are often too large for smaller faces, has poor seals and fails to face-fit (40 per cent of respondents reported issues with mask fit). Then there are boots that don't come in small enough sizes, gloves with too-long fingers – leading to loss of dexterity (68 per cent of WIBB's respondents had an issue with gloves) – and overalls with excess fabric, leading to poor mobility (53 per cent cited overalls as a problem).

The data WIBB collected shows that 90 per cent of respondents have felt restricted or limited in movement. Their PPE has affected their ability to perform their job.



Download the survey at <https://bit.ly/4bUQidn>.

Shieldhall gains support from The National Lottery Heritage Fund

The Steamship Shieldhall Charity has received initial support* from The National Lottery Heritage Fund for its 'Steamship Shieldhall: towards 2055, the next ten years' project, it has been announced.

Made possible thanks to National Lottery players, the project aims to help the historically important heritage vessel continue as an operational, sea-going, passenger carrying steamship, and also play a bigger part in the local community.

Development funding of £202,500 has been awarded by the Heritage Fund to help The Steamship Shieldhall Charity progress their plans to apply for a full National Lottery grant of £1.67m at a later date.

Steamship Shieldhall is Europe's largest operational heritage steamship, and is based at Southampton. The project will enable extensive conservation work to take place on the ship, which is now over 70 years old, including the provision of new fuel tanks, essential hull repairs, anchor chain replacement and electrical wiring renewal.



Sail Training International appoints new CEO

Sail Training International has appointed Vanessa Mori as chief executive officer, with the change taking effect immediately.

Sail Training International is a global charity focused on sail training and youth development. It also organises the international Tall Ships Races event programme.

Mori joined the organisation in 2018 as commercial director and has since been part of its senior leadership team. Alan James, who has served as CEO since 2020, will remain with the organisation as chief financial officer. The two are expected to continue working together in their respective roles.

Ancasta under new ownership as founder sells majority stake

Ancasta Group, one of Europe's leading yacht brokerage and new boat distribution companies, has announced that founder Nick Griffith has sold a majority shareholding in the business to Ancasta franchise owner Matthew Shave for an undisclosed sum.

Based in Southampton, UK, Ancasta Group employs 103 people and generates an annual turnover exceeding £50m. The group encompasses a portfolio of specialist marine companies, including Ancasta International Boat Sales, Sanlorenzo Yachts UK, PB Europe, Ancasta Yacht Services, Spencer Rigging, and Advanced Rigging & Hydraulics.

Following the transaction, Matthew Shave will assume the role of CEO, leading the company through its next phase of growth. Nick Griffith will transition to chairman, focusing on strategic oversight and supporting the executive team.



New Ancasta Group CEO Matthew Shave (left) and chairman Nick Griffith

Falcon Tenders wins bespoke superyacht tender award 2026

Falcon Tenders has been named Best Bespoke Superyacht Tender Builder 2026 by SME News, marking another milestone for the UK-based specialist in custom tender construction.

Headquartered in Hampshire, UK, Falcon Tenders is recognised for its high-end, tailor-made superyacht tenders. This latest accolade highlights its work on the YAS limousine tender and follows a previous win in 2024, reinforcing Falcon Tenders' position at the forefront of the bespoke tender sector.



The award celebrates Falcon Tenders' continued commitment to technical innovation and highly customised solutions. In a statement shared on social media, Falcon Tenders noted that the recognition highlighted its ability to take on "bold briefs, embrace technical challenges, and push beyond expectations to deliver something truly unique."

The Superyacht UK Technical Seminar 2026 report

The Superyacht UK Technical Seminar 2026 returned to the Union Jack Club in London earlier this year and was attended by over 90 senior professionals from across the global superyacht sector.

With an agenda that reflected the complexity of the current landscape, sessions spanned regulatory developments, evolving training pathways, emerging risks and advancing technologies, offering delegates a clear and informed view of both the issues facing the industry today and what lies ahead.



Following the welcome address from SYUK Chairman, Ben Greary, Julian Smith of the Cayman Islands Shipping Register opened the seminar with a comprehensive update on the REG Large Yacht Code, including updates on the Polar yacht guide, lifting appliances subject to class approval, new pilot boarding arrangements, fire safety and large yacht comparison and new shell doors and openings requirements. Andy King of Houlder followed with a detailed session on the new stability requirements for flooded conditions and enhanced resilience of safety critical systems, providing delegates with practical guidance to ensure a safe and compliant yacht design.

Global regulatory developments were addressed by Lorenzo Pollicardo of Superyacht Builders Association (SYBAss) and Patrick Hemp of International Council of Marine Industry Association (ICOMIA). The speakers offered insight into ongoing work at the International Maritime Organisation (IMO), with a strong focus on the evolving decarbonisation agenda.

The seminar concluded with a truly standout keynote from maritime archaeologist and explorer Mensun Bound, whose account of discovering Sir Ernest Shackleton's *Endurance* transported the audience deep into one of the greatest maritime discoveries of modern times. His powerful storytelling guided delegates through the expedition as if they were there, combined with themes of leadership, resilience and problem-solving, left a lasting impression.



Initial findings on the Llangollen Canal breach published

Prepared by our engineers, supported by technical experts, the initial findings into the Llangollen Canal breach that occurred at Whitchurch, Shropshire, last December suggest it was most likely caused by a combination of specific factors in this location. This included a long-term, deep-seated leak beneath the canal bed that was undetectable to our inspection regime, combined with a steep-sided, high embankment predominantly constructed of sand. This long-term leakage is thought to have eroded material below the canal bed and created a void, ultimately resulting in collapse.

The investigation, which continues as the site is drained and cleared, has not identified other factors at play such as heavy rainfall, overtopping, fallen trees or animal excavations. Final conclusions cannot be drawn until the site has been fully cleared and the investigation completed, including inspections of two nearby culverts which are currently not thought to be contributory factors.

Isles of Scilly Steamship's newest ferry floated out

Pirou Vietnam has floated out a new passenger ferry slated for the Isles of Scilly Steamship Group (ISSG). The 75-metre Scillonian IV will replace Scillonian III in March 2027. The latter vessel was acquired by ISSG in 1977 and is currently sailing on her final operational season with the company.

The introduction of Scillonian IV next year will form part of ISSG's £40 million (US\$50 million) investment programme, which will ensure modern and resilient passenger and freight services for the islands.



The new vessel will feature a range of new technologies and carry up to 600 passengers (a 24 per cent increase on current levels) whilst reducing journey times. She will also feature roll and pitch reduction systems to enhance passenger comfort.

IIMS Past President, Peter Broad, has been heavily engaged with the build project at the shipyard in Vietnam for the past couple of years and said how proud he was to see the vessel enter the water.



New marine welding bootcamp aims to fix the industry's skills gap

The maritime sector has long warned that a shortage of skilled welders and fabricators could slow growth across shipbuilding, vessel repair and offshore industries. A new training initiative launched by British Maritime Training and Assessment and Fareport Training aims to tackle that challenge head-on, equipping people with practical skills.

The bootcamp has been developed in partnership with employers to ensure participants gain the capabilities industry is actively looking for. Funded through Solent Growth Partnership to directly meet regional skills gaps, the course aims to give learners the confidence and competence to step directly into skilled fabrication and welding roles.

The course will be delivered through a combination of workshop-based practical sessions, classroom learning, instructor demonstrations and continuous assessment. This approach ensures learners leave not only with technical skills, but with the professional confidence needed to succeed in fabrication and welding environments.

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Are your membership and surveying details and activities correct and accurate?

IIMS believes it is increasingly important to ensure that the membership details we display on public facing websites and surveyor search apps are accurate.

For example, when did you last check to ensure your telephone number, email and address on your listing are correct? Please take a moment or two to do so and notify head office if something has changed or is wrong.

Equally important is to check that your surveying specialisations listed on your profile represent the work that you perform currently on a regular basis. Over time, surveyors learn new skills as old ones diminish through lack of use. Perhaps a decade ago, breakbulk cargo surveys were something a surveyor routinely undertook, but not anymore.

The IIMS management board is starting a campaign to encourage all those with specialisations listed to check as a matter of urgency. Furthermore, the term specialisations is to be replaced by the phrase surveying experience with supporting categories. IIMS asks that all members review their listing and only list current surveying activities that they undertake as part of their normal day job.

A further statement about this topic will be released in the coming weeks.

Recent new IIMS members, upgrades and graduates

Full members

Andrew Ball	MIIMS	British Virgin Islands
Ashley Bloor	MIIMS	UK
Emmanuel Okai-Quarshie-Shaft	MIIMS (Upgrade)	Ghana
Tony Tait	MIIMS	UK
Michael Uberti	MIIMS (Upgrade)	Australia
Julian White	MIIMS	France

Technician member

Martin Brettel	TechIIMS	Australia/UK
Damien Buckley	TechIIMS	Ireland
Thady McAndrew	TechIIMS	UK
John Waters	TechIIMS	UK

Associate member

Tony Butler-Waite	AssocIIMS (Upgrade)	UK
Timothy Cummins	AssocIIMS	UK
Phillip Fox	AssocIIMS	Australia
Prince Paulraj	AssocIIMS	Dubai
Sergey Pazdnikov	AssocIIMS (Upgrade)	Israel
Edgar Quintero	AssocIIMS	Mexico
Christopher Smith	AssocIIMS	British Virgin Islands
Christopher Wilson	AssocIIMS	UK

Affiliate member

Umut Mursitoglu	AffiliIIMS	Turkey
Ra Karan Chaudhary	AffiliIIMS	India
Huseyin Coban	AffiliIIMS	Turkey
Amila Gamage	AffiliIIMS	Sri Lanka
Thomas Gavagnin	AffiliIIMS	UK
Michael William Hirst	AffiliIIMS	Canada
Peter Jacobs	AffiliIIMS	South Africa
Charles Mount	AffiliIIMS	USA
Krista Neilly	AffiliIIMS	Canada
Maksim Rychkov	AffiliIIMS	Hong Kong
Joe Styles	AffiliIIMS	UK
Hannah Love Thayer	AffiliIIMS	British Virgin Islands
Mateo Vidovic	AffiliIIMS	Croatia

Graduate members

Lee Meachim	GradIIMS	UK
David Erickson	GradIIMS	Canada
Adam Lumsden	GradIIMS	Trinidad & Tobago
Jonathan Amos	GradIIMS	Canada
Andrea Claudio Bedini	GradIIMS	Italy
Richard Harris	GradIIMS	UK
Quentin Rauter	GradIIMS	New Zealand
Stephan Smith	GradIIMS	UK
Jean Lony Raffaut	GradIIMS	UK

IIMS congratulates Andrea, David, Jonathan, Lee, Quentin, Richard and Stephan for completing the IIMS Professional Qualification in Yacht and Small Craft Marine Surveying.

IIMS congratulates Adam and Jean for completing the IIMS Professional Qualification in Cargo and Commercial Ship Marine Surveying.



IIMS set to extend its ISO 9001:2015 scope

In 2024, after a protracted process, IIMS gained ISO 9001:2015 certification following the first external audit by DNV, the scope being 'Training services in marine surveying'.

Last year, at the first annual audit, DNV found no major or minor findings.

After deliberation, the management board has decided to extend the existing scope this year to bring the IIMS Certifying Authority into certification. Although the UK MCA (Maritime & Coastguard Agency) does not stipulate this certification in order to provide coding examinations, it was felt this action to be best practice and demonstrates the Institute's desire to enhance our performance. The audit takes place in mid-June and has now become a daunting two and a half day process. Camella Robertson, General Manager, takes personal responsibility for driving the ISO agenda as the IIMS Quality Manager.

The new, extended scope that IIMS is seeking ISO 9001:2015 certification for is: 'Training services in marine surveying. Administration, management, and certification of vessel coding activities for commercially operated vessels under 24 metres, undertaken under delegated authority from the Maritime & Coastguard Agency for applicable Merchant Shipping Regulations and Red Ensign Group Flag State requirements, including the management and oversight of authorised surveyors.'

IIMS President at Asia Pacific Maritime

IIMS President, Capt Ruchin Dayal, joined by members of his team, recently exhibited his business at Asia Pacific Maritime in Singapore.

Asia Pacific Maritime (APM) is Asia's premier exhibition and conference for cutting-edge innovation in Shipbuilding & Marine, Workboat, Offshore, Port Technology, and Electric & Hybrid Marine. Bringing together visionaries, tech trailblazers, and sector leaders and the maritime ecosystem, APM drives the advancement of the future of vessels, and solutions for tomorrow.

Into its 19th edition, APM has cemented its place as a cornerstone of the global maritime trade calendar and the pre-eminent event for Asia. It is the region's trusted platform for driving impactful connections and strategic collaboration.



Ruchin and some of his team

Peter Broad HonFIIMS installed as a Liveryman of The Worshipful Company of Shipwrights'

IIMS is pleased to announce that Peter Broad HonFIIMS, Past President of the Institute, has been installed as a Liveryman of the Worshipful Company of Shipwrights' at a ceremony on the 9th of April 2026 presided over by the Prime Warden Mr. Andreas Bisbas. The ceremony was held at Ironmongers Hall in the City of London.

The Worshipful Company of Shipwrights' is one of the City of London's 113 livery companies with its origins dating from before 1199. Recognised as a Company 'incorporated by prescription', the earliest surviving written reference to this old and Worshipful Company occurs in the records of the City of London in the reign of King Richard II in 1387.

The original purpose of the Company 700 years ago was to safeguard the quality of shipbuilding in London. This continues today via the provision of support to marine apprenticeships, boat building courses and naval and marine engineering students at university, plus the presentation of annual awards of excellence. The Shipwrights' Company has a strong philanthropic purpose and donates annually to maritime related causes, individuals, charities and companies.

Speaking about his recognition, Peter said, "It is a huge honour to be asked to join such a prestigious livery company that has its origins dating back 700 years. To attend the installation court at Ironmongers Hall was a very special event and to meet the Prime Warden, Wardens and Liverymen of the Worshipful Company of Shipwrights' was such a memorable and prestigious occasion."

"I look forward to contributing to the good work of the 'Company' and their historical goals supporting organisations, charities, educational institutions and individuals associated with the Company's role as a City of London Livery Company and its origins and trade."



Outgoing IIMS President recognised for maritime excellence

IIMS is delighted to hear that the Governor of Goa, Shri. Pusapati Ashok Gajapathi Raju, presented this prestigious recognition to our outgoing President, Capt. Ruchin C Dayal, at the 63rd National Maritime Day Celebration.

Ruchin was recognised for his outstanding service and enduring contribution to the maritime sector. This award stands as a testament to his passion, resilience, and lasting impact on the industry.

On behalf of members and colleagues, the IIMS head office team would like to congratulate Ruchin.

Capt. Ruchin C Dayal
(pictured left)



Two new IIMS handy guides

Peter Broad HonFIIMS, an IIMS Past President, has recently authored two new handy guides which are available to all, which brings the What a Marine Surveyor Needs to Know collection to over 30.



What a Marine Surveyor Needs to Know About Becoming an Expert Witness

Becoming an expert witness can be a daunting prospect but lucrative activity. Standing up in a packed courtroom to give your evidence, even if you are confident that you know your subject inside out, is still a challenge, especially the first time, and in what can be intense surroundings in the court.

Being prepared for every eventuality is essential, and

that is the aim of What a Marine Surveyor Needs to Know About Becoming an Expert Witness. Author Peter Broad is experienced in giving expert witness in court and is a seasoned veteran, making him perfectly placed to write this handy guide.

This handy guide focuses on the unique legal responsibilities of marine surveyors and consultants acting as expert witnesses. It covers the full process from initial engagement and evidence assessment to courtroom testimony, preparing consultants to deliver clear, credible and independent technical opinions that meet legal standards.

The areas covered in this handy guide will provide you with an introduction to:

- What is the role of the expert witness?
- The legal obligations and procedural guidelines for experts.
- Writing structured and defensible expert reports.
- The different communication techniques required for court and arbitration appearances.
- The ethical standards relevant to impartiality, independence and conflicts of interest.

Important note: The information contained in this handy guide, whilst predominantly related to English Law and legal concepts, still provides invaluable advice for those operating globally in different jurisdictions as an expert witness. The principles of giving expert witness are similar.

For more information go to <https://bit.ly/4cgj1sd>.

What a marine surveyor needs to know about Marine Classification Society and Statutory Surveys - an introduction

Available in both traditional paperback and electronic format, 'What a marine surveyor needs to know about Marine Classification Society and Statutory Surveys - an introduction' aims to give readers a good understanding of and insight into:

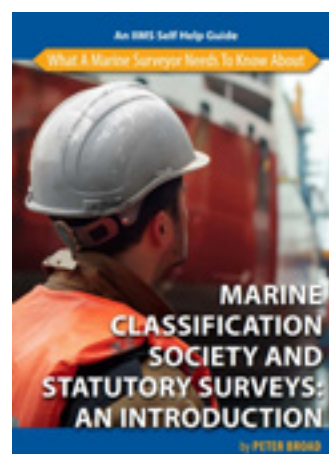
- What are Marine Classification Societies?
- Who carries out Marine Classification Society Surveys?
- Where and when are Marine Classification Society Surveys carried out?
- What are Statutory Surveys?
- Who carries out Marine Statutory Surveys?
- Where and when are Marine Statutory Surveys carried out?

The information contained in this handy guide draws information from various sources and relates to commercial vessels over 24 metres in length, 500 GT or more, and engaged on international voyages.

It should be noted that Classification Societies and Statutory Authorities are not just involved with ships, but can also be involved with the regulation and certification of other marine floating assets such as drill ships, oil platforms, military vessels, high speed craft, tugs, barges, support vessels, passenger transfer vessels, ice breaking vessels, floating hotels related to the offshore industry, superyachts, autonomous vessels, inland waterways vessels, composite hull construction and many more. Each of these areas has its own dedicated rules and regulations that need to be complied with for the construction and operation of each type of marine asset.

For more information and to order your copy go to <https://bit.ly/4kob4Vr>.

To view the whole collection of IIMS handy guides: <https://bit.ly/2WQTosu>.



Announcement of IIMS honors



Joel Lloyd Pinheiro awarded a Fellowship

Joel Lloyd Pinheiro has made a significant and demonstrable contribution to the marine industry over a career spanning nearly two decades, combining seagoing engineering experience with extensive professional practice as a marine surveyor and consultant. His reports are recognised for their technical depth, clarity and impartiality. In addition, he has contributed to the industry through knowledge sharing, mentoring and speaking at IIMS and industry events, thereby enhancing professional standards and standards of marine surveying.

Citation by Uday Moorthi, HonFIIMS



Nigel Cox awarded a Fellowship

Nigel Cox has been recognised as a Fellow of the International Institute of Marine Surveying, an acknowledgement of his many years of experience in UK shipping industry.

This award is most notable for his work in his role as a Principal Naval Architect involved in the design, construction and through life support of UK naval assets as well as his work with other friendly nations naval forces. His work has been involved with steel hull design as well in the use of advanced composites. He has been instrumental in developing industry best practices for design as well as surveying protocols for naval vessels.

Nigel has been a mentor to many younger engineers and naval architects through his career and demonstrates his sustained commitment to fostering a culture of excellence in his role as an inspirational leader. Nigel has earned the highest respect of his peers and made a lasting impact on ship design and marine assets through life maintenance.

Citation by Peter Broad HonFIIMS



Joe McWilliam awarded an Honorary Fellowship

For the past decade, Joe's efforts have underpinned the success of the eCMID Accredited Vessel Inspector scheme managed by IIMS on behalf of IMCA with skill and diligence. His detailed in-depth knowledge of the offshore inspection and marine health and safety sectors have made him invaluable as a lead tutor and scheme assessor. Joe's contribution has been immense.

Scores of Accredited Vessel Inspectors have been tutored by Joe in the mandatory introductory course as well as the 5-year revalidation programme. Many will have endured Joe's realistic roleplays as part of the training with relish and trepidation!

IIMS is delighted to formally recognise Joe's significant impact with the award of an Honorary Fellowship.

Citation by Mike Schwarz



Obituary Captain J.C Anand HonMIIMS 1922 to 2026

The death has been reported of Captain J.C. Anand at the age of 104. He was made an Honorary Member of the IIMS in 2010.

The Indian Register of Shipping (IRS) has paid a heartfelt tribute following the announcement of his passing. Remembered as a visionary leader, Capt Anand played a defining role in steering IRS in its formative years into a globally recognised institution.

He played a key role in IRS gaining full member status at IACS - a milestone that elevated Indian shipping's standing on the world stage. He convened India's first-ever Shipping and Shipbuilding Conference in 1961, inaugurated by President Dr. S. Radhakrishnan. And he was the first CEO of a liner shipping company to usher containerisation into India, recognising before most that the future of global trade would be built in boxes.

The industry recognised what he built. The Varuna Award, Indian Maritime's highest honour, as well as lifetime achievement awards from Lloyd's List and Seatrade. There was also a Business Excellence Award, The Hall of Fame and an Alumni Achievement Award. But what Capt. Anand leaves behind is something no award can capture - generations of maritime professionals shaped by his mentorship, his standards, and his quiet, unshakeable conviction that Indian shipping belonged among the best in the world.



Obituary Keith Victor Morgans

It is with sadness, that IIMS has been informed of the death of member Keith Morgans by his son, Nick, following a short battle with cancer. He passed away on Saturday 2nd May, shortly after his 80th birthday. Keith was a valued Full Member of the IIMS family and apart from being an accomplished general surveyor of many years' standing, he was also an MCA coding examiner working on workboats in particular.

His obituary posted on Facebook by the Maiden Marine Team says he was an integral part of their team, based in Cumbria, UK. He provided support and guidance for many years as their local marine surveyor. The statement said he was a true gentleman and an all-round good guy, who helped literally thousands of people on their boat buying and boat owning adventures. All are saddened by his loss.

Some of the comments from those who knew him said:

"He was an absolute legend. A true gentleman, kind and always up for topical conversations and banter armed with a sharp quip. He loved supporting the underdog and the little wins that the small people achieved were greatly admired and appreciated by him." J.G.

"I had great respect for Keith, his knowledge and understanding of vessels and his common sense approach was excellent - proud to have called him a friend." G.D.

"Sad news. Whilst I only met him for a survey on my boat and a few phone calls he left a great impression on me. A kind and knowledgeable gentleman with a wry sense of humour, I liked him very much." S.C.

Commenting on the news, IIMS CEO, Mike Schwarz, said, "I only met Keith a couple of times, once in Scotland on a freezing cold wet November day. He shook me by the hand with a warm smile on his face and made a lasting impression. As he introduced himself to me, he also introduced me to a young Ukrainian lady, Maria, by his side, who had joined him for the training event. It seems she had designs on becoming a marine surveyor and, as well as taking her in and giving her refuge following the start of the Ukrainian war, he was also mentoring her. He struck me as a really good man."



Sisters run virtual TCS London Marathon in support of Sailors' Society

Finishing in under six hours, IIMS member Catherine Linley ran the virtual TCS London Marathon MyWay in support of Sailors' Society – IIMS' chosen charity.

Catherine first contacted the maritime charity to take part in the event on their behalf after hearing about it via IIMS. She went on to complete the event with her sister, Hilary, by running along the Linear Trail and the beaches of Adelaide in "glorious weather".

Despite managing injuries in the lead up to the day, the sisters supported each other to the finish line where they were swept up by family members.

Catherine, who works for the Australian Maritime Safety Authority, said she was proud of their effort but was acutely aware of the privilege wrapped around it. She said, "I am a professional mariner who no longer works at sea. I know what it means to work long hours, far from home, keeping a global system moving that most people rarely notice.

"Every day, nearly two million merchant seafarers operate the vessels that keep global supply chains alive. Many seafarers don't work one six hour shift — they often work two in a day. Six hours on, six hours off - twelve hours a day, day after day. Unlike us, they don't have family waiting at the finish line. They may go months without seeing their loved ones.

"World trade depends on maintaining a skilled, resilient pipeline of seafarers. And seafarers depend on having the right support to do their jobs safely, sustainably and with dignity.

"That is why we chose to run this marathon in support of Sailors' Society. Thank you for all you do for the seafarers."

Beth Courtier, Head of Development for Sailors' Society, said: "We were delighted that Catherine and Hilary chose to support Sailors' Society by taking part in the virtual London marathon event in Adelaide. A HUGE thank you to the pair for not only raising funds for the charity but also raising visibility of the vital work we do to support seafarers and their families across the globe."

Sailors' Society is now gearing up for its Fansipan Challenge later this year. The aim of this challenging trek is the summit of Fansipan- at 3,147m, the highest mountain in Vietnam, and the famed 'Roof of Indochina'. This two-day trek is open to maritime professionals and takes place 27-29 November.

You can help Catherine hit her fundraising target here: <https://bit.ly/4nsdVyo>

Find out more about the Fansipan Challenge: <https://sailors-society.org/>

Safety considerations for fixed CO2 fire-extinguishing systems issued

The Liberia Maritime Authority issued an advisory to inform shipowners, operators, masters, and crew of important safety considerations regarding fixed CO2 fire-extinguishing systems.

According to the Authority, a vessel suffered an engine room fire involving the No. 2 diesel generator, which caught fire when fuel sprayed from a high-pressure pump onto the exhaust. Once the crew were out of the engine room and accounted for, the shore side fire team along with the ship's Master and Chief Engineer decided it was safe to activate the fixed CO2 fire-extinguishing system. The system was operated and the fire was successfully extinguished.

However, during the investigation after the fire, it was noticed that of the 118 bottles dedicated to the vessel's engine room, only 109 bottles were released. Further inspection revealed that not all the bottles had their safety pins removed from their actuating heads, which for this type of head was required for them to open.

Types of actuating heads

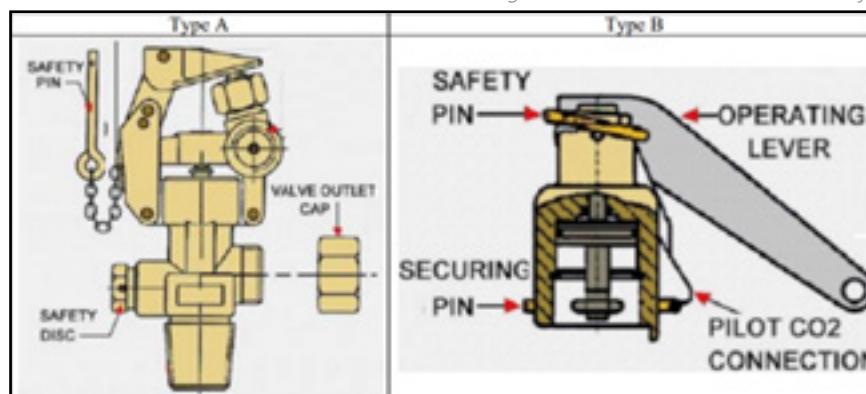
Generally, there are two predominant types of actuating heads, commonly referred to as Type A and Type B, although this may not be consistently used by all manufacturers.

For Type A systems, the safety pin is used solely as a safety device during transportation, installation and maintenance. The safety pin must be removed from the actuating heads when the system is in operationally ready status. If left in place, the CO2 will not discharge. The manual for the system may contain a warning that if the safety pins are left installed in the CO2 cylinder actuating heads, the valves will not open and CO2 will not be discharged.

It is noted that this is for a system covering the engine room. For a system with Type A heads that are not connected by a pilot line and are dedicated to a vessel's cargo holds, they can have their safety pins installed as the system would be manually activated with the pins being removed at that time.



Image credit: Liberia Maritime Authority



The picture below is from the case described in the background section above. As can be seen for this Type A system, the valves opened as designed where the pins were removed. Where the pin was left in, the valve did not open:

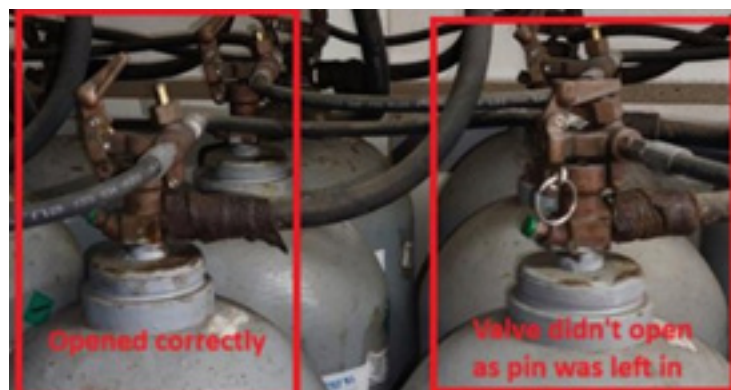


Image credit: Liberia Maritime Authority

For Type B systems, the safety pin is designed to prevent accidental discharge due to vibrations. The pin remains installed when the system is operationally ready. The system manual for such a system may contain a notice that when the safety pin is installed, the actuating head will still operate when remote activation occurs. It only needs to be removed when local, manual operation is necessary.

Flexible pilot lines

Another critical item of fixed CO2 fire-extinguishing systems are the flexible pilot lines, sometimes called pilot loops, which convey CO2 to the actuating valves to open them. The system manual should contain specifications for the pilot loops, including the minimum bending radius, and in general be

installed avoiding any sharp bends. Flexible pilot lines should be inspected in accordance with Marine Notice FIR-001 and maintained in good condition or replaced when there is evidence of distress likely to lead to failure. Any of the following conditions may require replacement of the hose assembly:

- Leaks at fitting or in flexible hose;
- Damaged, cut or abraded cover;
- Kinked, crushed, flattened or twisted flexible hose;
- Hard or stiff flexible hose;
- Blistered, soft, degraded or loose cover;
- Cracked, damaged or badly corroded fittings; and
- Fitting slippage on flexible hose.

The pilot lines below are clearly in poor/unsatisfactory condition (kinked hoses):



Image credit: Liberia Maritime Authority

Recommendations

It is recommended that shipowners, operators, masters and crew inspect the fixed CO2 fire-extinguishing system(s) on board their vessel to determine the type of actuator heads the system uses and that the safety pins are either not installed for Type A systems, or are installed for Type B systems, that are operationally ready. Pilot lines should also be inspected to ensure they are installed correctly and are in good condition.

These inspections should be noted in the log and records that are kept for the testing, inspections and maintenance of fire-protection systems and appliances.

It is recommended that flag state inspectors, when inspecting fixed CO2 fire-extinguishing system(s) and encountering safety pins installed on Type A heads, refer to the onboard maker's manual and/or drawings, to determine if this is correct installation before raising a finding. Inspectors should also check the installation and condition of the pilot lines and, where warranted, raise an appropriate finding.

In all cases, whenever fixed CO2 fire-extinguishing systems are subjected to inspection or maintenance, strict safety precautions should be followed to prevent the possibility that individuals performing or witnessing the activities are placed at risk.

Measures to avoid accidental discharges, such as locking or removing operating arms from directional valves or shutting and locking the system block valve, should be taken as the initial procedure for the protection of personnel performing any maintenance or inspections.

All personnel should be notified of the impending activities before work is begun. After inspection or maintenance is completed, the system must be brought back to normal operational status in accordance with SOLAS II-2/14 and the same recorded in the service chart (Appendix to MSC.1/Circ.1318, Rev.1 as amended) and ship's log.

REPORT bites

A controversial increase in fees for boats entering the island nation of the Bahamas instituted last year has been revised following a dramatic drop-off in visiting vessels.

Zelim says its AI-enabled Zoe man-overboard (MOB) detection system has received ISO 21195:2020 certification from classification society Lloyd's Register, following a 90-day testing period.

The buildout of the cruise sector continued at Fincantieri in Italy with the recent floatout of the Norwegian Aura, which is due to enter service in 2027. The fifth ship of the Project Leonardo design developed by Fincantieri, the ship is 10 percent larger than the second pairing of the class.

The International Federation of Boat Show Organisers (IFBSO) has added the Dalmatia Boat Show as an Emerging Member, a category for events in earlier stages of development.

The International Maritime Organization's Legal Committee has approved a new set of guidelines to improve transparency and due diligence in ship registration, as well as to prevent fraudulent registrations and misuse of flags.

European Boating Industry applauds the recent EU free trade agreements announced with the Mercosur region, Australia and India.

Officials in Djibouti officially inaugurated the Djibouti Ship Repair Yard, marking what they called a milestone in the development of the country's maritime economy. It becomes the largest ship repair yard in East Africa.



Keep record of modifications affecting vessel stability

The Australian Maritime Safety Authority (AMSA) has published a safety lesson about an incident where stability issues contributed to the capsizing of a fishing trawler in calm waters. In 2024, a range of vessel stability issues caused a trawler to roll over. The master had not followed the vessel's stability book properly. The investigation also found that the stability book didn't meet relevant standards.

What happened

A trawler with 2 crew was heading ashore to repair generators that were shutting off while at sea. While in calm waters close to the shore, the vessel capsized and rolled on its side. The master suffered a head injury and was taken to hospital. State authorities used containment booms and skimmers to control pollution from the incident.

Why it happened

The vessel rolled over after losing stability. The sea and weather were calm.

The stability book did not consider relevant standards. It had:

- no catch conditions
- fuel tank assumptions that were inconsistent with the National Standard for Commercial Vessels (NSCV).

In addition, the master did not maintain the vessel's stability according to the stability book. For example, they had ignored documented fuel tank management requirements.

Other issues:

- the lightship declaration was inaccurate – the owner failed to report modifications that exceeded 3.4 tonnes
- the risk assessment failed to identify or control risks associated with fuel and ballast management
- the deckhand wasn't qualified for the duties he was assigned to undertake.

Lessons learned

Under the Australian National Law, owners of vessels with a stability book must:

- base lightship assessments and declarations on accurate information
- conduct a risk assessment of vessel stability in the vessel's SMS
- keep a record of modifications affecting vessel stability in the vessel's SMS.

Safety guidelines for wind-assisted ships issued by MTF



The Maritime Technologies Forum (MTF) has published new guidelines to support the safe operation of wind-assisted ships, those using wind-assisted propulsion systems, as the shipping industry increasingly adopts technologies aimed at reducing fuel use and emissions.

The guidelines provide recommendations for developing and implementing safety management systems tailored to vessels equipped with wind-assisted propulsion systems (WAPS), including rotor sails, suction sails and wing sails. The report highlights the need to address operational, technical and organizational challenges associated with the technology, including impacts on manoeuvrability, visibility, maintenance and emergency preparedness.

The MTF said the guidance for wind-assisted ships is intended to help companies identify procedural gaps and strengthen safety management frameworks for both newbuild and retrofitted vessels. The guidelines also stress the importance of structured risk assessments, as well as continuous monitoring and reporting of WAPS-related incidents, near-misses and non-conformities to improve operational performance over time.

The forum said the guidance for wind-assisted ships aims to support the safe adoption of wind-assisted propulsion as regulatory frameworks and technologies continue to evolve. Wind-assisted propulsion systems offer significant potential, as part of the wider technology mix, to reduce fuel consumption and emissions. I welcome the publication of the MTF's latest guidelines as a further step in our shared commitment to supporting industry through a safe transition to a decarbonized future.

These guidelines give companies clear, practical recommendations for managing the operational, technical and organizational aspects of these systems within their SMS, added Lars Lippuner, Director, UK Customer Maritime Services at the Maritime and Coastguard Agency.

Download the report at <https://bit.ly/4vj9gSM>.

GUIDELINES TO DEVELOP AND IMPLEMENT A SAFETY MANAGEMENT SYSTEM FOR SHIPS USING WIND ASSISTED PROPULSION SYSTEMS

Fishing trawler Freedom II sank following engine room flooding

Four crewmembers had to be rescued after uncontrolled flooding on prawn trawler Freedom II caused the vessel to founder and later sink off the Scottish coast. The MAIB received 230 reports of flooding of fishing vessels between 2013 and 2022, of which 78 (34%) resulted in the loss of the vessel. The data indicates flooding remains a significant safety issue.

At 1535 on 21 February 2024, the 15.94m prawn trawler Freedom II foundered and sank to the east of the Garvellach Islands in the Firth of Lorn off the west coast of Scotland. Freedom II had suffered an uncontrolled flood into the engine room. The crew were initially alerted to the flood by the activation of the bilge alarms but did not isolate any sea cocks as they believed that the flood was due to a failed stern seal. The flood, likely caused by the failure of a seawater pipe, overwhelmed the available bilge pumps and passed into the fish hold.

The skipper and a deckhand tried to deal with the flood while Freedom II was taken under tow by an RNLI lifeboat. The tow was abandoned when it became apparent that the vessel was sinking, and the skipper and the deckhand swam clear of the vessel as it foundered; they were recovered from the water by the lifeboat's crew.

Safety issues

- The vessel foundered due to a progressive flood into the engine room.
- The exact source of the flood could not be identified. The most likely cause was a vibration-induced fracture of the seawater suction pipe for the deck wash pump.
- The rate of flooding overwhelmed the operational bilge pumps and additional pumps either failed or could not be used due to power supply issues. The salvage pump from the lifeboat was not used.
- The skipper was proactive in ensuring that the crew were safe and managed to raise the alarm in an area of poor signal coverage.

Download the report: [MAIB - What would you do if your vessel flooded?](#)

Download the safety flyer: [MAIB - What would you do if your vessel flooded?](#)



REPORT bites

Yachting New Zealand, the governing body for the sport of sailing in New Zealand, is undertaking a review of its national membership model and club affiliation fee structure.

Seaspan Shipyards in North Vancouver, B.C., has named Leo Martin chief operating officer of Vancouver Shipyards, effective April 20, 2026.

Global maritime piracy and armed robbery incidents fell to levels not seen since 1991, reports the International Maritime Bureau in its quarterly report on maritime piracy.

Pilbara Ports has announced the names of two mobile harbour cranes at Lumsden Point. The cranes will be called Julie and Arnold, in recognition of local figures Julie Arif and Arnold Carter.

In a 3D printing breakthrough, a U.K.-based consortium led by Enki Marine Ltd, has completed an 815-millimetre, 45 kilogram, section of a next-generation nickel aluminium bronze marine propeller blade using the process.

Sunpower Yachts reaches the water's edge as its 90ft solar electric catamaran prepares for sea trials.

Lloyd's Register has signed a new contract with long-standing partner Echo Marine Group to support the delivery of Western Australia's first fully electric passenger ferries - marking a major milestone for sustainable public transport in Australia.

The first of two large, fully-electric containerships was placed in service in China. Built for Ningbo Ocean Shipping, they are being promoted as a key advancement in sustainability and China's leadership in green shipping.

IMPA warns of risks of deregulation in maritime pilotage



The International Maritime Pilots' Association (IMPA) has sent out a warning of the consequences of deregulation and competition in maritime pilotage.

Maritime pilotage is a public, not commercial, service that exists for safety of navigation - protecting people, the environment and trade. IMPA said some jurisdictions are tempted by the idea that deregulation and competition deliver a better service at a lower cost. This is a mistake, and the evidence agrees.

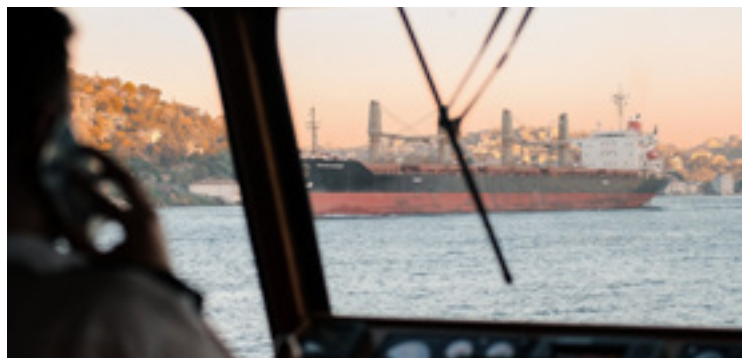
IMPA believes decision-makers need to understand that deregulation and competition are not sound policies in pilotage and expose the public and the shipping industry to unnecessary and avoidable risk.

The data speaks for itself. In one jurisdiction where competition in service-delivery was introduced, pilotage fees have doubled since 2018, while the incident rate per port call is 41 times the international average. In another, 60% of maritime safety incidents under pilotage occur in areas where providers compete against one another to provide the service. In another, the main provider's efficiency has declined by 9%, and the service's ability to meet total demand has been compromised. In another, deregulation and government profiteering, in combination with a dilution of training and licensing standards, make it hard to say the service is pilotage.

Deregulation and competition are not features of mature, high-performing pilotage systems. Because of this, some jurisdictions are very explicit in their position. The European Union's Port Services Regulation safeguards against competition in maritime pilotage. Alaska and Florida, having experimented with competition in the past, explicitly prohibit the practice because of the threat to public interest.

The systemic risks arise from the negative impact of competition on pilots' professional independence and the incentive for commercial service providers to underinvest in training and professional development. In 2018, KPMG identified under-investment in safety and quality as a reason why competition can be more damaging than a natural monopoly.

When multiple operators must replicate infrastructure – pilots, pilot boats, training programs and facilities and seek to recover costs from a divided market, costs inevitably go up, not down. Furthermore, when the prospect of profit is insufficient, there can be under-provision of pilotage, necessitating government intervention. And when providers abuse their market power, the government must intervene again. The great irony is that deregulation in pilotage creates a greater need for intervention, not less.



SAFETY Briefings

West P&I Club insight into soot pollution from inert gas systems and open-loop scrubbers

The maritime industry is confronting an increasingly serious environmental challenge – soot pollution arising from inert gas (IG) systems and open-loop exhaust gas scrubber operations.

What were once considered isolated or incidental events have now evolved into a systemic issue, exposing shipowners and operators worldwide to potential significant operational disruption, financial loss, and regulatory scrutiny, says West of England P&I Club. To date, the Club has recorded over 60 documented incidents, although the true scale of the problem is believed to be substantially greater.

These events are no longer regarded as minor environmental infractions. Instead, they frequently carry severe legal and financial consequences, including vessel detentions, delays, clean-up obligations, and substantial fines. As environmental enforcement intensifies across multiple jurisdictions, ship operators are facing heightened scrutiny and increasingly punitive responses from port and coastal State authorities.

Escalating Enforcement and Penalties

Growing environmental awareness has led many ports and coastal States to prohibit open-loop scrubber operations entirely. Elsewhere, inspections have become more intrusive and penalties more severe. Jurisdictions such as Turkey and the UAE are notable for their strict and highly visible enforcement approaches.

Depending on the jurisdiction the fines can be in the range of a few thousand dollars to millions of dollars. The Club has experience where vessels have been subject to fines exceeding USD 1 million for serious pollution incidents.

The absence of uniform international standards – particularly for Inert Gas Systems (IGS) discharges – further complicates compliance and exposes ship operators to regulatory uncertainty, financial risk, and reputational damage.

Preventive Measures and Best Practices

Most soot pollution incidents are entirely preventable through disciplined operations, effective training, and proactive maintenance. Shipowners and operators are strongly encouraged to adopt the following best practices:

- **Strict Adherence to Manufacturer Guidance.** Follow manufacturer-recommended operating procedures and maintenance instructions for IG systems and scrubber systems without deviation.
- **Comprehensive Pre-Operation Inspections.** Conduct thorough system checks before activation, ensuring all critical components and alarms are fully functional.
- **Crew Training and Competency Development.** Ensure crew members are adequately trained in normal operation, fault recognition, troubleshooting, and emergency response.
- **Adoption of Cleaner Technologies.** Consider transitioning to hybrid or closed-loop scrubber systems, particularly when trading in regions with strict environmental controls.
- **Robust Record-Keeping.** Maintain detailed logs of system operation, maintenance activities, sensor readings, and visual observations to demonstrate compliance and support incident investigation.
- **Enhanced Preventive Maintenance Regimes.** Implement maintenance programmes that exceed minimum regulatory requirements, including scheduled inspections and timely replacement of critical components. A vessel-specific operational checklist is strongly recommended.
- **Real-Time Monitoring and Early Detection.** Utilise continuous monitoring systems to identify deviations in performance at an early stage, allowing corrective action before a discharge occurs.



REPORT bites

Rand Boats, the Danish electric yacht manufacturer that filed for bankruptcy in September 2025, has resumed operations after securing new funding and completing a corporate restructuring.

The U.K. government has committed up to \$85 million (£64 million) to support the development of a floating offshore wind port at Port Talbot in Wales, as part of efforts to expand clean energy capacity.

The Bahamas has introduced a comprehensive suite of Merchant Shipping Regulations under the Merchant Shipping Act 2021, that came into force on 1 April 2026, marking a significant milestone in the modernisation of its regulatory framework.

Tugboat captain Yusiél Lopez Insua of Miami has been charged with seaman's manslaughter after operating a barge with obstructed visibility and without a proper lookout.

Finland is planning to establish a major offshore wind logistics base at Koverhar Harbour, with developers and port operators revealing details of the infrastructure required to support gigawatt-scale projects in the Baltic Sea.

The Nauticales trade show is about to write a new page in its history, with a new location in Marseille designed to support its development.

The Superyacht Eco Association (SEA Index), established in 2020 by the Yacht Club de Monaco and Credit Suisse (UBS Group), and the Port de Marseille Fos has formed a partnership aimed at reducing yacht emissions.



Tokyo MOU shares preliminary results of CIC on Ballast Water Management

The Tokyo MOU has released the preliminary results of a Concentrated Inspection Campaign (CIC) it held which focused on aspects of the Ballast Water Management Convention (BWM) 2004.

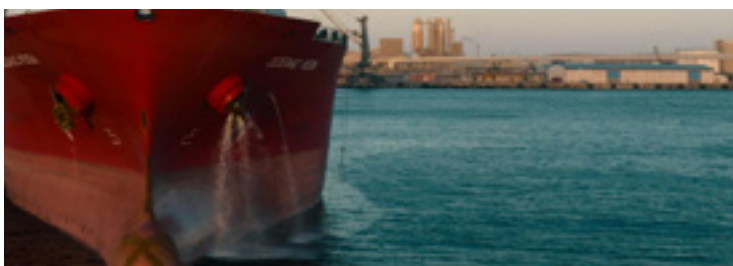
The campaign was carried out from 1 September 2025 to 30 November 2025, jointly with the Paris MoU.

Over the course of the CIC period, involving all types of ships, a total of 9,244 inspections were carried out. Of these inspections, 6,930 (74.96%) inspections were performed using the CIC questionnaire and a ship was subjected to only one CIC inspection during the campaign period. During the period, 184 ships where CIC was carried out were detained in total (2.66% detention rate). Of which, 30 detentions were the result of inspections with CIC questionnaires, which were detained as a direct result of the CIC concerning deficiencies, reflecting a CIC topic related detention rate of 0.43%.

The most common deficiencies (and deficiencies that resulted in a detention) found during the campaign were associated with under the deficiency code 14811 (Q6 – Is the BWMS operational?) underscoring the fact that the operation and maintenance of BWMS onboard remains a critical area for the effective implementation of the intent of the Convention.

The highest absolute number of CIC-related deficiencies was recorded on ships flagged to Panama (475), Liberia (234) and Marshall Islands (168). This reflects the high inspection exposure of these flag States during the campaign. When normalised against the number of inspections conducted with a CIC questionnaire, the corresponding deficiency ratios were 23.95%, 24.42% and 24.59%, respectively.

Most ships with CIC-topic related deficiencies marked as grounds for detention were in the High Risk category (26/30), or 86.6% of all detentions. By ship type, General Cargo/multipurpose ships accounted for 43.33% of all CIC-topic detentions (13 detentions) followed bulk carriers (4), Oil tankers (5), Gas carriers (3), Oil Chem (3), Container Ships and other special activities (1) each. Ship age did show a correlation with CIC-topic detention rate. Most of the detentions were recorded for ships aged between 19 – 24 years of age. The majority of flag States associated with CIC-topic detentions were listed on the Tokyo MOU High Performance List.



SAFETY Briefings

Addressing alarm fatigue

Seafarers worldwide face growing challenges with shipboard alarm systems. On some vessels, thousands of alarms per day create dangerous alarm fatigue, turning the management of constant alerts into a full-time task during critical operations.

Alarm fatigue describes the situation where a ship's crew becomes 'numb' to alarms. Instead of supporting safe operations, alarm systems can become a source of distraction, disruption, and risk. Analysis by Lloyd's Register (LR), based on 40+ million alarm events, shows that many alarms provide little operational value, disrupt rest, and push crews toward unsafe workarounds.

Alarm overload at sea

Ships generate thousands of alarms daily. LR analysed 11 vessels over 2,000+ operational days, reviewing more than 40 million alarm events, and found:

- Many alarms provide little or no operational value
- Fewer than 50% of vessels meet the benchmark of <30 alarms/hour
- Cruise ships recorded up to 2,600 alarms/day and 4,691 alarms in 10 minutes
- On some vessels, alarms disrupted 63% of crew rest periods
- Addressing the top 10 most frequent alarms could reduce total alarm load by 40%

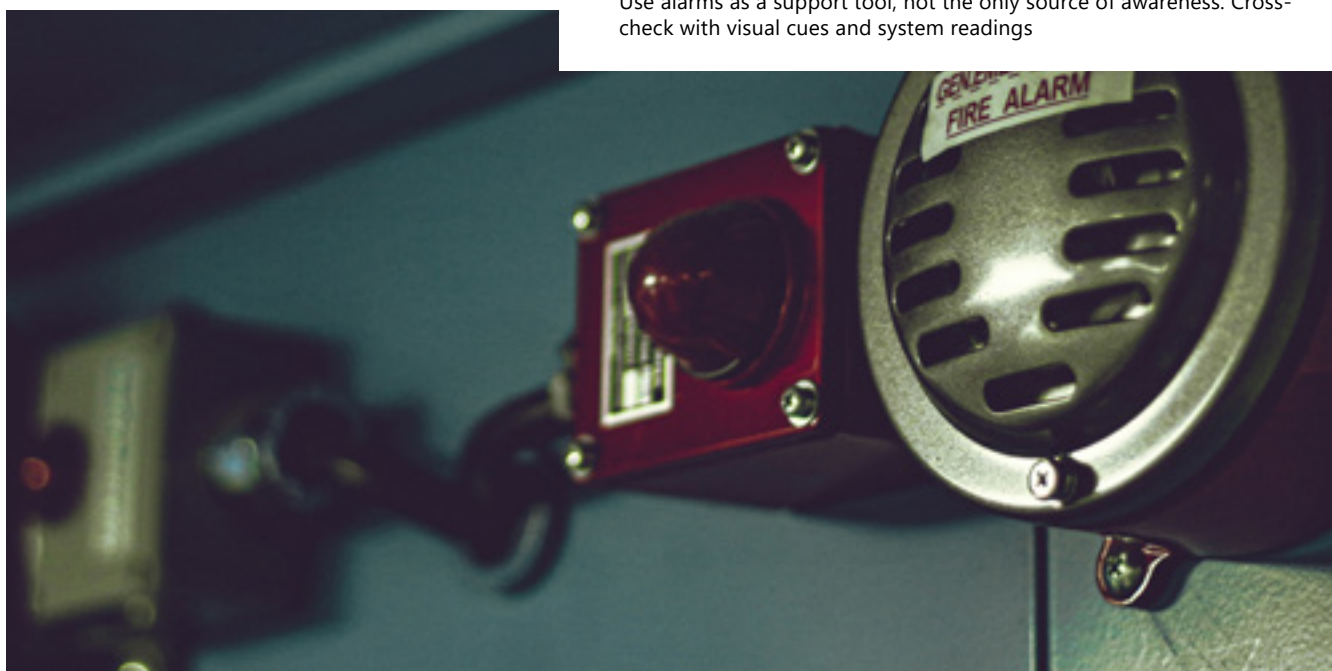
As maritime operations become more digital, the challenge of alarm overload is growing, affecting everyday life and safety on board ships, LR highlighted.

Effective alarm management isn't just about reacting to alerts. It's about empowering watchkeepers with the right information at the right time, so they can prevent abnormal situations from occurring or escalating.



8 Tips for effective alarm management

- 1 Don't ignore, understand
Always try to identify the cause before acknowledging. Avoid routine "click-through" responses
- 2 Focus on what matters
Give priority to critical and safety-related alarms. Don't let nuisance alarms distract from key risks
- 3 Manage alarm fatigue
Stay aware of desensitisation during busy periods. Take short mental resets when possible to maintain focus
- 4 Report nuisance alarms
Flag repetitive or low-value alarms to senior officers/engineers. Help improve the system for the whole crew
- 5 Fix, don't bypass
Avoid silencing or bypassing alarms unless properly authorised. Push for root cause fixes instead of temporary workarounds
- 6 Use logs and handover notes
Record recurring alarms and share during watch handovers. Build awareness across the team
- 7 Communicate and escalate
Speak up if alarms are overwhelming or unclear. Escalate concerns when safety may be affected
- 8 Trust, but verify
Use alarms as a support tool, not the only source of awareness. Cross-check with visual cues and system readings



REPORT bites

The Prince Rupert Port Authority (PRPA) announced that its Board of Directors has appointed Kurt Slocombe as the organization's next President and Chief Executive Officer as of April 1.

Italian superyacht builder Sanlorenzo has appointed Gianguido Girotti as CEO of Nautor Swan and Bluegame, with the role effective from June 2026.

The Norwegian Ministry of Trade, Industry and Fisheries initiated a follow-up review of the Ports and Waterways Act. This inspection seeks to determine if the legislation, which was first adopted in 2019, is appropriately designed and functioning as intended.

Peter Bryant, the man behind the concept of superyacht shows, is making a return to the exhibition industry, this time targeting the small boat volume sector in the UK with the launch of three BoatFest events.

Mitsui O.S.K. Lines Ltd. has signed a memorandum of understanding with Hitachi Ltd. and Hitachi Systems Ltd. covering the development, operation, and commercialization of a floating data centre converted from a second-hand vessel.

The Royal Ocean Racing Club (RORC) has confirmed that Ben Willows joined the organisation in April 2026 as sporting director.

Japan's Mitsui O.S.K. Lines and Hitachi plan to explore the use of old ships as a means of meeting the strong demand and technical concerns of developing data centers.

The British Government has opened a £132 million (\$171 million) investment through the fisheries and seafood scheme to support fishing industries and coastal communities across England over the next five years.

Liberia Maritime Authority reinforces mandatory engine room fire prevention requirements

The Liberia Maritime Authority has sent out a marine advisory to reinforce the mandatory compliance requirements that govern engine room fire prevention, fire protection readiness, and safe machinery-space operations on Liberian-flagged vessels.

Engine Room Fire Trends

Fires aboard Liberian-flagged vessels during 2025–2026 have been reviewed and the number of incidents in the Engine Room have been identified as follows:

- 46 fires in 2025, of which 21 involved the engine room
- 7 fires in 2026 (YTD), of which 4 involved the engine room

The pattern continues to show that heat sources combined with fuel/oil spray, incomplete ventilation shutdown, improper system readiness, and inadequate training remain core risks.

Marine Casualty case studies

The Administration has reviewed recent Engine Room fire incidents with similar root causes and a summary of representative, anonymized cases provided below.

Engine Room Fire During Navigation Under Pilotage. A fire originated in the vicinity of auxiliary diesel generator machinery. Ventilation flaps, particularly upper-level closures, could not be fully secured, allowing continued oxygen supply and enabling rapid fire growth. Crew members assigned to activate the CO₂ system were not fully familiar with the activation sequence, resulting in incomplete cylinder discharge.

Auxiliary Engine Internal Mechanical Failure. A sudden mechanical failure caused fuel and lubricating oil to spray onto hot engine surfaces. Heavy smoke forced the evacuation of the Engine Room. The water mist system did not activate due to a lack of emergency power interconnection, resulting in significant structural and equipment damage.

Fuel System Component Failure (Filter Cover Failure). A diesel engine filter cover failed during operation, resulting in lubricating-oil spray onto the lubricating oil and exhaust components. The fire was extinguished, but the surrounding cabling, lights, and machinery sustained heat and smoke damage.

Fourth Case – High-Pressure Fuel Pipe Failure (Main Engine). A high-pressure fuel line ruptured, projecting atomized fuel onto the exhaust manifold and causing immediate ignition. Ventilation was secured, and CO₂ was released, extinguishing the fire. Affected main-engine units and Engine Room systems require further engineering assessment and root-cause analysis.

Key Safety Failures Identified in four outlined cases

- Fuel/oil spray contacting uninsulated or inadequately shielded hot surfaces.
- Missing, damaged, oil-soaked, or deteriorated thermal insulation.
- Incomplete closing of Engine Room ventilation flaps and dampers.
- Crew unfamiliarity with CO₂ activation sequence, remote cabinet use, and pilot cylinder initiation.
- Water-mist systems are not fully functional on emergency power.
- Improper torque, workmanship deficiencies, or vibration leading to component failure.
- Emergency response without full PPE and BA sets.
- Inadequate maintenance records or incomplete testing logs.

Read the full notice at

Liberia Maritime Authority Marine Advisory 03-2026 - Engine room fire prevention

Lithium-ion battery fires require coordinated safety measures

A recent Maritime Professional Council (MPC) guide highlights the growing risks of lithium-ion battery fires in the maritime industry, warning of rising risks that require stronger regulations, improved training, and coordinated safety measures.

In the "Lithium-ion Battery Fires: What We Know So Far," MPC warns of the rising risks, particularly with the growing use of electric vehicles (EVs) and a myriad of devices powered by these batteries. As explained, lithium-ion batteries have a high energy density, making them efficient but also prone to catastrophic failures if mishandled.

Key safety issues and implications

The guide makes five key points regarding safety issues and implications:

1. Thermal runaway risks: understanding thermal runaway is critical as it leads to uncontrollable fires.
2. Firefighting challenges: traditional firefighting methods may be ineffective against lithium-ion battery fires due to their unique characteristics.
3. Regulatory gaps: current regulations do not sufficiently address lithium-ion battery safety, highlighting the need for updated guidelines.
4. Training deficiencies: crew members often lack training specific to lithium-ion battery risks, increasing vulnerability to incidents.
5. Collaborative solutions: cooperation among stakeholders, including ship operators, maritime regulators, and emergency responders, is vital for enhancing safety measures.

Rising battery-related fires in marine insurance claims

Reports indicate that battery-related fires are a significant and rising cause of marine insurance claims, with an increase in incidents linked to lithium-ion technology.

Meanwhile insights from professionals in the maritime and fire safety sectors emphasize the need for comprehensive approaches to battery management and fire prevention.

Gaps in crew training and operational awareness

Many incidents stem from inadequate safety protocols and a lack of understanding among crew members and vessel operators about how to handle lithium-ion batteries safely.

The dangers include thermal runaway, which can cause fires and explosions, and the release of toxic gases during combustion.

Lessons from past maritime battery fire incidents

The guide includes detailed analyses of past incidents to illustrate the potential dangers and the importance of understanding lithium-ion battery behaviour during fires. Several reported incidents illustrate the consequences of lithium-ion battery fires on vessels including car carriers and container ships, leading to significant financial losses and safety hazards.

Non-marine lithium-ion battery fire incidents

The dangers are not confined to sea-going vessels but reported examples include explosions on a canal boat in the UK and a fire on a yacht due to inoperable battery management systems.

Regulatory gaps and the need for improved training

Current regulations are insufficient to address the unique challenges posed by lithium-ion batteries in maritime environments. Enhanced training for crew members on fire safety and emergency response is crucial to mitigate risks.

Industry collaboration and best practices for risk reduction

The maritime industry must collaborate with manufacturers, regulatory bodies, and emergency services to develop comprehensive safety protocols and training programs. Adoption of best practices, such as thorough inspections and maintenance of battery systems, is essential for preventing fires.

The guide's authors conclude that effective strategies must include ongoing education, robust safety regulations, and collaborative efforts to ensure the safe transport and usage of lithium-ion batteries.

Immediate action, the report warns, is required to address the challenges posed by lithium-ion batteries to prevent future incidents and protect lives and property in the maritime industry.

Download the 48 page guide at bit.ly/4vj9gSM.



REPORT bites

Dutch superyacht yard Koninklijke De Vries Scheepsbouw, part of Feadship, has marked a pivotal moment in its history as Henk and Tom de Vries step down from day-to-day management.

Belgian marine contractor Jan De Nul has launched its second next-generation cable laying vessel (CLV), William Thomson, as it expands capacity to support growing offshore wind and grid interconnection projects.

History was made in the 80th Rolex Sydney Hobart Yacht Race when it was won for the first time by a woman. The winning vessel, the 10.4m Chinese-owned Min River, was crewed by its owner, 60-year-old Jiang Lin, and co-skipper Alexis Loison.

The governments of India and South Korea announced a broad range of agreements, including support for the development of Indian shipbuilding and port developments, during a state visit by South Korea's President Lee Jae Myung.

Zach Hutcheson has stepped into the Chief Executive Officer role at Correct Craft. Hutcheson succeeds Bill Yeargin, who served as CEO for the past two decades.

With the demand for offshore wind components predicted to surge in the coming years, getting them to where they're needed could become an issue, analysis by maritime data analytics company Spinergie has found.

The City of Toronto is moving forward with plans to restrict personal watercraft (PWCs) and some small boats from select areas of its waterfront this summer.

Key considerations for the carriage of cement

The volume of seaborne cement trade continues to grow, with the most recent annual figure estimated to be over 145 million tonnes, however, loading cement on conventional bulk carriers presents significant operational challenges, Britannia P&I Club explains.

According to Britannia P&I Club, bulk cement is typically carried on dedicated cement carriers or standard bulk carriers. On dedicated carriers, cement is loaded from shore silos through a pneumatic system and discharged via a closed self-unloading system, where compressed air fluidizes the cargo and a vacuum pipeline transfers it to shore—effectively minimizing dust and preventing hardening. In comparison, loading cement on conventional bulk carriers, whether in bulk or in bags, remains a much more challenging operation.

Cement can stick and remain after discharge in recessed areas of the tank top, such as manhole cover areas and any indentations on bulkheads. Recessed areas on the tank top should be covered with plastic sheets and secured with tape.

- Residues of previous cargoes, such as sugar, can affect the characteristics of cement cargo; therefore, cargo holds should be thoroughly washed and dried. Bilges should be clean, dry, and protected against ingress of cargo.
- Risk factors of loading cement in bulk include solidification of the cargo due to water ingress, mainly through hatch covers or the bilge/ballast system. Weather tightness of hatch covers, and the correct functioning of non-return valves and other valves should be ensured to prevent water ingress. Hatch cover ultrasonic sealing tests should be carried out to detect potential leakage.
- When cement is loaded directly from the production plant, it may have a temperature of around 110°C when leaving production. It is recommended that the loading temperature of the cement does not exceed 80°C, to reduce the chance of hold coating damage. The temperature of the cement should be measured prior to loading using an infrared thermometer.

Cement should not be handled during precipitation and weather conditions should be monitored.

In addition, dust generated during cargo handling is another major issue with cement cargo, especially when handling is carried out with open hatches. Precautionary measures are required to protect machinery, equipment, and accommodation spaces from dust.

- Scuppers should be blocked to prevent clogging caused by cement settling and hardening. Ship staff must wear appropriate personal protective equipment (PPE) to protect themselves from dust during cargo handling.
- Once loading is finished, and if local regulations permit, all hatch coaming trackways, drainage channels, and drain holes should be brushed and cleaned using compressed air to remove cement. Any remaining cement in drain channels or drain holes may solidify in the event of water ingress through the hatch compression bar and subsequently leak, wetting the cargo inside.
- The main deck, pipelines, exposed equipment, and machinery should be cleaned. It is common that is used for rapid cleaning, but this must always be done with full safety precautions. All vents and accesses to the cargo holds should be sealed. The bilge system should not be operated; fixed bilge pumping systems should remain isolated, and associated valves should be sealed and recorded.

Some ports employ atomised water mist cannons during open-hatch discharge of cement as an effective measure to control cement dust. This system should be closely monitored while in use to ensure proper operation and to prevent any unintended spray of water into the cargo.

SAFETY Briefings



Photo credit: Britannia P&I Club

When grabs are used for cargo handling:

- Ensure that stevedores use appropriate measures to protect the ship's side from, as any cement that hardens on the hull can be difficult and costly to remove.
- After discharge, cargo residues in the hold should be removed as much as possible using brushes before washing commences. Similarly, all residues and dust on deck, machinery, and equipment should be cleaned.
- The ship's fixed bilge pumping system must not be used to pump out hold washings due to the risk of cement hardening and blocking the bilge lines.

Cement loaded through cement hole

Bulk cement is loaded through pipes using a shore loader positioned in the cement-loading holes of the hatch covers, a method designed to minimize dust. During loading, the cement is aerated to make it fluid-like, allowing it to flow smoothly through the pipes.

Maintaining the ship upright throughout the loading process is essential. The cargo should be trimmed so that the surface angle does not exceed 25°. Because cement can behave like a fluid before settling, the ship must not depart until the cargo has fully settled.

The risk of cargo shift increases in heavy weather and should be avoided. The Master and officers should be trained to recognize the risks of cargo movement and to correct the angle of heel if it develops.

If port regulations prevent cleaning, a request should be made to the charterer to allow the cleaning of hatch drain channels after leaving the port, Britannia highlights.

Cement in bags

Polypropylene woven bags are used to carry cement. The quantity of cement per bag can range from 25/50 kg bags to 2 MT Flexible Intermediate Bulk Container (FIBC) bags. The 25/50 kg bags are usually packed in cement sling bags for shipment. Tally survey in load port and discharge port should be done to prevent cargo shortage.

- Stevedore mishandling, such as improper hooking of the sling bag handles to the spreader or banging of the bags against the coaming during discharge, is the main reason for damage to cement bags. Any damaged bags should be rejected for loading.
- Adequate photographs should be taken, and a Letter of Protest (LOP) should be issued in cases of stevedore mishandling.
- Incorrect hooking of FIBC or sling bags can cause damage to the bags and result in cargo spillage. When handling these bags, all lifting handles must be used. Bags should not be lifted using a single hook. Proper slings or lifting arrangements should be employed to ensure that the bag handles remain vertical during lifting.

Dragging bags during handling can also cause damage and lead to spillage. Photographic evidence should be taken, and a LOP should be issued in such cases.

Another issue observed is bagged cement becoming compacted and hardened at the discharge port when mixed stowage is employed, particularly where heavy cargo such as vehicles is stowed on top of the cement bags. No other cargo should be stowed on top of cement carried in bags, and any such stowage proposal should be rejected.

Furthermore, stowage of cement bags should be tight and compact. Bags at the top of the stow should be properly lashed together.

- A protective cover should be placed on top of the stow to prevent condensation or sweat from falling onto the bags. The suitability and load-bearing capacity of the bags should be considered when stacking.
- When breaking bulk, it is important to conduct a survey and take photographic evidence.
- Another cause of bag damage is the shifting of the stow when the ship encounters heavy weather. In such cases, a Note of Protest should be lodged at the first port of arrival after experiencing heavy weather.

REPORT bites

Premier Marinas has completed the acquisition of the Dart Marina Group in Dartmouth, bringing Dart Marina, Dart Marina Hotel and the Dartmouth Higher Ferry into its portfolio.

South Korea's largest shipbuilder, HD Hyundai Heavy Industries, has moved well beyond traditional block outsourcing, splitting entire vessels between two yards in a first for the country's shipbuilding industry.

Turkey-based BAZ Yacht Design has announced a partnership with Iliad Catamarans, marking a significant step in the studio's growing international collaborations.

The Thailand International Boat Show has secured a strategic investment from Phuket Yacht Haven Marina, establishing the marina as its permanent venue and ensuring the show's long-term growth as a key platform for the yachting industry in Asia Pacific.

The Cruising Association has updated its Orca Interaction Comments Library, which collates first-hand reports from skippers describing the deterrent actions they took when encountering orca attacks and the outcomes that followed.

ampStay, an Austrian clean-tech start-up developing a new category of onboard wind generation for sailing yachts, has opened a €600,000 funding round to scale production of its backstay-mounted turbine system.

World Sailing is set to deliver its first Para Inclusive Development Programme in the Caribbean, with Antigua and Barbuda confirmed as the host for June 2026.



Latest guidance for shipping lithium-ion cells and batteries in containers

In response to the growing risks associated with the maritime transport and shipping lithium-ion cells and batteries, the following guidance for shipping lithium-ion cells and batteries in containers has been published. Lithium-ion cells and batteries are classified as dangerous goods and must be handled with care.

According to the Nordic Association of Marine Insurers (Cefor) in its 2025 year-end ocean hull report, fires remain a major source of marine losses. The report highlights an increase in severe fire incidents involving both container vessels and car/RoRo ships. As a result, the marine industry, including insurers, has become increasingly concerned about the rising number of onboard fires, particularly in cargo holds and engine rooms.

Lithium-ion cells and batteries are classed as dangerous goods because of several hazardous properties.

- Fire Hazard: Flammable electrolytes can ignite if damaged or overheated, triggering thermal runaway reactions that lead to fires or explosions.
- Chemical Reactivity: Reactive materials may explode or catch fire if punctured or short-circuited.
- Toxic Emissions: Fires release harmful gases such as hydrogen fluoride (HF), which are toxic and corrosive.
- Explosion Risk: Internal pressure buildup can cause rupture or explosive vapour clouds.
- Electrical Hazard: Short circuits or mishandling can lead to burns, sparks, or fires.
- Environmental Risk: Improper disposal can contaminate soil and water, causing environmental harm.

Key risks during transport

These factors increase the risks involved in the carriage of lithium-ion cells and batteries:

- Packing not consigned in compliance with the IMDG Code.
- Packing into containers other than in accordance with the CTU Code.
- High temperature inside container(s) during transport
- Cell or battery not in compliance with UN 38.3

Packing the Cargo Transport Unit (CTU)

To assist firefighting and to mitigate risks, it is recommended that cargo stuffing should keep to:

- a minimum 30cm gap between the top of cargo and the container ceiling.
- a minimum 30cm gap between the cargo and the container doors.
- ensuring that the packaging is not in direct contact with the container walls.

Download the guidelines at <https://bit.ly/4f48MdB>.

Fire safety deficiencies a major concern on Panama fleet inspections

The Panama Maritime Authority (PMA) has presented a list with common deficiency codes as identified by the United States Coast Guard (USCG) on Panamanian-flagged vessels during 2025.

PMA highlights the expectations of Port State Control Officers during inspections conducted by the United States Coast Guard and underscores the importance of effective implementation of the Safety Management System, robust onboard maintenance programs, proper preparation prior to arrival at U.S. ports, and continuous compliance with statutory and operational requirements.

The following are the top 5 deficiency codes recorded in the Panamanian fleet, all relating to fire safety:

1 07105 Fire Safety/Fire doors – openings in fire-resisting divisions

- Fire doors in main vertical zones bulkheads, galley boundaries, and stairway enclosures, other than power-operated watertight doors and those which are normally locked, shall satisfy the following requirements: the doors shall be self-closing and be capable of closure against an angle of inclination of up to 3.5 degrees opposing closure. **PSCO observed A-0 fire door in main stairway incapable of closing on its own.**
- The speed of door closure shall, if necessary, be controlled so as to prevent undue danger to persons. **PSCO observed safety crash bar on sliding failed to operate.**
- Stairways and lift trunks which penetrate more than a single deck shall be surrounded by at least "A0" class divisions and be protected by self-closing doors at all levels. **PSCO observed door leading to stairway on "C" deck was not self-closing.**
- Self-closing fire doors of the same fire integrity standards shall be fitted in the enclosure. **PSCO observed that the door to the steering room did not close and latch when released.**
- Doors required to be self-closing shall not be fitted with holdback hooks. **PSCO observed the following self-closing door held back with a zip-tie: door to the general service office in the cargo engine control room.**
- Fire doors in main vertical zone bulkheads and stairway enclosures shall be capable of remote and automatic release from a continuously manned central control station, either simultaneously or in groups, and also individually from a position on both sides of the door. **The fire door did not automatically release during fire drill.**
- Electrical installations shall be such that: the safety of passengers, crew, and ship from electrical hazards will be ensured. Dead-end wires were observed back stage in the theatre room, deck 03 starboard side. Dead wires were resolved in accordance with their ship's policies.
- **PSCO observed fire door to steering gear room has gasket heavily worn. Repaired on scene and tested for operation.**
- **PSCO observed holdback hook on an A-60 class self-closing fire door in the aft engine room.**
- The fire integrity of the divisions shall be maintained at openings and penetrations. **PSCO observed a 1cm by 1ft gap in a category A boundary between the engineer's workshop and the engine room.**

2 07126 Fire Safety/Oil accumulation in engine room

- The purpose of this regulation is to prevent the ignition of combustible materials or flammable liquids. For this purpose, the following functional requirements shall be met - means shall be provided to control leaks of flammable liquids. PSCO found oil leaking on the #3 auxiliary engine from the coupling shaft.
- In a ship in which oil fuel is used, the arrangements for the storage, distribution, and utilization of the oil fuel shall be such as to ensure the safety of the ship and persons on board. PSCO observed excessive amount of oily-water mixture in the bilge, excessive oil accumulation, oil rags, and excessive trash scattered throughout the engine room.
- The ignitability of combustible materials shall be restricted. PSCO observed multiple catch basins and plastic buckets throughout engine room containing oily rags and oil in liquid form.
- The machinery, boilers, and other pressure vessels, associated piping systems and fittings shall be of a design and construction adequate for the service for which they are intended and shall be installed and protected so as to reduce to a minimum any dangers to persons on board, due regard being paid to moving parts, hot surfaces, and other hazards. PSCO observed approximately 2 inches of pooling lube oil leaks under generators 1, 2, and 3.
- Means shall be provided to control leaks of flammable liquids. A small LO leak was discovered on the GE/LO pump.
- PSCO observed excessive oil accumulation in way of jacking gear for the main engine, main engine piping below fuel injectors, below common rail and associated lagging, fuel purifier inlets, and the lowest level forward bunker station valve in the engine room.
- PSCO observed aux gen no. 2 leak around electrical configuration. Wires were zip-tied and taped with oil present.
- PSCO observed excessive amounts of oil in the purifier room.
- Relief valves and air or over-flow pipes should discharge to a safe position. PSCO observed an overflow pipe for the port side #2 fuel tank that emptied into a bucket which contained standing fuel oil.
- The machinery associated piping systems, and fittings shall be of a design and construction adequate for the service for which they are intended and shall be so installed and protected as to reduce to a minimum any danger to persons on board. PSCO observed a fuel oil leak from high pressure fuel line at cylinder #1.



3 09209 Working and Living Conditions/Electrical

- Electrical installations should be such as to minimize the risk of fire and explosion from flammable products. Observed 3 light fixtures exposed to natural elements from water inside casing. 3 light fixtures located between tank domes 1 and 2.
- The safety of passengers, crew, and ship from electrical hazards will be ensured. PSCO observed missing panel with exposed wiring on No 2 HFO Purifier Control Panel.
- PSCO observed the deck in pool machinery room on deck 9 had an excessive amount of water on it, creating shock hazard with the electrical panels in the same space.
- PSCO observed inoperable and unserviceable equipment not properly tagged/locked out in main switchboard as required by SMS procedures.
- PSCO observed daisy chained power strips and multiple appliances plugged into spliced wires in ECR.
- All electrical apparatus shall be so constructed and so installed as not to cause injury when handled or touched in the normal manner. PSCO observed multiple light fixtures overhead air compressors improperly installed with modified equipment.
- In zones on open decks or non-enclosed spaces on the open deck, within 3M of any cargo tank outlet, gas or vapor outlet, cargo pipe flange, cargo compressor rooms; certified safe type equipment; and through runs of cables. PSCO observed approximately 5 lights in cargo compressor room with improperly installed wiring and missing ground wires. Additionally, all remote valve indicators are installed in such a way that operation of cargo valves causes damage to indicator wiring. PSCO observed broken packing nuts and damaged wiring on 50% of cargo valves.
- PSCO observed bonding straps broken and/or missing on cargo deck piping systems.
- PSCO identified unapproved cable spliced directly into cable box preventing electrical box closure.
- PSCO observed several dead-end wires, exposed wires, missing housing, and spliced wires throughout engine room, machinery spaces, and deck passageways.

4 07199 Fire Safety/Other (fire safety)

- Protection of means of escape or access for firefighting. PSCO observed wing-nut release for escape trunk from engine room was seized, preventing means of escape.
- Escape routes shall be maintained in a safe condition, clear of obstacles. PSCO observed steel beams cargo blocking the starboard side primary egress route on the cargo main deck.
- Doorways and corridors and intermediate landings included in the means of escape shall be sized in the same manner as stairways, shall not be less than 900mm in clear width, the minimum clear width shall be increased by 10mm for every one person provided for in excess of 90 persons. PSCO observed escape route door obstructed by multiple curtains on deck 10 starboard side in club O2.
- The means of escape, including stairways and exits, shall be marked by lighting or photoluminescent strip indicators placed not more than 300 mm above the deck at all points of the escape route, including angles and intersections. Additionally, escape route signs and fire equipment location markings shall be of photoluminescent material or marked by lighting. PSCO found escape routes not identified with signage in areas within the casino area.
- Any required low-location lighting (LLL) systems shall be approved by the administration. The LLL in the forward passenger stairwells on decks 4, 6, 7, and 8 were not illuminated entirely to include the top and bottom indicators.
- Escape doors from public spaces that are normally latched shall be fitted with a means of quick release. Escape doors from the Victorian Lounge do not have a quick release mechanism and consist of thumb latches that do not release when force is applied to the door release mechanism. The aft door on the Piano Lounge was found to be of the same configuration.
- Low location lighting on deck 4 amidships aft near wedding chapel found not illuminating.
- PSCO observed no emergency exit signage leading to escape routes in the port azipod control room.
- PSCO observed extinguished low-location lighting in the forward stairway deck 14.
- PSCO observed portable A/C units on port and starboard bridge wings with supply duct connected to bridge wing doors, blocking clear access to bridge wing means of escapes.



5 7120 Fire Safety/Means of escape

- Stairways and ladders shall be arranged to provide ready means of escape to the lifeboat and liferaft embarkation deck from all passenger and crew spaces and from spaces in which the crew is normally employed, other than machinery spaces. PSCO observed three rolls of matting obstructing the restricted yellow marked path in the electrical locker.
- Escape routes shall be marked by lighting or photoluminescent strip indicators placed not more than 300 mm above the deck at all points of the escape route, including angles and intersections. PSCO observed the low location photoluminescent was blocked by construction material on deck 03 FWD starboard side.
- Escape routes shall be maintained in a safe condition, clear of obstacles. Refrigerator door, leading into vegetable room, has an inoperable handle, impeding means of escape.
- Inoperable low location lighting adjacent to fire door.
- Alleyways, stairways and exits giving access to the muster and embarkation stations shall be lighted. Insufficient exit signage in the emergency generator space, by ships main diesel generators, and in the main gym that didn't lead occupants to exit.
- Aft crew stair 10 was found to have carts and cleaning supplies in way of escape path.

New vessels review

Trimaran crewboat launched

Thai shipbuilder Marsun has launched the Uniwis Commander, a trimaran crew boat. The triple-hull configuration is specifically developed for offshore personnel transfer operations in the region. According to Marsun, the vessel is capable of achieving a service speed of 34 knots while maintaining stability in wave heights of up to 2.5 metres. The vessel is propelled by waterjets.



Marsun stated the design offers enhanced stability and reduced vessel motion while providing increased deck space for equipment.

Something new from Dhamma Blue

Spanish boatyard Dhamma Blue has developed a hydrogen fuel cell and lithium battery hybrid propulsion system that gives their flagship DHB-P01 model all of the range and speed many recreational boaters would ever need – without pumping carbon dioxide and noxious fumes into the atmosphere.

The system has four core elements:

- Hydrogen tank holding 350 Litres / 8.4 kilograms at a pressure of 350 bar (5,000 psi)
- Fuel cell converting hydrogen to electricity
- Battery with storage capacity of 63 kiloWatt hours
- 140 kW (190 hp) electric motor with shaft line transmission

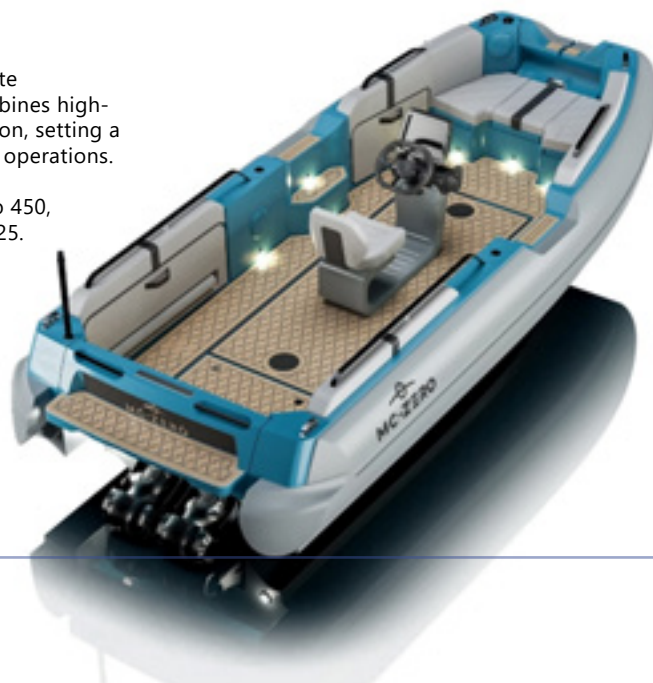
In the DHB-P01 system the cells and battery are linked to the motor in parallel, meaning either – or both – can power the motor. An ECU (Engine Control Unit) adjusts the input as necessary depending on the speed and load required. In general, the fuel cells are used for slower speeds / longer range and the battery for higher speeds / shorter bursts.

ZeroJet and McConaghy Boats launch MC-Zero electric tenders

Inspired by the advanced engineering seen in foiling monohulls from elite competitions such as the America's Cup, the MC-Zero joint venture combines high-performance composite construction with cutting-edge electric propulsion, setting a new benchmark in efficiency, safety, and sustainability for modern yacht operations.

The MC-Zero range launches with two models: the twin-engine MC-Zero 450, designed for the 4.5m (15ft) segment, and the single-engine MC-Zero 325. Both models are powered by ZeroJet's 48-volt, 30-kilowatt electric jet system, delivering responsive, high-output performance without the need for traditional fuel systems onboard.

The propulsion system is supported by 3C semi-solid state batteries from Australian supplier Safiery Pty, offering high discharge rates suited to demanding marine environments. According to MC-Zero General Manager Chris Baird, this combination delivers strong, reliable performance while eliminating the need for petrol storage or diesel feed systems onboard.



New vessels review



New truck-transportable tug completes sea trials

The first in a new series of compact, truck-transportable tugs has completed undergoing sea trials. Built by Silverback Marine of Tacoma, Washington, the tug measures only 25 by 16 feet (7.6 by 4.9 metres). Two Qummins QSL9 diesel engines drive Schottel Z-drives to deliver a bollard pull of approximately 7.2 tons.

The deck equipment includes a towing winch and two line handling winches all supplied by Wintech. The wheelhouse provides 360-degree visibility as well as upward-facing windows, thus significantly enhancing the helm operator's situational awareness.

The world's first carbon fibre twin 48V electric jet, MC-ZERO 450

Created to solve the real-world frustrations of yacht ownership, the MC-ZERO 450 features a rigid carbon hull and world-first and patent pending 'moveable helm' to give boaters back the versatility of increased deck space, to provide a stable and spacious platform that offers 40% more internal volume than a traditional RIB. The 450's modular deck is enabled by fly-by-wire technology to transform the vessel from a guest shuttle to complete gear-hauler in minutes, making the flagship the ultimate SUV of the sea. Twin electric jets allow full redundancy if needed which is ideal for large vessels cruising in remote locations.



Photo credit: MC-ZERO

Propelled by twin 30kW (equivalent 80HP) ZeroJet electric drives, the 450 delivers smooth, immediate power without the complexity, noise, exhaust or maintenance of combustion engines. Powered by the latest and safest 48V SAFIERY 32.4kWh solid-state battery system, the setup provides quiet, clean propulsion, designed specifically for modern yacht tenders.

Damen delivers purpose-built multi cat

Damen Shipyards Group has delivered a Multi Cat (MuC) 3113 to Leask Marine. The vessel was named C-Trojan in a handover ceremony at Damen Shipyards Hardinxveld's location in the Netherlands. The MuC 3113 is a highly versatile vessel, purpose-built for Leask Marine's requirements.

Damen outfitted the MuC 3113 with a DP1 dynamic positioning system, as well as a four-point mooring system, and has amended the layout of the vessel. This has included creating a separation between working and accommodation areas to help ensure crew well-being.



New vessels review

Extra Yachts introduces 21m X70 Shadow yacht

Extra Yachts has introduced its latest project, the X70 Shadow, a 21-metre GRP planing yacht, marking the introduction of a new line for the Italian builder.

Despite its compact footprint, the yacht offers flexible, spacious layouts that adapt to guest and operational needs. The stern features a 40-square-metre area configurable to accommodate a 5.2-metre jet tender, two Jet Skis, and two motorcycles, or a 6.5-metre daysailer and two Jet Skis.

Performance is set to come from twin Volvo Penta IPS D13 1350 engines, each delivering 1,000hp, delivering a top speed of 30 knots and cruising speed of 26 knots.



Apreamare unveils the new Gozzo 42

With the new Gozzo 42, Apreamare introduces a model that represents the latest milestone in the stylistic and design evolution of the Gozzo line. The Gozzo 42 expresses a natural evolution of the shipyard's design language; a boat with a clearly contemporary style that nevertheless stays true to the natural spirit of Sorrento gozzo boats.

Specifically, the boat can be powered by two Volvo Penta D6 engines with shaft drives – 380 hp or 480 hp – or by two Volvo Penta IPS units – 500 hp or 600 hp – for top speeds of between 27 and 36 knots and cruising speeds of between 22 and 27 knots.



The boat's range is ensured by one of the largest fuel tanks in the category, containing 1,200 litres. With a length overall of 12.80 metres and a maximum beam of 4.20 metres, the new Gozzo 42 is designed to accommodate up to 14 people on board, offering generous spaces and safe cruising even on challenging trips.

Aquila Catamarans launches the 45 Sport

Aquila Catamarans has launched the 45 Sport power catamaran. The 45 Sport utilizes double-stepped hull technology that delivers top speeds above 50 mph and efficient 30-40 mph cruising, with power coming from twin 600 HP Black Mercury Verado V12.

Its catamaran hull is carefully designed and sculpted to improve efficiency, reduce drag, and create a more comfortable cruising experience. The hull is built using a vinylester vacuum infusion process, which all Aquila models are made with, to provide maximum strength and durability. The vessel carries CE certification for B, C, and D classes.



New vessels review

Damen and Windcat launch Windcat Amsterdam

Damen and Windcat have launched Windcat Amsterdam in Europe. The vessel is the first Elevation series Commissioning Service Operations Vessel (CSOV) to arrive in European waters. The vessel has been developed in collaboration between Damen and Windcat and was constructed at the Ha Long Shipyard in Vietnam. With capacity for up to 120 people and advanced low-carbon solutions, Windcat Amsterdam strengthens Windcat's growing offshore service offering in the European market.

Designed for offshore deployment of up to 30 days, the vessel offers high operability and safety. The 3D motion-compensated gangway sets new industry standards. The high vertical range allows crew to transfer safely between the vessel and offshore platforms, even in challenging sea conditions. The world's first 10-ton 3D motion-compensated crane enables heavier platform lifts in rough sea conditions in a safe and easy manner. These features help maintain operations and reduce delays caused by changing weather conditions.



Large-capacity electric tour boat for operation on China's Pearl River

The China Shipbuilding Group, through its subsidiary 605 Research Institute, has handed over a new electric sightseeing vessel to local tour company Guangzhou Public Transport Group Passenger Ferry.

The newbuild has an LOA of 39.7 metres (130 feet), a beam of 13 metres (43 feet), a draught of only 2.1 metres (6.9 feet), a depth of 3.2 metres (10 feet), and space for 360 passengers across enclosed main and upper decks with panoramic floor-to-ceiling windows.

The vessel also has a lithium battery propulsion system and azimuth thrusters for enhanced manoeuvrability. The

propulsion can deliver a maximum speed of 9.7 knots while a cruising speed of seven knots will enable operation for up to seven hours. The other key systems include those for energy management, intelligent navigation monitoring, vibration damping for enhanced comfort, and automatic berthing to ensure faster turnarounds.

Axopar launches all-new 38 range

The 38 Range of boats marks the extension of the Helsinki, Finland's signature design - the 37 Range - which catapulted the company into the mainstream.

The new 38-foot model will carry an LOA of 11.84 m (38'10") with a 3.56 m beam (11'8"). The hull features a twin-stepped 22 degree V "sharp entry hull" with a max speed of 45 knots. Fuel capacity is an ample 830 litres (220 gallons). Power will be available with either twin 300 or twin 350 HP outboards for a total of 600-700 horsepower.

The 38 range showcases this new approach with its tri-generation hull, "designed to move with the sea rather than fight it, maintaining stability, agility, and composure in a wide range of conditions. At typical cruising speeds, where people spend most of their time, the boat delivers exceptional balance, predictability, and comfort."





Beijing Convention on the Judicial Sale of Ships enters into force

The Convention on the International Effects of Judicial Sales of Ships – also known as the Beijing Convention on the Judicial Sale of Ships – entered into force earlier this year, marking a major milestone for the international maritime legal framework.

The Beijing Convention was developed by the United Nations Commission on International Trade Law (UNCITRAL) and adopted by the UN General Assembly in 2022 to address the problem of bona fide new owners and those financing the purchase of vessels who, for instance, find themselves dealing with previous creditors laying claim to the ship as security for a loan.

Dr. Ann Fenech, President, Comité Maritime International (CMI), has highlighted the Convention's journey through UNCITRAL as 'remarkable'.

The United Nations Convention on the International Effects of the Judicial Sale of Ships promotes greater harmonisation and commercial certainty for purchasers when a judicial sale occurs in one jurisdiction and the vessel is registered in another. Under the Convention, the judicial sale of a vessel grants the purchaser a clean title, free of all encumbrances. While most jurisdictions already recognise such clean title, a few still refuse to give it legal effect. Previously, judicial sales of ships were governed by domestic laws, which varied widely between States. This treaty therefore represents a significant modernization that will reduce risk and friction in vessel transactions.

By reducing legal risks and removing uncertainty, it helps strengthen the ship market, supports maximum pricing in the market and facilitates smoother international trade.

The Convention applies when a judicial sale occurs in a State Party and the ship is physically within that State's territory at the time of the sale.

It has been signed by 33 States including Antigua & Barbuda, Barbados, Belgium, Brazil, Burkina Faso, China, Comoros, Côte d'Ivoire, Croatia, Cyprus, the Dominican Republic, Ecuador, El Salvador, Gabon, Ghana, Grenada, Honduras, Italy, Kiribati, Liberia, Libya, Luxembourg, Malta, Panama, São Tomé and Príncipe, Saudi Arabia, Senegal, Sierra Leone, Singapore, Spain, Switzerland, the Syrian Arab Republic, the United Republic of Tanzania and the European Union.

"The success of a Convention is totally dependent on the number of States which make it part and parcel of their domestic law through ratification. So, the work of the CMI and in particular the IWG on the ratification of the Convention continues with our deliverable being to convince as many states as possible to ratify the Convention," said Dr. Fenech.

Global agreement on fishing vessel safety to enter into force in 2027

Argentina has become the latest country to accede to the 2012 Cape Town Agreement, triggering its entry into force in 12 months. The Agreement has met the requirements for entry into force and will enter into force in February 2027, closing a longstanding gap in the global maritime safety framework.

It sets out mandatory safety standards for more than 45,000 fishing vessels of 24 metres in length and over, according to FAO data, helping to prevent casualties, improve working conditions for fishers, enhance competitiveness and protect the marine environment.

Welcoming the milestone, IMO Secretary-General Mr. Arsenio Dominguez said, "Thousands of fishers lose their lives every year while working to supply the world's growing appetite for fish and fish products. The 2012 Cape Town Agreement will help protect fishing crews, while safeguarding vessels."

Argentina accedes to the CTA

Argentina became the latest country to accede to the Agreement, with H.E. Ms. Mariana Edith Plaza, Argentina's Ambassador to the United Kingdom, depositing the instrument of accession on 24 February 2026 at IMO Headquarters in London.

This brings the total number of Member State accessions to 28, representing 3,754 vessels of 24 metres or more in length. The Cape Town Agreement enters into force 12 months after at least 22 States, collectively representing 3,600 qualifying fishing vessels – typically ocean-going ships operating on the high seas – consent to being bound by the treaty.

Keeping fishers and ships safe

Once in force, States Parties must incorporate the provisions of the 2012 Cape Town Agreement into national law and enforce it as they would any other legislation.

Flag States must ensure that vessels under their registries comply, while Port States have the right to inspect foreign vessels in their ports to verify compliance with the 2012 Cape Town Agreement requirements. These cover the design, construction, equipment and inspection of fishing vessels, as well as vessel stability and seaworthiness, machinery and electrical installations, life-saving appliances, fire protection and communications equipment.

Beyond safety, the Agreement is also expected to support the reduction of marine plastic pollution from abandoned or lost fishing gear.

Four pillars for fishing vessel safety

The 2012 Cape Town Agreement is the culmination of decades of work by IMO, building on earlier international instruments that did not enter into force, including the 1977 Torremolinos International Convention for the Safety of Fishing Vessels and the 1993 Torremolinos Protocol. The treaty is now set to enter into force in 2027, nearly 15 years after it was adopted in 2012.

The Cape Town Agreement represents the fourth pillar in global fishing vessel safety, alongside the following key instruments, all of which are in force:

- IMO's STCW-F Convention on training and certification of fishers.
- ILO's Work in Fishing Convention, 2007, which sets minimum requirements for work on board, including hours of rest, food, minimum age and repatriation.
- FAO's Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) Fishing, 2009, which seeks to combat IUU fishing through effective port State measures.

Key requirements for domestic transport under the UK ETS

Lloyd's Register (LR) has provided information about the upcoming inclusion of domestic maritime transport in the UK Emissions Trading Scheme, outlining key compliance obligations and regulatory requirements for shipowners and operators.

From 1 July 2026, the UK Emissions Trading Scheme (UK ETS) will cover domestic maritime transport on ships of 5,000 GT and above operating on domestic UK routes and in UK ports. According to LR, shipowners and managers need to prepare now to ensure compliance as shipping companies will be legally required to monitor, report and surrender UK ETS allowances for greenhouse gas emissions (carbon dioxide (CO₂), Methane (CO₄) and Nitrous Oxide (N₂O)) from qualifying ships.

Reporting and allowance deadlines

The scheme's first reporting period covers six months (1 July-31 December 2026). From 2027 onwards, the reporting period covers a calendar year (1 January-31 December). A verified emissions report must be submitted by 31 March (of the year following the reporting period) to the relevant regulators using the Manage Your UK Emissions Trading Scheme (METS) system.

Emissions allowances must be surrendered by 30 April (of the year following the reporting period). To allow maritime operators time to ensure they can meet these reporting requirements, there will be a one-off double surrender deadline for the 2026 and 2027 schemes of 30 April 2028. However, the verified report deadline for 2026 remains 30 March 2027.

Applicability of domestic UK ETS

The domestic UK ETS will apply to any companies operating a ship carrying cargo or passengers which:

- Undertakes a voyage between two UK ports (but excluding Crown Dependencies and British Overseas Territories).
- Undertakes activities in a UK port, irrespective of whether the preceding or next voyage is UK domestic or international. In-port activities include hoteling, cargo operations and all movements within a UK port of call.

Exemptions to domestic UK ETS

The following ship types are exempt: armed services ships, law enforcement vessels, government surveillance/marine protection vessels, navigation/safe passage support vessels, fishing and fish processing vessels, publicly funded research vessels, coastguard and search and rescue vessels, medical emergency response vessels, non mechanically propelled ships, primitive wooden ships and Scottish ferry services.

Offshore vessels are only exempt until 31 December 2026.

UK emissions allowances

Each year regulated companies must purchase and surrender UK allowances equivalent to:

- 100% of emissions from UK domestic voyages and in-port activities
- 50% of emissions from voyages between Northern Ireland (NI) and Great Britain (GB).

Regulated entities and UK ETS regulator

The regulated entity responsible for compliance with the UK ETS is the registered owner by default, unless these ETS responsibilities have been delegated by written agreement to the ISM company, and the regulator accepts the evidence. Responsibility for administering the UK ETS depends on where the operator is based and will be one of:

- Environment Agency (EA) – England and all non UK operators
- Natural Resources Wales (NRW) – Wales
- Scottish Environment Protection Agency (SEPA) – Scotland
- Department of Agriculture, Environment and Rural Affairs (DAERA) Chief Inspector – Northern Ireland.

These regulators will approve monitoring plans, receive emissions reports (through the common Manage Your Emissions Trading Scheme (METS) account), as well as enforcing compliance and imposing penalties.

Emissions Monitoring Plan (EMP) approval

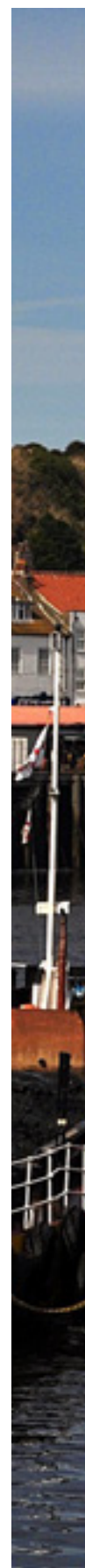
From 1 July 2026: Each maritime operator must apply for approval (by their relevant regulator) of their Emissions Monitoring Plan (EMP) within 42 days of performing its first maritime activity. This EMP must be compiled at a company level (not at the ship level).

- NOTE: Verifiers are not involved in the approval of the EMP. Applications for an approved EMP must be made through the UK Manage your Emissions Trading Scheme (METS) platform.
- Early onboarding: The Environment Agency is supporting early onboarding of shipping companies into the UK ETS METS to get early approval of EMP before 1 July.

Enforcement and penalties

Civil penalties may be applied where a company does not comply with the requirements of the domestic UK ETS, including: Publication of non-compliant operators.

Regulators will publish names of operators who are subject to emissions penalties.



IMO FAL 50: Key outcomes

The Facilitation Committee met at IMO Headquarters in London for its 50th session (FAL 50) from 23 to 27 March, where key matters were discussed.

The Facilitation Committee (FAL) deals with matters related to the facilitation of international maritime traffic, including the arrival, stay and departure of ships, persons and cargo from ports. The Committee also addresses electronic business, including the single window concept, and aims to ensure that the right balance is struck between regulation and the facilitation of international maritime trade.



Amendments to the FAL convention

According to Lloyd's Register (LR), amendments have been introduced to the Convention on Facilitation of International Maritime Traffic, 1965, with entry into force on 1 January 2028.

This resolution introduces changes to Recommended Practice 6.24 under Section 6 on public health and quarantine, including sanitary measures for animals and plants, which advise Administrations to facilitate changes, movement, vaccination, and access to medical care for crew during episodes of international public health emergency.

It also replaces the expression "Maritime Declaration of Health" with "Ship Declaration of Health" in line with Resolution WHA77.17 (2024) from the International Health Regulations (2005). The "Ship Declaration of Health" is a form that shall be carried by any seagoing or inland navigation vessel on an international voyage.

Summary of significant outcomes

Below is a brief overview of some of the significant outcomes from FAL 50, as provided by Lloyd's Register (LR):

1. Strategy on maritime digitalization

An action plan cataloguing current ongoing IMO digitalization work and proposing gap-closing outputs will be drafted. Administrations/delegations must submit any new outputs formally to MSC / MEPC / LEG / FAL.

A draft maritime digitalization strategic plan was finalized and will be submitted to MSC, MEPC and LEG for input/endorsement, with a

revised draft due at FAL 51 (2027) and adoption targeted at Assembly 35.

2. Maritime cyber code

The IMO has initiated work on a goals-based, non-mandatory Maritime Cyber Code. The Code is expected to be completed by 2028 and should be flexible to allow Contracting Governments to account for regional/national requirements.

3. IMO Compendium

A new version of the IMO Compendium has been adopted. It includes a number of new data sets.

4. Amendments to FAL convention

A new resolution modifying the FAL Convention was adopted with an anticipated entry into force of 2028. The amendments are related to public health.

Future amendments will include non-mandatory data submission requirements for Advance Passenger Information (API) and Booking and Reservation Information/ Passenger Name Record (BRI).

These changes are expected to be adopted at FAL 51 (2027). Implementation of these changes will be left to the discretion of Contracting Governments.

Strategy on maritime digitalization

As explained by LR, a correspondence group was established and is expected to develop an action plan which will capture all the current digitalization initiatives that the IMO is developing as well as proposing new potential outputs to close any gaps identified. The action plan will only be a list of proposed potential work and should not be treated as an agreed list of work.

Administrations and delegations are expected to review the action plan and formally propose and develop the new outputs to be submitted under the relevant IMO committees (MSC / MEPC / LEG / FAL).

In addition, a draft strategic plan was finalized. However, as digitalization is a cross-body topic, this draft strategy will be presented at MSC, MEPC and LEG committees for their views, developments and endorsement. The correspondence group will then be expected to take any comments into consideration and present a revised draft strategic plan at FAL 51 (2027). Assembly 35 is then expected to adopt the strategy.

It was agreed that the guiding draft principles of this digitalization strategy should be:

- Standardization to ensure different systems can communicate and share information seamlessly
- Adoption of human centered design to reduce workloads, administrative burdens and improve usability
- Engagement of end users from early design stages
- Establishment of a data governance framework
- The need for scalability and flexibility
- Supportive of innovation and solution agnostic
- Support long term viability and resilience to disruptions

And its objectives:

- Efficiency, safety, security and cyber resilience and reliability enhancements
- Support for compliance with relevant instruments
- Support decision making and insights

Draft revision to MSC-FAL.1/Circ.3/Rev.3 – Guidelines on maritime cyber risk management

The International Association of Ports and Harbors (IAPH) has produced new Cyber Resilience Guidelines for emerging Technologies in the Maritime Supply Chain. It contains principles to achieve cyber security for emerging technologies in the maritime supply chain. The revision to the circular introduces the IAPH guidelines as supporting documents when implementing cyber risk management (MSC-FAL.1/Circ.3/Rev.3 – Chapter 4).

Maritime Cyber Code

IMO has agreed to start the development of a new, goals-based, non-mandatory Maritime Cyber Code, LR informs.

After its completion, an Experience Building Phase (EBP) is foreseen to capture any lessons from Parties' experiences and implementation. It is expected that the new code will provide enough flexibility to take into account regional and national requirements and will apply to ports, ships and ship-shore interface.

An intersessional working group will continue to develop the Code. It is expected that the Code will be finalised and approved by 2028 (FAL 52).

Review and amendments to the IMO Compendium

As explained by LR, the IMO Compendium aims to harmonize the vast array of electronic data exchanged between ships, ports and other stakeholders. It includes IMO data sets and an IMO reference model which provide a common format and semantics for such data.

This enables IT systems from different stakeholders to exchange data efficiently with shared meaning, while supporting the harmonization of MSWs and Port Community Systems (PCS).

The IMO Compendium consists of the IMO Data Set and the IMO Reference Model:

- the IMO Data Set identifies and defines the data elements and individual data sets supporting maritime regulatory or business processes relevant to international shipping (cargo item gross weight, date and time of arrival, next port of call, etc)
- the IMO Reference Model serves as a guide for developing the ICT systems

The current version of the IMO Compendium, approved by FAL 49, has 29 data sets, almost 950 data elements and 85 business rules, and the IMO is responsible for 42 different code lists. A new version of the IMO Compendium has been approved with the addition of the following new data sets:

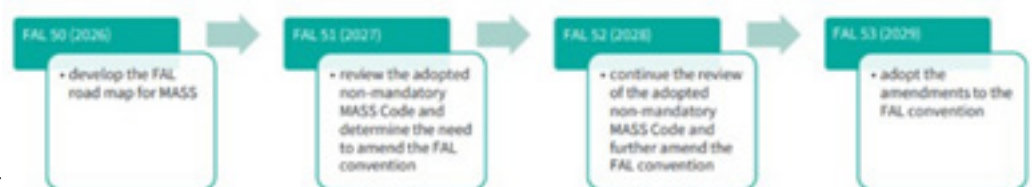
- Meteorological and oceanographic observations
- Delivery bill for mail consignment as described in the Acts of the Universal Postal Union, the Universal Postal Convention and its regulations currently in force
- Ship Sanitation Certificate as set forth by the International Health Regulations
- Seafarers related information and STCW certificates as a work in progress

Development of high-level business process flows and descriptions for data sets in the IMO Reference Model

It was agreed that the Expert Group on Data Harmonization (EGDH) should further discuss what instruments or business processes are required to help and aid stakeholders in the use of the IMO Compendium.

MASS at the next FAL meeting (FAL 51)

A new road map to address MASS issues related to the FAL convention was developed.



New IACS recommendation for hull structural steels up to 100mm thickness

The International Association of Classification Societies (IACS) has introduced Recommendation 197 (Rec.197), marking a significant advancement in the regulatory framework governing hull structural steels.

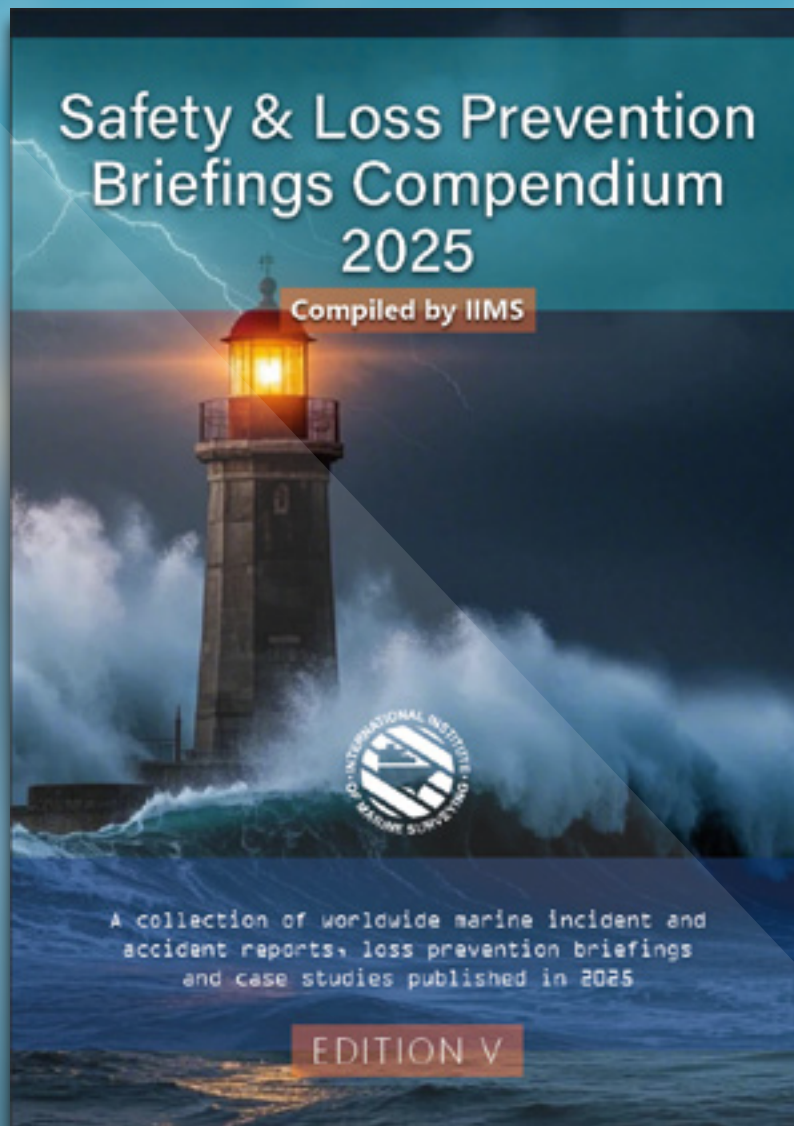
Building upon the established provisions of IACS Unified Requirement W11, which address steel thicknesses up to 100 mm, this new recommendation responds directly to the evolving demands of modern shipbuilding and offshore engineering.

As vessel sizes and structural loads continue to increase, the industry has seen a growing reliance on thicker steel plates in critical, highly stressed regions of the hull. Rec.197 provides harmonised, technically robust guidance for steels ranging from over 100 mm to 200 mm in thickness, reflecting both advances in manufacturing practices and the collective experience of IACS Member Societies. "This new recommendation will help ensuring a harmonized technical framework for hull structural steels up to 200mm, which in turn will enhance safety," commented Ajay Kumar, IACS GPG Chair.

The Recommendation also clarifies the testing and sampling arrangements applicable to thick steel products, including:

- tensile testing with specimens located at approximately quarter thickness;
- impact testing generally performed at quarter thickness locations;
- the possibility, subject to agreement with the Classification Society, to use impact specimens taken at mid thickness with appropriate acceptance criteria.

THE 2025 COMPENDIUM IS
available for download



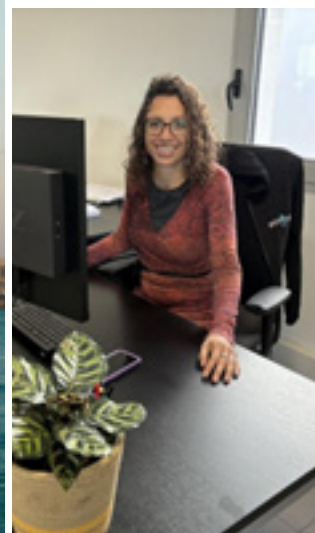
<https://bit.ly/4pKqd5n>

OR VIEW PAST COMPENDIUMS AT
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TECHNICAL FAILURES BEHIND MOST BALLAST WATER DETENTIONS

by **Charlène Ceresola** (pictured)



Results from the 2025 CIC on Ballast Water Management (BWM) show ballast water system itself accounts for 46% of all detainable deficiencies.

Results from last year's Concentrated Inspection Campaign (CIC) on ballast water management revealed a marked change in regulatory compliance failures, which now include the actual performance, operation and maintenance of installed ballast water treatment systems.

Charlène Ceresola, BWT Project Manager and Regulatory expert at BIO-UV Group, Port State Control (PSC), explained that data show that while documentation and record-keeping issues remain widespread, the most serious non-compliances are technical in nature.

"When you look at the total number of compliance failures, documentation still ranks high. But once you focus specifically on deficiencies serious enough to result in a ship being detained, the majority are associated with the ballast water treatment system itself," said Charlène Ceresola.

The Paris MoU and Tokyo MoU launched a Concentrated Inspection Campaign (CIC) on Ballast Water Management (BWM) on 1 September, running until 30 November 2025. RISK4SEA also presented final insights from the total period of 90 days of the CIC, revealing ballast water recordkeeping, system operation, management plans, and crew training as the key areas of focus. Over the 3-month period, Ceresola underscores that the ballast water system itself accounts for 46% of all detainable deficiencies, followed by deficiencies in crew training (21%) and the Ballast Water Management Plan (15%).

As in 2024, the most frequent deficiencies reported by the Paris MoU on Port State control related to poor ballast water record book-keeping, inadequate crew training, system unfamiliarity, and invalid or missing certificates.

"The number does not imply widespread system failure, but it does mean that when an issue escalates to the point of detention, it is very often because the system has been

poorly maintained and not performing as it should. Ship managers and crews must start addressing these gaps in system upkeep; it will cost them substantially more than a new UV lamp," said Ceresola.

Furthermore, Ceresola notes spare part availability has emerged as a decisive factor behind corrective actions, with some operators struggling to find components for legacy systems.

"The CIC results have highlighted how quickly minor issues can escalate when systems are poorly maintained or when crews lack the tools or system knowledge. You cannot fix a neglected system the day before an inspection," she commented. "If you do not have the spare parts, there is no way to catch up overnight."

Additionally, she explained that ballast water training and familiarization remain uneven across the industry and are often not yet treated as a core operational competence.

"Work is underway at IMO level to better integrate ballast water management into standard maritime education and certification frameworks, but in the meantime, the responsibility rests with ship management. Crews must be properly trained on the specific BWTS installed onboard and regularly refreshed to account for turnover and operational drift," she noted.

Alongside these findings, the CIC results have also reinforced concern that some manufacturers can be unresponsive to customer service and after sales requirements, leaving shipowners exposed when inspections identify weaknesses onboard.

In conclusion, Charlène Ceresola said, "Reliable support, spare-parts availability, on-going system training on are now critical elements of compliance, not optional extras. More suppliers do need to commit to aftersales support. This will ensure system performance remains compliant throughout the system's life, while refresher familiarisation addresses the realities of crew turnover. This is how PSC detentions are avoided."

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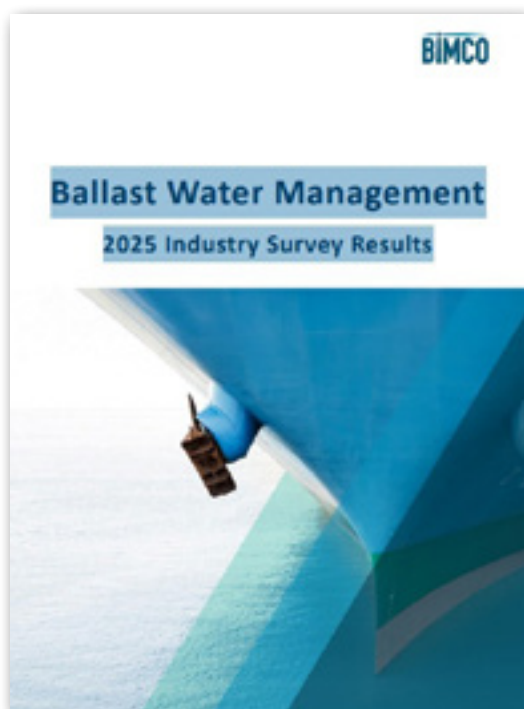
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Ballast Water Management 2025 report published by BIMCO

BIMCO has published its Ballast Water Management 2025 report, presenting the results of its industry survey on the operational realities of implementing the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention).

Since September 2024, the BWM Convention has entered a mature phase of global implementation, with most of the world fleet operating approved BWMS under the D-2 standard, yet practical challenges related to system performance, usability and enforcement under real trading conditions have become increasingly evident.

The Ballast Water Management 2025 report confirms that, while global implementation of the BWM Convention has reached a mature phase, significant operational challenges persist across ship types, trades and ballast water management system (BWMS) technologies.

"These challenges are not isolated or exceptional, but systemic and recurrent, particularly during time-critical port operations, cargo handling and ballast uptake or discharge under challenging water quality (CWQ) conditions," explains BIMCO.

Operational findings show that Ballast Water Management System (BWMS) performance is often constrained by environmental conditions, system behaviour and alarm management. Frequent alarm cascades, intermittent shutdowns, sensor faults, and unpredictable system responses, often

occurring during peak crew workload. UV-based systems were identified as particularly sensitive to challenging water quality (CWQ), with low UV transmittance frequently triggering alarms, automatic shutdowns, or forced bypass during ballast uptake.

Importantly, CWQ was described not as an exception but as a routine and predictable reality in many ports, rivers, and estuaries. Consequently, the use of contingency measures has become a normal component of ballast water management (BWM) in practice.

Respondents reported regularly activating contingency pathways in line with IMO guidance, due to CWQ, system malfunctions, time pressures, or extended repair periods caused by limited access to authorised service engineers or spare parts.

In some cases, defects remained unresolved for more than two months, making contingency measures unavoidable. In addition, experiences during third-party inspections further indicate that BWMS-related findings remain common.

Inspection challenges were most often linked to:

- system malfunctions
- alarms
- documentation gaps
- and difficulties demonstrating compliance when contingency measures had been applied.

Respondents further highlighted inconsistent interpretations by inspectors regarding alarms, system behaviour, and contingency actions, creating compliance uncertainty -even when crews were acting in accordance with manufacturer instructions and IMO guidance.

BIMCO also highlighted the significant human-element implications of BWMS operation. Frequent alarms, troubleshooting demands, and administrative burdens increase crew workload, particularly during port operations, contributing to fatigue and, in some cases, rest-hour exceedances.

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



WinGD and Envision Energy study shows path to green ammonia cost parity

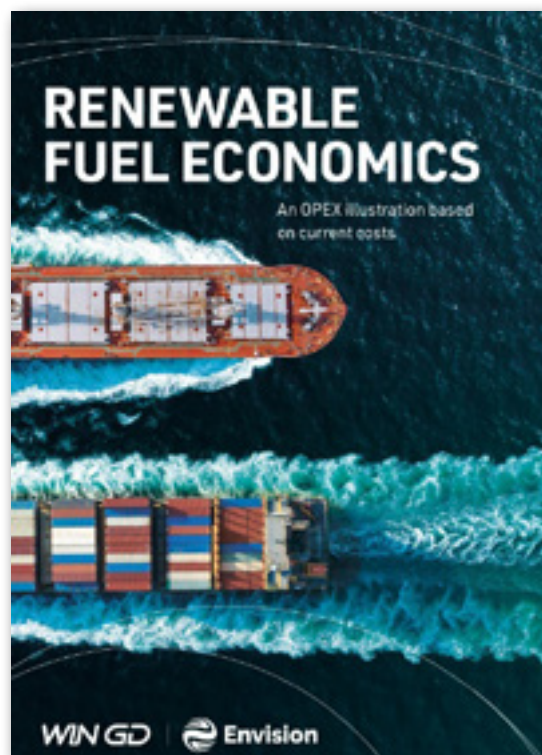
WinGD, a Swiss marine power company and Envision, a world-leading green technology company have released a pioneering study analysing the operational costs of ships powered by renewable fuels. The findings reveal that under moderate global regulations, green ammonia could achieve cost parity with VLSFO and LNG at current prices, even before additional subsidies or rewards associated with zero-emission fuels.

The study, an operating expenses illustration of green-fuelled vessels on the container and bulk trades between China and Australia, uses verified lifecycle emissions factors and current estimated bunkering pricing along the coast of China. By 2050, green ammonia is projected to outperform LNG on a cost basis, with a predicted 5-6% lower lifecycle operating cost.

Fuel consumption, use of consumables for emissions abatement and tank-to-wake emissions are based on real-life performance of engines in WinGD's existing portfolio: ammonia-fuelled X-DF-A, methanol-fuelled X-DF-M and LNG-fuelled X-DF engines. For the vessel cases studied, the illustrations show how VLSFO and LNG are currently the most cost-competitive fuel options, with green ammonia reaching a similar and eventually lower net costs under a global regulatory regime.

The study finds that e-LNG and green methanol may have a longer path to viability, requiring the addition of higher rewards under a global regime—although the price evolution will depend on the speed at which producers can increase volumes. Further fuel candidates and power configurations will be modelled by WinGD in future studies.

The collaboration between WinGD and Envision comes as both companies ramp up the introduction of green fuels and technologies to the shipping market. Envision's Chifeng green ammonia plant is already producing around 320,000 tonnes annually, with exports having commenced in Q4 2025. Envision offers a proprietary, full-stack technology package for green hydrogen and ammonia production. By 2028, the industrial park is projected to produce 1.5 million tons of green ammonia per year, serving as a replicable model for clean industrial hubs worldwide.



Download the study at <https://bit.ly/4sXQsqf>.



Accelerating uptake of green ship fuels

Neither regulation nor ethics alone can push shipping to decarbonisation – what's needed is a clear business case.

Slowing climate change: moral imperative or regulatory necessity? At first glance today, it would seem neither. Outside of Europe, there is no carbon pricing scheme in effect for greenhouse gases emitted by ships. And while morality – in its corporate guises of ESG reporting and reputation management – may offer some incentive to big, public facing companies, it is unlikely to move the smaller ship owners, operators and charterers that make up the backbone of the international shipping market.

Those companies face an increasingly challenging global economic environment, while flying under the radar of public expectations around sustainability. Why invest in expensive new fuels and technologies without a financial penalty to avoid or reward to accrue?

In the absence of a coherent global policy on pricing shipping's emissions, it won't be moral conscience that drives companies towards green fuels and zero-emission shipping – it will be a clear business case.

Is there a business case for green ship fuels without carbon pricing?

Motivated first movers are already confident they can make it work – evidenced by strong year-on-year growth in methanol- and ammonia-fuelled newbuild orders.

To explore the business case for the wider market, Swiss marine power company WinGD partnered with green fuel supplier Envision Energy to illustrate the current costs of using clean fuels, the cost gap between those fuels and their conventional cousins, and how that gap will be closed while a global regulatory framework is agreed.

The vessel cases shown are based on existing fuels and propulsion technologies at current prices. They show that, while the green fuels remain more expensive today, the gap is closing. It will close further with future price evolution, technology advances and – if there is a will – supportive global policy.

Crucially, the modelling also shows that at current green ammonia prices, only the surpluses and remedies element of the proposed IMO Net Zero Framework – without further reward – would be enough to make ammonia competitive against a conventionally fuelled vessel.



Nations' readiness for decarbonization under the microscope in new report

A new report from the UCL Shipping and Oceans Research Group finds that no major maritime nation is fully prepared for the tightening decarbonisation rules being negotiated at the International Maritime Organization (IMO). The study, the first systematic comparative assessment of national policy posture across ten major shipping nations, warns that some of the world's most technically capable maritime nations, including high income economies, face an "incumbent paradox": their current asset base, in combination with their national policy's misalignment with the IMO's Revised Strategy, creates risks that may weaken and/or forestall their incumbency. Equally, some countries with lower existing lock in and stronger latent industrial potential are better positioned to take advantage of clear/strong GHG policy at the IMO and disadvantaged by fragmented regional policy.

Dr Pinar Langer, Research Fellow at the UCL Energy Institute Shipping and Oceans Research Group, said, "This report shows that countries are not starting from the same place in the shipping transition, and that readiness depends on more than headline ambition alone. What matters most is whether policy signals, investment priorities and transition planning are aligned in ways that support scalable zero-emission pathways and reduce risk of long-term lock-in"

The report assesses national alignment with the IMO's 2023 GHG Strategy across three domains - greenhouse gas targets and long-term planning; fuel pathway signals; and shipbuilding transition support for ten major shipping nations.

Countries fall into four distinct policy-posture archetypes:

1. Aspiring Leaders (USA, China, UK): Strong green-fuel readiness and comparatively lower LNG lock-in exposure, better position them to benefit under a comprehensive global deal.
2. Hedged Incumbents (Singapore, South Korea, Japan, EU): Highly capable, but maximum LNG exposure creates acute vulnerability if well-to-wake standards and carbon pricing tighten.
3. Developing Industrialists (India): High industrial transition potential and zero LNG legacy risk - a potential "leapfrog" economy if international finance mechanisms close the investment gap.
4. Policy Takers (UAE, Malaysia): High LNG exposure and weaker domestic transition signals; face conflicting compliance demands and imported transition costs under divergent regional regimes.

The report draws three overarching policy implications for governments seeking to implement the IMO 2023 Strategy. First, managing transitional fuel lock-in is as important as setting long-term targets: LNG-specific infrastructure creates asymmetric downside risk under stringent regulatory designs, making early planning for orderly pivot pathways and lifecycle (well-to-wake) performance increasingly urgent. Second, credible IMO fund, reward and finance mechanisms are not optional - they are central to both formation of a broad majority of support for a policy design at the IMO, and to activating high-potential countries such as India without imposing unfunded compliance burdens. Third, governance coherence reduces system-wide transition costs, while prolonged fragmentation amplifies compliance complexity and deepens technology-taker dependence for countries with weaker industrial transition capacity.

The report also highlights the risk of "pseudo-action" under a partial NZF deal scenario: a standards-only NZF outcome may temporarily validate LNG-heavy strategies while weakening the investment case for genuinely zero-emission fuels, raising long-run adjustment costs across the sector.

Prof. Tristan Smith, Professor of Energy and Transport at UCL Shipping and Oceans Research Group, said: "It is clear from this analysis that although IMO's Revised Strategy was unanimously adopted, countries are at different points in their journey to convert that outcome into national policy. It's also clear that maritime nations face risks from their incumbency, which are not always best served by a weak outcome in how IMO's Net Zero Framework now advances. There is significant complexity in how competing pressures might play out both within IMO's member countries and between countries."

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



NEW marine reports and guides

Blue Marine Foundation publishes 2025 annual review

The Blue Marine Foundation has published its 2025 Annual Review, highlighting a year of significant conservation progress across global marine ecosystems. The report outlines the organisation's key achievements and ongoing work towards its goal of helping protect at least 30% of the world's oceans by 2030.

According to the foundation, 2025 delivered some of its most impactful results to date, despite what it describes as a challenging political and funding environment for environmental organisations. Through collaboration with governments, scientists, and local communities, Blue Marine has continued to campaign for stronger marine protections while addressing growing threats such as destructive fishing practices and habitat loss.

In total, Blue Marine Foundation says that 446,620 square kilometres of ocean are now on the path to protection, through new marine protected area (MPA) commitments, designations, and fisheries closures. During the year, it also engaged 13,750 stakeholders in ocean policy initiatives and community-led conservation programmes, while working with partners across 29 countries.

Among a raft of notable annual success, the release of the documentary OCEAN with David Attenborough in the UK and Blue Marine's associated campaigns have helped drive public debate around destructive fishing practices. The film's premiere was hosted by the foundation in London and contributed to momentum behind a government proposal to close 41 English offshore MPAs to bottom trawling, covering approximately 30,000 square kilometres of ocean.

Speaking in the report, CEO of Blue Marine Foundation, Clare Brook, said, "Thanks to the team, we have defied the political headwinds and delivered our biggest, most impactful year so far. We know we have far more to achieve in 2026, but we're heading into the second half of the Ocean Decade full of ideas and positivity."



Download the report at <https://bit.ly/3NaSX9s>.



Australian Commercial Marine Industry releases landmark Economic Impact Study

The Australian Commercial Marine Group (ACMG) has released the Australian Commercial Marine Economic Impact Statement (EIS), revealing the sector supports 137,262 jobs nationally and contributes \$25.16 billion to the Australian economy each year, with \$50.93 billion in total industry business output.

Commissioned by ACMG and prepared by independent economic consultants AEC Group, the report provides the most comprehensive assessment to date of the Australian commercial marine sector. It measures the industry's direct, supply chain and broader economic impacts, including employment, wages and industry activity across tourism, logistics, manufacturing and trade.

The EIS is a critical benchmark for industry growth, with ACMG CEO David Good asserting that the study marks a pivotal step in strengthening the industry's voice and ensuring its value is recognised in national decision making. David commented, "This study provides hard evidence of the economic significance of Australia's commercial marine sector. For the first time, we have a robust, independent benchmark that captures the full scale of the industry's contribution to jobs, productivity and national prosperity. The EIS will help guide policy, investment and long-term growth."

The EIS defines the commercial marine sector with clarity, ensuring the report accurately reflects the true commercial marine footprint. It covers passenger vessels, event and function boats, workboats, deep sea charter fishing vessels and tourist boats, and excludes vessels used primarily for leisure such as houseboats, as well as defence, cargo, freight and cruise ships.

The study found the Australian commercial marine industry generates:

- \$50.93 billion in annual business output
- \$25.16 billion in Gross Product contribution to the Australian economy
- 137,262 full time equivalent jobs supported nationwide
- \$14.2 billion in wages paid to Australian households each year

The findings provide a strong evidence base to support government policy, infrastructure investment and workforce development across Australia's marine industry. The report also highlights the importance of the sector's supply chains, which extend across transport, tourism, advanced manufacturing, engineering and marine science.

Of note, the study highlighted New South Wales as the largest economic driver followed closely by Queensland. However, with the opportunities to be presented by the upcoming Olympic Games, Queensland is expected to surpass NSW if the comprehensive 2032 Marine Project currently residing with government is adopted.



LR survey warns fatigue, inconsistent leadership and reluctance to speak are driving yacht safety risk

Inconsistent leadership and variable safety priorities, along with indications that formal procedures are not always followed, are creating avoidable risks across the yacht sector.

Additionally, current levels of crew engagement mean that opportunities to recognise and respond to both perceived and emerging risks are not being fully realised onboard.

These are findings from Lloyd's Register's (LR) Yacht Safety Culture and Wellbeing Survey, which gathered input from crew and shore-based professionals working across a broad range of yacht sizes (all over 24 metres) and operating models. The survey indicates that although safety-critical rules, checklists, and safety meetings are in place, their effectiveness is frequently diminished by financial, operational, and guest-driven pressures, as well as by crewing levels and workload demands.

Process and procedures, along with communication, were identified as relative strengths underpinning safety culture onboard. Crew generally understand basic risk principles and say that well-run safety meetings help them work more safely. However, the survey highlights significant variation between yachts in how consistently these practices are applied.

Engagement emerged as a critical area requiring attention to strengthen reporting culture, trust, and safety performance. Respondents conveyed low confidence in reporting, challenging decisions, and speaking up without fear of negative consequences. Engagement is notably lower on yachts under 500 GT and among long-tenured crew, who report declining trust in follow-through related to safety observations and improvement suggestions. On smaller yachts in particular, unclear roles and responsibility were seen to weaken accountability and make it harder for crew to raise concerns.

Owner and management company priorities and instructions and onboard leadership behaviours were found to be a decisive factor. While some captains and senior crew demonstrated and encouraged engagement, others were perceived as prioritising schedules, guest experience or commercial demands.

Fatigue and workload pressures featured heavily throughout the survey. Long hours, reliance on overtime and limited recovery time were repeatedly cited, especially during busy seasons. Engineers and senior officers recorded the lowest wellbeing scores, reflecting sustained responsibility and operational strain. The findings show that when fatigue becomes accepted as normal, risk increases.

The survey also identified missed opportunities in learning from incidents. Based on engagement results, better reporting practices are needed. Although investigations take place, respondents described inconsistent follow-up and limited sharing of lessons learned. Some crew said that excessive reporting of minor issues diluted meaningful learning and reduced confidence in reporting systems.

Positive wellbeing was linked to better focus and safer behaviours. Good food, good connectivity and regular contact with home were consistent wellbeing boosts, but support for stress, fatigue and mental health onboard varied widely. Many crew were hesitant to raise wellbeing concerns due to inconsistent follow-through and low trust in reporting processes. Overall, the findings show that wellbeing systems exist but are inconsistently implemented.

Download the LR Advisory - [Yacht Safety, Culture & Wellbeing Survey Report](#)



NEW marine reports and guides

New white paper calls for aligned wind propulsion verification standards

Anemoi Marine Technologies Ltd and Lloyd's Register have published a new paper calling for closer alignment between methodologies used to verify the performance of wind-assisted propulsion systems (WAPS).

The "Performance Verification Methodologies for Vessels with Wind-Assisted Propulsion" white paper demonstrates how complementary frameworks can be combined to improve consistency, transparency and confidence across the maritime sector.

The study builds on LR's 2025 verification of Anemoi's in-service performance and forecasting model calibration methodology. It evaluates how this approach aligns with the International Towing Tank Conference (ITTC) sea trial guidelines and DNV's recommended practice for in-service testing.

While ITTC focuses on short-term validation under controlled conditions and DNV provides long-term operational assessment, Anemoi's method bridges the gap by linking real-world vessel data to robust fuel-saving predictions.

Key finding

This paper compared three approaches for verifying WAPS performance: ANEMOI, ITTC guidelines, and DNV practices. While all use ON/OFF comparisons, they differ in scope, uncertainty treatment, and application. ITTC provides controlled, short-term verification, DNV ensures rigorous long-term assessment, and ANEMOI combines in-service measurements with modeling for actionable fuel-saving predictions.

"Accurate measurement and prediction of the real savings made by vessels using WAPS is essential for giving confidence to ship owners and operators who want to harness wind energy in order to reduce environmental impact and fuel costs," explained Luke McEwen, Technical Director, Anemoi Marine Technologies Ltd.

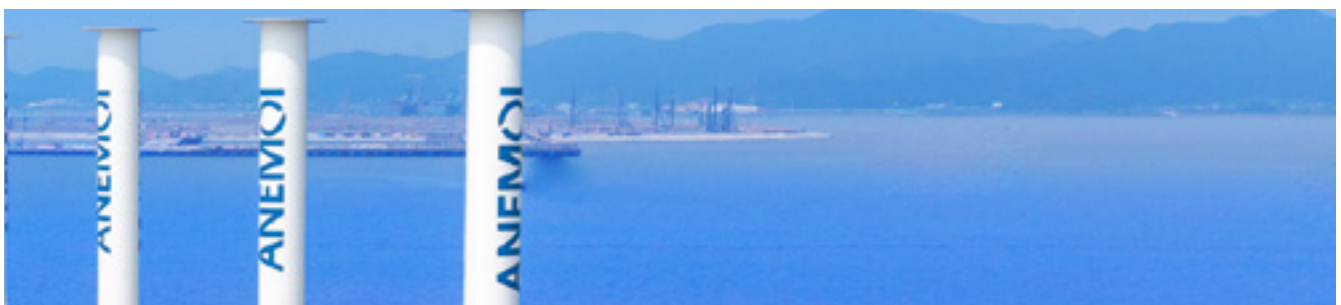
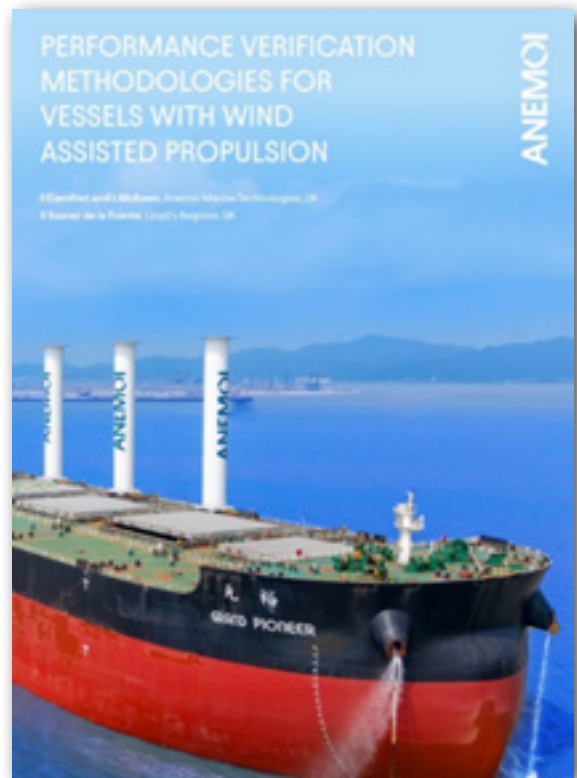
The paper has concluded that future standardization would benefit from unifying controlled verification principles, explicit uncertainty treatment, and validated performance prediction. Such an approach would improve comparability, strengthen confidence in reported savings, and support wider adoption of WAPS.

"Verification of performance assessment methodologies is a core part of LR's mission to assure both safety and efficiency standards for maritime stakeholders—and particularly important in emerging sectors where processes have yet to be fully standardized," said Dr Santiago Suarez de la Fuente, Ship Performance Manager, Lloyd's Register Advisory

Key recommendations

- The white paper has also provided a series of recommendations. Some of these include:
- Verify WAPS performance with in-service testing under real-world conditions; use ITTC trials for quick, controlled checks.
- Combine verification with model-based prediction for decisions beyond tested conditions; ensure the approach is clear, documented, and auditable.
- Choose performance metrics that match the intended use; force-based metrics are preferred for calibration and extrapolation.
- When using power- or energy-based metrics, define how ON/OFF differences, speed-power curves, and propulsive efficiency changes are handled.
- Correct and normalize data for environmental variability; check controlled conditions, correct baseline drift, and standardize wind measurements.
- Report uncertainty transparently for regulatory, third-party, or contractual purposes.
- Use model-based approaches for long-term or commercial decisions to reduce testing and maximize fuel savings.

Read the white paper at
<https://bit.ly/4uszm5u>.





Rescue and Restoration: A snapshot in the journey of Heritage Boat 43M

Background & History

To introduce the vessel 43M. Heritage Boat 43M is from the Irish Grant canal system which was built in Ringsend boatyard by Vickers in 1927. The boat was built for the Grand Canal Company as a transport barge serving the Grand Canal, the River Shannon Navigation and the River Barrow Navigation.

The boat operated from the late 1920s until the late 1950s when the canal ceased trading. The boat had an unfortunate set of uses from 1959 onwards. The boat was cut down by 11" to open the hold up so it could be used as a small boat floating drydock. 43M was later converted to a pleasure boat but had many years neglect and dereliction in private ownership until it sank around 2009.

*Damien Buckley
BEng.MIEI MSc.MCT*

The boat was removed from the navigation by Waterways Ireland and sat until 2025 on the hard in a boatyard. Waterways Ireland offered the boat for tender, and Damien Buckley was the tender bid winner.

And here this snapshot of our journey starts.

Introduction

Damien Buckley is a barge restoration enthusiast from the Ireland's midlands, based in Co. Offaly. He and his family have restored a number of barges over the past 20 years and campaigned hard to be the restorers of 43M.

Damien first tried to purchase 43M privately in 2007/2008 but was unsuccessful and instead ended up restoring a different Irish Canal boat, 1B, which he subsequently sold during the economic downturn. Damien later purchased the two halves of Heritage Boat 44M, joined them back together, and successfully completed her restoration in 2022.

The Restoration

The restoration began in October 2025 with a full survey of the hull and an assessment of its weak points. This assessment showed some serious structural issues. The base plate of the boat was sitting up to 9" high in the centre of the boat and the bilges had cracked along each side - basically her back was broken!

This prompted a change in the original stabilising strategy which was to build "W" type trusses inside the hold to take the inward pressure of a crane to lift the boat. Instead of just trusses it was necessary to install 9" RSJs across the hull's width just above the turn of the bilge. Once each RSJ was installed four 30T bottle jacks were used to push down on the bilge plate to bring the bottom back flat.

The addition of the RSJ across also held the sides square and allowed the bilge to return to its radius. Once the shape had returned, box section stand offs were welded to the RSJ and to the base plate, and the jacks were removed. The hull was back into shape, and the trusses could now be added. The addition of the RSJ allowed for the truss shape to be changed to a "V" type truss. A second cross support of 3" angle was added touching the underside of the deck in line. From this support a V shape structure was installed pushing moments of force around the structure when outward pressure would be in play from the crane straps.

43M was now stable and could be moved. No time was wasted and within hours of bracing she was successfully lifted and placed on a trombone trailer for transportation to Damien's yard in Banagher Co. Offaly, Ireland.

Once 43M arrived at its stand in the yard the work began. A teleporter was brought in to help lift off the old superstructure and wheelhouse. There wasn't much left holding it.

The old wheelhouse floor was taken up to give access to the engine room and there we found a very old British Leyland 370 engine up to its manifold in water. We proceeded to pump the engine room out and remove the engine. The engine had been mounted on the old truck cross member from whatever vehicle had donated it and was barely bolted to the engine beds. The engine had been setup to cool directly from the boat's old ballast tank, a brave move running water from the tank directly to the un-marinated engine.

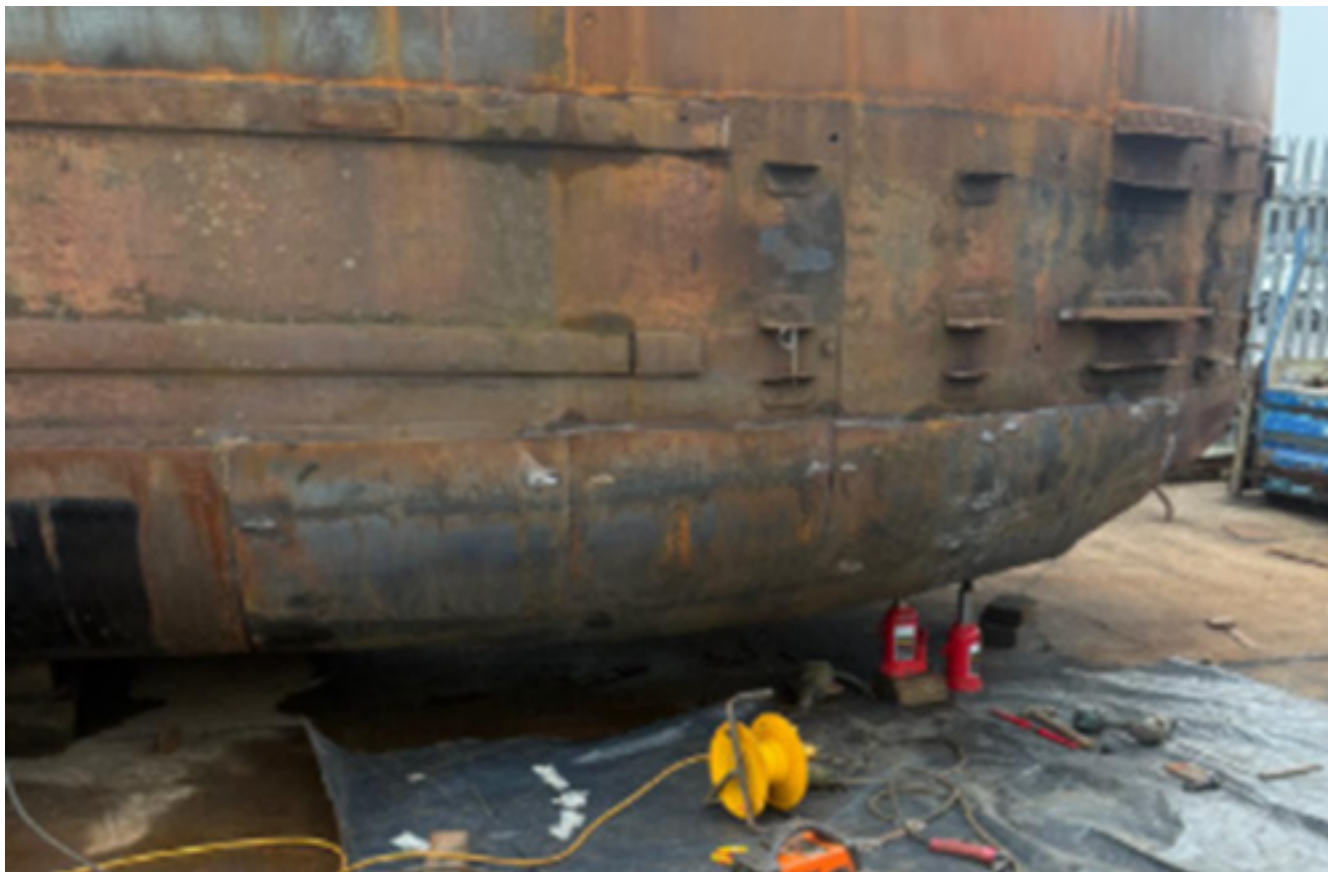
Despite 16 or so years of being submerged the engine turned straight over using a big spanner. This is something that gets a bit of attention further down the road to see if it will run. At the same time as all this strip back was going on the first of the build-up started. Damien had hidden an old Ford D series short block in the back of his shed waiting for such a project to come along. The D Series, a straight 6 cylinder, came from British Army surplus and with a donor engine also stuck in another corner a recondition and rebuild starter. 43M was basically getting a new 1970s engine!

A pause to assess what state the hull was in brought a few head scratches and deep drawings of breath, but on the project went. The original belief was that 43M had been cut down by 6" but in measuring her sister ships, she was low by just under 11". The hull had holes in the bilges, the baseplate and the bow were paper thin underneath, and the ballast tank had rotted.

Some foresight had been used in getting ready for the boat's restoration. There was an assumption that the bilge plate and bilges were beyond ordinary repair. A new bottom had been prefabricated in the workshop and was sitting on the boat's stands ready for the arrival. When 43M was lifted into place it was placed onto new 8mm bilge plate and 6mm bilges. The new bottom was attached by drilling 18mm holes at 18" intervals along the old line of her ribs and impacting 16mm bolts through it before welding seams along the joint lines of the bottom section and then welding the bolt heads.

Tackling jobs one at a time, the decks were removed and all the issues were laid bare for all to see. The deck had only been stitched on and this caused major rot along the edge of the hull. The rot had to be cut back, and the sides of the boat brought square. The boat had





sagged out by 4" along the deck line but with a number of chain blocks this was straightened. Once all this had been squared up the sides were extended using 6mm plate to match the 1/4" plate on the original. There was around 0.2mm difference between them, so it worked well.

The bow and stern were a slightly more challenging story. The ballast tank in the stern had rotted at its bulkhead and along the waterline of the hull. The hull had been cut down in a banana shape and was a bit butchered. This made the rebuild in the area very much more difficult, dealing with squaring up the old sides along with replating and rebuilding the tank's bulkhead. If the ballast tank was to be used as a cooling tank again it would need to be watertight and retreated.

And one by one the jobs continued. The bow was next. A very deep crease in the starboard side of the bow was evident in her from photos taken in the 1940s and 1950s. This damage had caused the inside supports to rot away over time and the ribs to rot. It wouldn't be possible to remake the round shape of the bow with this damage, so it had to be repaired. The outer bumpers were removed to gain

access and 2 x 4' slices were cut along the metal to allow it to be pulled out. The inner rib and rivets were then removed, once the rib was out the metal could be pulled using the forklift and a bottle jack and finally the bow took shape again. After all this the rib was replaced and the cuts welded back up.

43M took up her original shape and dimensions again. The decks could be re-added, the old 8mm diamond plate had been carefully removed and was reusable. This was a big score as the diamond plate is difficult to get and is expensive. The bow and stern were decked out, and the side decks were on. 43M was now becoming a boat again. The wheelhouse floor was installed 9" below the deck to allow for bridge clearance and the design was taking shape.

The superstructure was built 30" off the deck. This was for no other reason than it looked good and was half of a 5' x 10' sheet. The cabin was roofed using rolled 2" box section overlayed with 4mm sheets. The front cuddy was pushed forward and the bulkhead moved to allow for maximum main cabin space and headroom during fit out.

From there, we went on to the wheelhouse, and it came together beautifully. The roof is 13ft long and 9'6" wide, a great space with 6'10" head height. A forward-facing window design was used to save the bother of installing a wiper and side access sliding doors were installed to save on cost. It's much cheaper to build sliding doors out of spare box section than it is to have custom doors made at over £1,000 each.

The boat was now together. The hull was repaired, new superstructure and wheelhouse added, and we awaited the rebuilt engine back from the Ford specialist. Glass and windows were required. That took us onto the internet. Wesley Marine Windows has a great section on their site which lists cancelled or unused orders. Fortunately, there was a full set of superstructure thermal break windows that worked with the dimensions and layout. They were on a pallet and away in quick time, a major saving. The wheelhouse was simpler. The frames were built into the structure and double glazed units, locally sourced, were installed. The side doors would provide enough ventilation, so again a major saving.

From there we got on with those nice things that make the boat look good. Firstly paint. The boat

was prepared, cleaned and primer applied. The topcoat was going on a day later. The whole boat was painted with three coats of zinc phosphate semi-gloss paint, locally manufactured, and a good proven coating on many other M boats.

Keeping up the nice work, battens were fixed to the steelwork inside, and the boat got a good 2" coat of closed cell spray-foam from our local supplier, Pro Spray Foam. A big step on for the project, it always takes shape when the spray foam goes in. The 17T of 4" concrete blocks that had been lifted in before the superstructure went on were then spread out between the boat's ribs. This allowed for the floor support timbers to go in and the ¾" ply to make a floor.

It is all down to finishes from this point. The first fix wiring was installed and the roof light in the saloon was put in place. The plumbing with the water tank were all put together. This pace of fit out is blinding for a hobby project, but there's a target event. We wanted to make the canal boat rally in Shannon Harbour, Co. Offaly. Heritage boats 44M and 45M are going to be there and to be able to capture these vessels in a set of photographs along with many of the

other M's that are still around would be incredible.

A pallet of marine plywood arrived. It is taken below deck for lining and partitioning. Three straight weeks and there was a very spacious boat emerging. This is more a team effort now that there's an end in sight. Interest and help were coming from all angles. This was just in time. It had been an exhausting restoration and a tough winter!

The engine arrived back in the middle of all this. It was quickly squeezed through the door and into the engine room. There followed a week of alignment, wiring and piping. It is all well worth it. The vessel is new and runs like new. While that side of things was happening, a further two days went into sorting the steering and mounting a wheel.

A little bit of decoration to conclude, and she's as ready as she's going to be for a couple of summer events.

The crane and truck are booked again, and it is off to the river for her first run in nearly 20 years. Another boat saved and, although beyond economical repair, she wasn't beyond repair.



This is the Marine Notice that first attracted Damien to the sale and potential purchase of Heritage Barge 43M.

Marine Notice No. 93 of 2025 – All Navigations

Issued: 22 August 2025

Sale of Heritage Barge 43M

Waterways Ireland invites public tenders for the disposal of the former CIE canal barge 43M, built 1928, a vessel of considerable heritage value. The barge is currently stored on the hard at New Ross Boat Yard, Waterford Road, Raheen, New Ross, Co. Wexford, Y34 V967, Ireland.

Waterways Ireland's preference is for the vessel to be restored in a way that recognises its heritage value. Accordingly, all tender submissions must include a plan outlining the proposed restoration of 43M which demonstrates how its heritage value will be preserved. In the absence of a suitable buyer, and restoration plan, Waterways Ireland reserves the right to dispose of 43M by way of scrappage.

Public Viewing. 43M may be viewed externally only between 11:00 hrs and 15:00 hrs on Saturday, 13 September 2025 at New Ross Boat Yard.



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RESPONSIBILITIES AND AUTHORITY OF A SHIP'S MASTER REGARDING THE ISM CODE

By **Capt Bertrand Apperry**,
HonFIIMS and IIMS Past President



INTRODUCTION

Referring to the ISM Code, one might think that the responsibility of the shipmaster would be limited to the application of the Company's Safety Management System (SMS), whereas the spirit of the ISM Code lies elsewhere, particularly in its objectives, which can be recalled here:

Objectives of the ISM Code: *To ensure safety of the vessel through an internal organization with a view to providing safe operating practices and a safe working environment by ensuring compliance with the mandatory rules and regulations concerning it and by taking into consideration industry recommendations relevant to its activities.*

However, the ISM Code was created nearly 30 years ago with a desire for not only universal compliance, but also for continuous improvement, which is important to the International Maritime Organization (IMO). We must therefore find this improvement objective through intelligent application of the Code.

Furthermore, given that the ISM Code was deliberately designed to be concise, it is important not to rush through the requirements. The original text is often intentionally more specific than you might think and has given the shipmaster another hidden responsibility: verifying compliance with the Safety Management System (SMS).

Process

For an SMS in operation and mandatorily "declared" compliant by a flag, this should theoretically be simple. Indeed, if the flag itself commits to complying with the Code while considering it as an acceptable minimum and certifying it as compliant with an official Document of Compliance, it is committing to safety at sea at an international level. So, assuming that all flags are reliable, even when they delegate to ROs, we could assume that all ships operating around the world comply with the ISM Code.

Then, after regularly verifying that each of the company's ships strictly enforces its SMS, the flag company

commits and issues a Safety Management Certificate (SMC) to each ship "managed" under the same SMS. These two certificates are the key to operating internationally.

Then, if the flag state is reliable, it will ensure that the ship complies with European regulations, if applicable, and that the port regulations of the ports it visits are known and followed.

After five years - at the IMO, we're very much on a five-year basis - it's time to review the SMS. Everything evolves so quickly today, including our safety culture, so we'll take the opportunity to improve it if necessary. In this process of maintaining compliance and

continuous improvement, between two visits from its flag administration, it is up to the company to ensure the operation of its SMS as specified with particular regard to the ISM Code where a DPA (Designated Person Ashore) has been chosen, which will ensure this compliant operation in complete theoretical independence from the management.

However, a major player seems to have been somewhat overlooked in this operational chain via the SMS: the ship's Master. This person is the key to effective on-board implementation, in cooperation with the DPA, and liaises with the shipowner and their company regarding this implementation. This key is essential to all ship operations, whether technical, safety, human, or commercial, and, of course, as a "profit centre" for the shipowner.

Since the SMS is the main instrument for ensuring the safety of the ship and its passengers, as well as environmental protection, it is logical that this SMS should be the Master's bedside book.

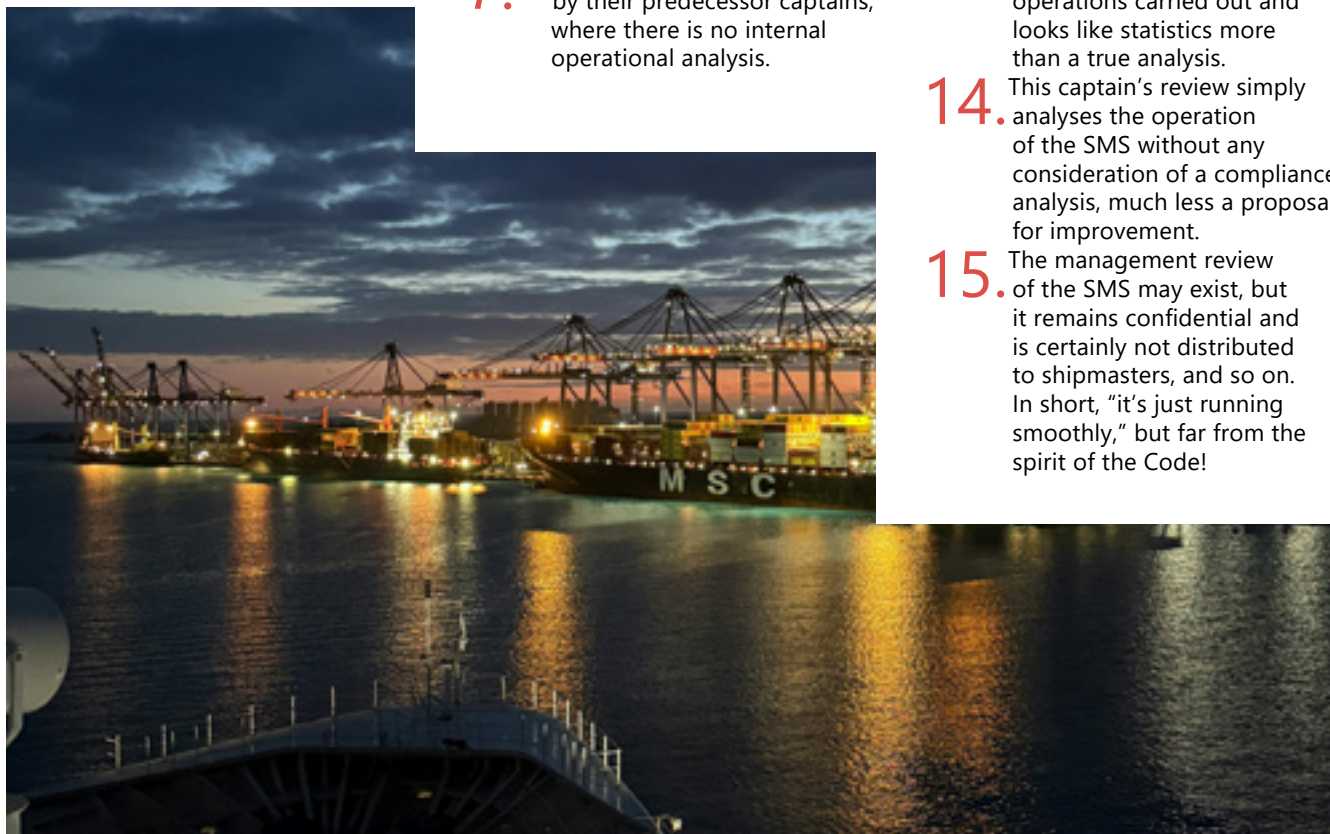
While their ultimate responsibility remains tied to their discretionary power (SOLAS V rule 34-1), which is also logically included in the SMS.

So, with all this clearly defined, what does the ship's Master do?

The captain incurs liability, i.e., sometimes their personal freedom, via the company's SMS, which they are specifically responsible for implementing on board. Upon arriving on board, they may encounter:

1. A text message declaring compliant by a flag administration that is sometimes lacking in competence and, moreover, sometimes subject to "pressure" from the shipowner.
2. A huge and poorly performing, almost generic SMS, often.
3. A copied SMS, but poorly copied, poorly pasted... from another similar SMS.
4. A virtual SMS, existing only "off the shelf", of a model provided by an RO.
5. A simple paper exercise disguised as a virtual operation, a "smoke factory", as the Anglo-Saxons would say!
6. A chaotic SMS operation without any real self-analysis or verification by a company DPA, a person virtually "unknown" to the crew.
7. A text applied more or less by their predecessor captains, where there is no internal operational analysis.

8. There are internal audits sometimes carried out by the DPA themselves, without the necessary independence, and therefore few anomalies and no major non-conformities are revealed, with the added bonus of repeated "self-satisfaction"!
9. External audits are a little more incisive, but not too much, especially for the shipowner's wallet.
10. The crew is not consulted in any way by the captain who authored the annual review... as long as things are running smoothly, we leave it at that. Remember the terrible "no waves syndrome". Besides, it's rare that SMS is discussed during the monthly Ship Safety Committee (SSC).
11. There are a few incidents in the ship's daily life, but all of them are minor, and sharing with company feedback records was not deemed necessary.
12. The annual external flag audit is always a key moment; however, the objective remains to "not make waves", and under no circumstances is the right to criticise or even raise an alert... especially not.
13. The Master's annual review simply lists safety operations carried out and looks like statistics more than a true analysis.
14. This captain's review simply analyses the operation of the SMS without any consideration of a compliance analysis, much less a proposal for improvement.
15. The management review of the SMS may exist, but it remains confidential and is certainly not distributed to shipmasters, and so on. In short, "it's just running smoothly," but far from the spirit of the Code!



So, what should be done, considering the following:

- With respect to the Shipowner, the ship's Master remains responsible for the entire vessel and therefore for the operation of the SMS on board their vessel.
- With respect to the flag, the Master must fulfil the responsibilities listed in the ISM Code, with personal checks related to obtaining the SMS, correcting non-conformities, and taking into account recommendations.
- With respect to the PSC (Port State Control), the Maritime Administration of the host port may consider that the SMS is not functioning properly and requires immediate corrective action to avoid detention, which is the nightmare of its owner or charterer. The Master of the vessel must therefore decide or transmit corrective actions to lift or avoid detention. Any defects noted are also reported to the flag. (NB: until recently, the PSCs never emphasised the critical points of the SMS because the reliance on the DOC apparently was still existing).
- Regarding the SMS created by the company, the Master must regularly (annually) conduct a review on board and report any deficiencies to the company: a functional review, certainly, but... not a compliance review?

To ensure all this, the Master should lead SSC meetings, considering the opinions of their crew members, especially regarding the operation of

the SMS at the level of each person on board... to use this in their personal assessment (captain's review).

All this is theory!

But aren't the shipmaster's responsibilities ultimately more important than that?

The compliance of this SMS has been verified by an Administration, any Administration, or its representative (class or other RO) which has issued a DOC. Therefore, the Shipowner can theoretically use their vessel anywhere. Notwithstanding the annual verification of the operation of their SMS, and apart from the random PSC, they have virtually every opportunity to use their supposedly compliant vessel as they see fit complying with international regulations for the safety of persons, property and environmental protection.

However, the ship's captain may have a different idea of the application of the ISM Code. Perhaps acquired through personal knowledge or through previous contracts with a Shipowner who opted for more than the minimum. Maybe even if they come from the oil or gas transport sector, where, thanks to the TMSA (Tanker Management & Self-Assessment), the SMS minimum has been forgotten for long.

The Master may be a special employee due to their status as a collaborator of the Shipowner, but they are nonetheless obliged to report any problems to management. Especially when they affect the safety of the vessel, the people on board,

and the protection of the marine environment. As stipulated by the ISM Code, the operator must report to the company "gaps" in the SMS, the implementation of which they are supposed to monitor aboard. Indeed, "to review something" implies both examination and criticism for some improvement... otherwise, it makes no sense!

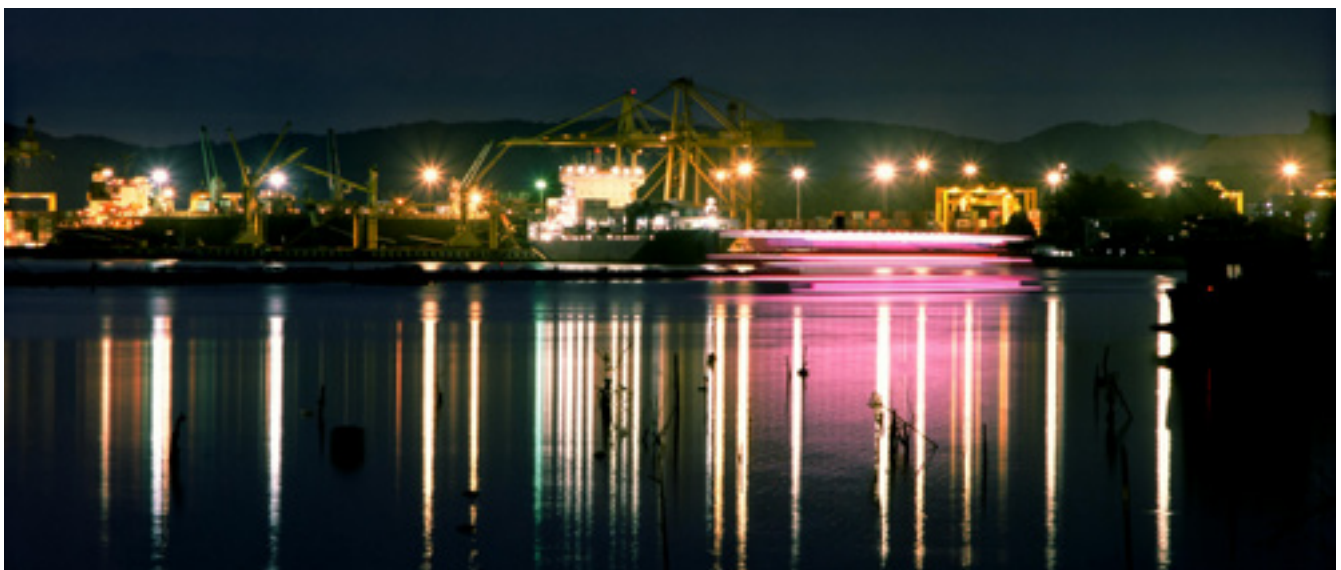
This may be an opportunity to link the ISM Code to this modern notion of contradiction. Indeed, the Code never specified that the company's SMS, declared compliant, was something set in stone... on the contrary, we might say!

Let's recall here what the ISM Code itself says:

5. CAPTAIN'S RESPONSIBILITIES AND AUTHORITY

5.1. The company should clearly define and establish in writing the captain's responsibilities with regard to:

1. implementing the company's safety and environmental protection policy;
2. encouraging crew members to apply this policy;
3. issuing appropriate orders and instructions in a clear and simple manner;
4. verifying that specifications are being met, and
5. periodically reviewing the safety management system and reporting any deficiencies to shore-based management.



Let's break down each requirement:

1. Implement the company policy

It is obvious that the Master, representing the Company, cannot do anything other than apply the policy decided by management in the form of an SMS to be implemented, and also to apply the company's procedures and follow any instructions. To ensure this implementation, the Master must have advanced knowledge of the ISM Code and the Company's SMS, as they will also have to assess the SMS's compliance as well as its application on board their vessel.

2. Motivating the crew members to implement this policy

IMO somehow intended to involve the Master in motivating the crew to implement the Company's policy... which is what ensures the "pay" at the end of the month, after all.

We could have said: "oblige and assist the crew to implement the Company policy via the SMS as part of their duties"... that would have been clearer for our sailors.

In "motivating," there's more than just simple application; there's also the encouragement to apply... an additional notion of participation!

This participation today could be distinguished in the Master's periodical review when, for example, they describe the safety committee results as something other than a "crying office".

The management, in its instructions, and the DPA during their visits, will encourage the Master to motivate their crew through a simple description of the benefits of giving their opinion, including in a critical manner.

3. Give appropriate orders and instructions

Nothing new under the sun: The Master's orders and instructions have been part of our culture for ages. Their introduction as a code requirement solves the previous problem: the Master's orders must include the application of Company policy, and in particular, compliance with the procedures and instructions contained in the SMS. This normally also includes the crew's participation in improving the system through an internal organisation like the safety committee today.

Notice: A relatively recent method will help us: nothing prevents the shipowner from including a paragraph on the application of the SMS on board in the seafarer's employment contract, specifying the mandatory knowledge of the SMS and its consequences, as well as its continuous improvement. If this is not done at the company level, it can also be done via the Master's standing orders if necessary... while, fortunately, SMS is still improving, little by little every day.

It is specified that the orders must be simple and clear. We will use existing material, even if only the parts of the STCW Code on watchkeeping, for example. If the job descriptions are already well developed, this will simplify the standing orders.

A reference to well-established texts (IMO, for example) will avoid repetition... and these texts have the advantage of being clear and precise!

Ultimately, the Master will be left with specific orders concerning their vessel and

its operations, as well as ad hoc orders depending on circumstances, including weather conditions (order book, which includes a daily section, for example).

When we talk about orders...

We must also talk about the language in which these orders or instructions are given. Multilingualism comes back to haunt us here again. Orders must be given in the crew's working language. When there are multiple languages, orders in English are therefore necessary!

While I have no doubt about is the Master's English, the crew's level of English is often insufficient. Therefore, don't hesitate to translate orders into certain languages spoken on board (Tagalog, Ukrainian, Russian, Spanish, Arabic).

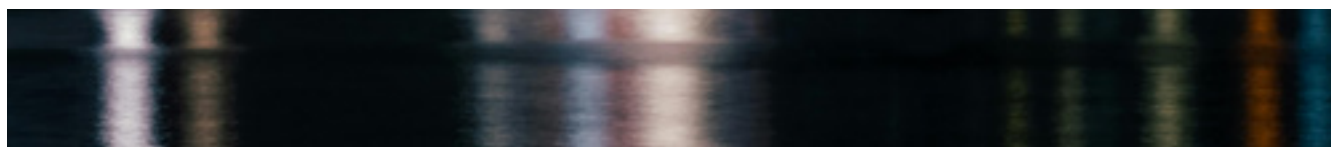
Warning: The English comprehension test is increasingly common in Flag State and Port State Controls at all crew levels.

4. Verify that the specifications are met

A little ambiguous, but still fantastic! This involves verifying that what was specified in the SMS is being applied. The Master in charge of the vessel ensures the vessel's operations follow the company's procedures and instructions. They, in a way, provides on-site oversight assigned to the DPA, who remains on land. This link between the DPA and the Ship's Master is obvious... but apparently not to everyone!

5. Reviewing the SMS

Here, then, there is a possibility of interpretation: Reviewing the SMS is one thing, while reviewing the application of the SMS on board, as many have understood it, is another!



By analysing the “safety and environmental protection” situation on board during the period in question, the Master can, using performance indicators for example (see below), measure the application of the SMS on board. This is still quite simple and will, in theory, be of great use to the DPA in their preparation of the management review (as

understood by a correct SMS) on the one hand. And on the other hand, they will take the opportunity to give their opinion as the person ultimately responsible for the compliance of the SMS with the ISM Code as they understood it. For the modern Master in a serious company, this is in some way a new task which is added to the other commercial or technical reports or is a part of them.

Proposed contents of a Master’s review concerning the implementation of the Company’s SMS

- 1 **Introduction:** Evolution of SMS implementation compared to the last review - Status of achievement of the captain’s objectives
- 2 **Analysis of SMS operation on board:** Summary of analyses
 1. Suitability of the vessel with the SMS and possible proposals
 2. Crew readiness to respond to emergency situations
 3. Status of the vessel’s certificates
 4. Analysis of the operation of the vessel’s maintenance system
 - Status of vessel compliance
 - Operational status of the vessel from a safety perspective
 - Status of critical components and systems
 - Status of safety equipment
- 3 **Overall analysis of internal and external audits**
With copies of internal audits and external audits.
- 4 **Results of internal accident investigation analysis**
- 5 **Overall analysis:** Requirements for periodic or special flag and/or PSC inspections and analysis of the follow-up to any requirements or recommendations
- 6 **Analysis of feedback from the vessel**
- 7 **Evaluation of the application of the SMS on board**
- 8 **Personal assessment by the Master of the compliance of the Company’s SMS with the ISM Code**, with a list of questions regarding the regulations that concern us, including local regulations in the ports visited
- 9 **Suggestions for improvements, with their degree of urgency**
- 10 **Conclusion and new objectives of captain UNTEL**

Tools related to the captain’s responsibility:

The Safety Committee (Rule 4.3 of the MLC 2006)

Ship Safety Committee (SSC)

Created by the MLC 2006 and therefore applied on board vessels with more than five crew, the Safety Committee is a mandatory tool that assists the Master in the management of the vessel. For crews of fewer than five, the captain replaces the safety committee (this is generally already done in the SMS).

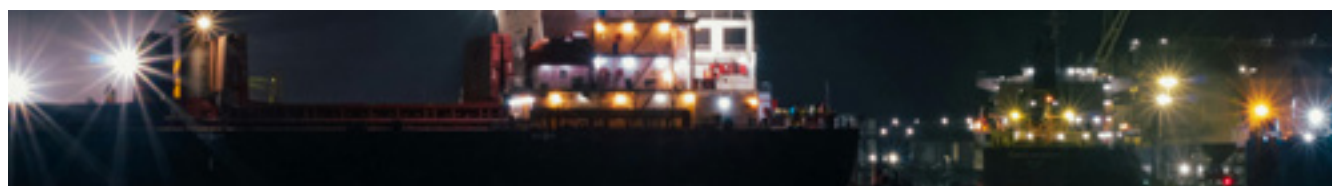
Beyond this, a committee is formed to address all aspects of safety, health, and risk prevention on board. This involves implementing the Company’s safety/health policy and program (e.g., the ship’s operator holding the DOC).

Note: Any additional “environment and safety” issues can be conveniently grouped together via the SMS.

Specific Responsibilities of the safety committee

Ensure flag and Company health and safety requirements are met and collaborate with the Captain and the Company to implement the corresponding SOHSP policy and program (see MSC-MEPC.2/ Circ.3 of 2006):

- Participate in the Health/Safety/ Working Conditions program
- Review crew questions and opinions on this subject
- Assess the condition of relevant equipment
- Monitor compliance with established procedures
- Review incidents, accident/near-miss reports (Flag, Company, or occupation) and any resulting preventive measures
- Provide opinions and/or recommendations
- Contribute to the principles relating to training/familiarisation and instructions on working conditions (consultation when procedures are amended, for example)



Composition of the Safety Committee

- Captain (or representative): Committee Chair
- A designated competent crew member by the Company, responsible for risk prevention
- Possible safety delegates per department (depending on the number of crew members): officers, crew, others (passenger ships)

NB: appointed or elected delegates who may acquire the necessary knowledge through the Company (internal training during working hours, for example)

Operation of the Safety/Security Promotion Committee

Under the responsibility of an officer in charge of promoting Safety/Security, generally the Chief Mate, traditionally responsible for all aspects of safety on board:

- Monthly or more frequent committee meetings (exceptionally when two committee members request it)
- Mandatory meetings following accidents, incidents, or near misses
- Mandatory reports to be communicated to everyone on board, with a copy to the DPA (Departmental Safety Officer) and followed up by the captain

Practical application

Opinions of the crew member(s) during internal audits and Captain's reviews and participation in the annual DUP review (individual opinions of members taken into account)

... Last but not least, the captain's objectives

As a Captain, it seems normal to me to have my own objectives related to the application of the ISM Code. Unless I remain at the minimum required level of service, as a matter of ethics. A ship's Captain should be able to set their own objectives once the Company has appointed

them as permanent Master for a minimum period. Limiting themselves to safety, a Master aware of the common weaknesses of seafarers could express upon arrival on board a targeted improvement objective, for example, along the following lines:

- Part of the emergency plan requires improvement, and during this time on board, I propose during the present period to improve the crew's preparedness to respond to emergencies.
...by developing a drill & exercise plan based on communication during emergencies. All exercises will emphasise this "communication" aspect, whether within the onboard team (response team, crisis unit, Master), or with potential emergency services or the Company directly.
- Another paper exercise could be devoted to brainstorming on the real risks compared to an already old and somewhat generic Risk Assessment Study or even conducting an evacuation drill in a hard-to-access compartment to evaluate and, if possible, improve our already acquired methods, etc.
- Just as simulating a gathering of thousands of passengers in preparation for an evacuation of the ship in a situation other than good weather and during the day, would raise awareness among the hotel crew of this problem, which is known to be "virtually insoluble." This kind of attitude is certainly in keeping with the spirit of the ISM Code, linked to continuous improvement and the new safety culture of our time, which, without abandoning a well-established practice, is moving more easily than 30 years ago toward smarter safety management.

NB: The topic is broad enough to challenge your thinking.

Finally, the Master must review the SMS compliance

As part of their responsibilities, the Master, by delegation from the shipowner, ensures that their vessel complies with the SMS, but not only that!

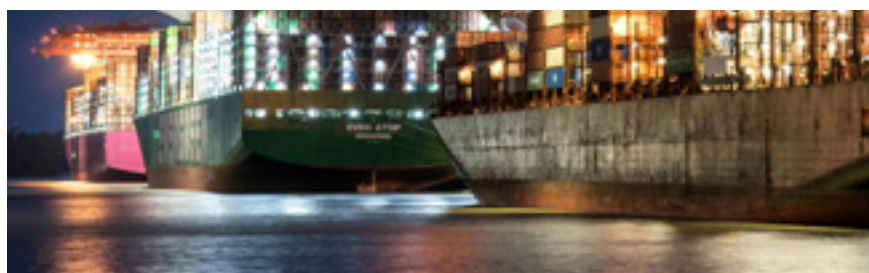
Indeed, the ISM Code specifies that the SMS itself must be reviewed periodically (Section 5.5) by the Master, and not only its onboard application, as most of members of our industry have understood. Notwithstanding the copy of the DOC posted at the entrance to the captain's office, this compliance of the Company SMS must also be verified by the Master during their annual review. In theory, nothing is more effective than the advice of those who apply it day to day... rather than waiting for an internal audit conducted by auditors who are often somewhat lacking in knowledge of the ISM Code and almost never truly independent. Difficulties: It is true that except in small companies where senior management participated in the creation or evolution of the SMS, large companies long ago switched to an SMS "developed" by a team of "landlubbers," sometimes with minimal knowledge of work at sea, and which hasn't evolved much since its creation.

Then again, due to a certain atavism, our industry has never really known how to practice differently and cannot tolerate the current trend of whistleblowers!

Few Masters finally dare to suggest improvements to the SMS. Why? It's worth remembering here that French law, as in the US (SPA), allows employees to express their criticism of their boss's safety options... as long as they present them "with restraint" (French Court of Cassation, September 28, 2022).

Ship Masters, you want to be protected in the exercise of your high-level duties in maritime transport safety, so participate in its development by reporting what's wrong to your boss and suggesting improvements, for goodness' sake!

It's worth it, right?



NB: Examples of SMS compliance and operation reviews using KPIs:

SHIPMASTER'S REVIEW ON THE COMPANY'S SMS OPERATION ABOARD THEIR SHIP		
N°	Key PERFORMANCE INDEX	Pts/5
1	State of realisation of Company's objectives as stated	
2	Assessment of crew's preparation to respond to emergencies	
3	State of safety, security or pollution prevention procedures and equipment	
4	State of ship's certificates and crewmembers' certificates	
5	State of follow up of prescriptions & recommendations	
6	State of the reporting system: operation and follow up	
7	State of the feedback system: operation and follow up	
8	Organisation and operation of technical maintenance (recordings & follow up)	
9	State of critical elements & study of ship's operation in a degraded mode	
10	State of ship communication with DPA and Company management	
11	State of shipboard documentation and implementation of regulation watchdog	
12	Evaluation on the implementation on board of the Company safety culture	
TOT	Total of indexes	/60
Evaluation of Results: minimum operation 12pts, 12 to 24 emerging operation, 24 to 36 Good operation to be improved- 36 to 48 performing operation, 48 to 60 high level of operation		

MASTER'S REVIEW ON THE CONFORMITY OF COMPANY'S SMS WITH THE ISM CODE		
N°	Conformity Criteria	Pts/5
1	Conformity of risk management (analysis & mitigation measures) at a Company's level	
2	Safety culture and management of continuous improvement ok knowledge	
3	Conformity of the Company's responsibility as detailed in the ISM Code	
4	Conformity of the DPA's responsibilities as in the ISM Code and the IMO side circulars	
5	Conformity of the SMS concerning the Master's discretion for ship safety and security	
6	Conformity of Company's HR management regarding the ISM Section 6	
7	Adequacy of ship's operation procedures with the ISM philosophy (follow up of best practices)	
8	Take into account feedback & crew's suggestions via the ship safety committee	
9	Level of the reporting system towards the management and the DPA	
10	Level of conformity with ISM Section 10.3 concerning equipment & technical critical systems	
11	Level of conformity of the Section 12 concerning Company verifications, reviews & evaluation	
12	Safeguard of Master as specified in IMO resolution A 443 and the ISM Code Preamble	
TOT	Total of indexes	/60
Evaluation of Results: minimum operation 12pts, 12 to 24 emerging operation, 24 to 36 Good operation to be improved- 36 to 48 performing operation, 48 to 60 high level of operation		



CONCLUSION

Today, the shipmaster assumes their duties in the following theoretical circumstances: the vessel's certificates are up to date, particularly the SMC (Safety Management Certificate), which is theoretically official proof that the onboard safety and environmental protection management complies with the Company's SMS, itself recognised as compliant with the ISM Code by a named DOC (Document of Compliance).

However, the current general weakness of Flag State Control is undermining the confidence that the profession has cultivated within the framework of the IMO, a loss of confidence largely due to flags of convenience, if not "flags of complacency".

Traditionally, the PSC was created largely to counter this phenomenon. Through targeted inspections and by sanctioning lax behaviour, the PSC has begun to instil fear, being seen as "the armed wing of the IMO."

Theoretical sanctions can scare shipowners who fail to comply with international regulations because detention is theoretically a terrible instrument that directly attacks the shipowner's wallet... more than ever in our industry, time is money, and any delay today is counted... in dollars lost on chartering.

This PSC system, supposed to solve the problem of substandard vessels, even though it scares shipowners and continues to improve, is far from perfect. Sometimes the vessel doesn't need to call at a port for a transfer, for example, beyond territorial waters... thus, the dark fleet under the command of "Dark Masters" that continues to grow, avoids calling and therefore... we have no legal right to hope to block it. The Law of the Sea did not provide for this (except in cases of violations or pollution only)... should it not be reviewed and a Coastal State Control (CSC) created, extended to all vessels where control would be possible without being a clear initial violation... an amendment to the UNCLOS maritime conventions to clarify this (via MONTEGO BAY), for example.



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The views presented above are solely those of the author and do not necessarily reflect those of AFCAN. They are intended for information exchange and discussion purposes.

PS 1. The transition from English, the working language of the IMO, to another language often poses interpretation problems. This is generally not too serious, but it still often takes us a little further away from the desired result of the initial text.

PS 2. The Italian government and the RINA (the Italian RO) have had a difficult time following the official investigation into the Costa Concordia disaster. Our colleague Francesco Schettino recently requested release halfway through his prison sentence (already 8 years in the Rebibbia prison in Rome) ... which was refused! Perhaps it's still too early for him to tell us the story from his perspective. Are the Italian administration and RINA a little afraid that Schettino will point out the impressive laxity of the Company's ISM certification, and more specifically on board their ship?

PS 3. The English version of the Code refers to "deficiencies," which the French have simply translated as "gaps," whereas in English, this word is broader, meaning "lack/insufficiency/imperfection or weakness/deficiency, while retaining a nuance of insufficient level."

PS 4. The phenomenon of the dark fleet (strangely called the "ghost fleet" in French) is poisoning our industry today, with nearly 1,000 ships affected, and therefore at least 1,000 captains more "like pirates than privateers". Personally, as a former Master, I am ashamed!

PS 5. Port regulations are often somewhat forgotten by Masters, yet in the event of an incident in the port, this is the first check that will be used by local investigators.

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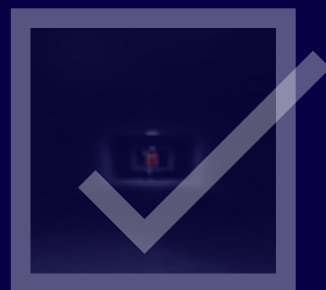
Beyond the checklist: Preventing enclosed space fatalities at sea



By Capt. Akshat Arora,
*Regional Loss Prevention
Director (Singapore),
UK P&I Club.*

Enclosed space fatalities at sea remain stubbornly high. In this article, Capt. Arora discusses what a truly human-centric approach to safety could change.

Despite decades of awareness campaigns, regulatory updates, and repeated industry commitments, seafarers and shore workers continue to lose their lives in enclosed spaces on board ships, often in circumstances that were entirely preventable. The persistence of these incidents forces us to confront a hard truth: the measures currently implemented are insufficient. To break the cycle of fatalities, the industry needs a change of mindset, move beyond the checklists and procedures, and embed a genuinely human-centric approach to safety.



What do the numbers tell us?

From a P&I Club perspective, enclosed space related fatalities remain one of the leading causes of loss of life at sea. According to The International Group of P&I Clubs (IG), 83 deaths occurred in enclosed spaces during the five-year period between the 2015 and 2019 policy years.

The data collated by InterManager paints a similarly troubling picture. While the annual number of recorded enclosed space accidents has remained largely unchanged, the casualty rates have worsened. In both 2022 and 2023, 14 enclosed space incidents were recorded, yet casualties rose sharply from 18 in 2022 to 34 in 2023. Alarmingly, senior officers – individuals regarded as the most experienced and well trained on board – constitute a significant proportion of those affected.

Analysis of vessel types and accident locations shows that bulk carriers account for the highest proportions of incidents ($\approx 41\%$), followed by tankers ($\approx 23\%$). The most common sites for fatalities are cargo holds or hold access areas ($\approx 51\%$), with cargo oil tanks also presenting a significant risk ($\approx 18\%$).

Multiple-fatality accidents remain common. There were a number of cases, where rescuers instinctively rushed to aid a collapsed colleague, only to become victims themselves.

Further insight is provided in a submission by the International Bulk Terminals Association (IBTA) to the IMO (CCC 11/15/3). Between 2000 and 2024, at least 1,010 crew and shore workers lost their lives in enclosed spaces on ships of all types. Of these, 700 (69%) were crew members and 310 (31%) were shore personnel. This equates to an average of 40 deaths every year, a sobering reminder of a problem that refuses to fade.



Industry Responses

It is commonly noted that the standards of training and drills vary on every ship. While some companies may choose to invest in advanced training and education tools, many do not. To address this gap, the International Chamber of Shipping (ICS) has proposed amendments to the STCW Convention and Code (HTW 12/6/2) to enhance mandatory training for entering, working in, and rescuing from enclosed spaces. If adopted, this will represent a valuable step towards addressing issues repeatedly highlighted through inspections and accident investigations.

In parallel, the industry is also progressing on several enclosed space related safety enhancements. Classification Societies are actively discussing improved tank designs, including better structural layouts, improved ventilation standards and minimising maintenance items to reduce the need for human entry. Trials with drones and remote inspection technologies are also advancing, offering safer alternatives for routine tank inspections.

At the same time, organisations such as The Oil Companies International Marine Forum (OCIMF), International Parcel Tanker Association (IPTA) and International Association of Independent Tanker Owners (Intertanko) are exploring the feasibility of replacing traditional wall-wash testing on tankers with wash-water analysis, an approach that could significantly reduce enclosed space entries while maintaining cargo quality assurance.

Additionally, to deepen understanding of persistent failings, InterManager, in collaboration with The Nautical Institute and IMarEST, has launched a survey seeking first-hand feedback from those working at sea. The aim is to delve deeper into what's going wrong and understand better what solutions are needed.

As part of the wider industry effort to enhance safety at sea, the UK P&I Club supports the maritime consortium 'Together in Safety', that has published a set of 10 'Golden Safety Rules', designed as straightforward, easy-to-follow practices to help prevent the most frequent fatal incident types across shipping. The Golden Safety Rule No. 2 provides practical steps to follow before entering inside an enclosed space.

Regulatory Updates

The IMO's first recommendations for entering enclosed spaces (Resolution A.864(20)) entered into force in 1997.

These were later revised via Resolution A.1050(27) in 2011.

Subsequent regulatory developments include:

- SOLAS Reg. III/19.3.6 (1 January 2015): Mandated enclosed-space entry and rescue drills every two months.
- SOLAS Reg. XI-1/7 (1 July 2016): Required portable atmosphere-testing instruments capable of measuring oxygen, flammable gases/vapours, hydrogen sulphide, and carbon monoxide.

However, despite regulation, fatalities have continued. In July 2024, following two incidents involving the deaths of stevedores during coal discharge operations at Indian ports, the Indian Directorate General of Shipping issued DGS Circular 23/2024, reinforcing safety recommendations to prevent similar incidents from happening.

Similarly, the China Maritime Safety Administration (MSA) launched a special campaign aimed at preventing enclosed space accidents onboard vessels visiting Chinese ports between 15 January and 14 October 2025. Among its findings was the unsatisfactory execution of drills, reinforcing long-standing concerns regarding training standards.

In June 2025, the IMO's Maritime Safety Committee, at its 110th session (MSC-110), adopted Resolution MSC.581(110) (Revised Recommendations for Entering Enclosed Spaces Aboard Ship). This resolution replaces Resolution A.1050(27) and aims to address the persistent underlying issues: failure to systematically identify hazards, properly assess risks, and implement appropriate entry procedures. It also explicitly recognises that effective organisational leadership, both ashore and onboard, is essential for empowering crew to make the right decisions and ensure safe operations.





Key developments include:

Strengthened Ship–Shore Coordination

- A joint ship–shore risk assessment is required before any contractor, stevedore, or shore worker enters an enclosed space.
- A simple schematic plan must be posted at the gangway, highlighting which spaces are safe or unsafe to enter.
- Shore personnel must be briefed on any hazards specific to the ship.

These measures aim to bridge the gap between ship staff and visiting personnel, ensuring everyone shares the same understanding of the risks involved.

New and Clarified Definitions

- To improve hazard recognition and ensure consistent interpretation, several critical definitions have been added or refined:
- Enclosed Space: As before, a space with limited openings, inadequate ventilation, or not designed for continuous human occupancy—now emphasising wide-ranging examples such as holds, tanks, bilges, pump rooms, chain lockers, and engine crankcases.
- Connected Space: Newly defined. Any space linked by permanent or temporary means (including manual doors) to a source space. Must be treated as hazardous until proven safe by testing.
- Adjacent Space: More clearly defined as a space sharing a boundary with a hazardous space but without any openings. Still requires precautionary consideration in case of barrier failure.
- Trapped Hazardous Atmosphere: A new concept that addresses hazardous atmospheres that linger in connected spaces even after the source space is discharged or ventilated.
- Defined Roles (Responsible Person, Competent Person, Attendant): Enhanced clarity on accountability and training expectations for each role.

Enclosed Space Register

One of the most consequential changes is the introduction of a ship-specific Enclosed Space Register, which must catalogue:

- Every enclosed space onboard,
- All connected and adjacent spaces,
- Associated hazards,
- Expected atmospheric changes based on cargo or tank contents,
- Required risk controls, equipment, ventilation expectations, and emergency arrangements.

This Register must be maintained both onboard and ashore and kept continuously updated - especially during voyages and cargo operations.

Strengthened Operational and Procedural Measures

Risk Assessment & Gas Testing

- The competent person's assessment must explicitly consider the potential for CO and CO₂, in addition to other toxic or asphyxiant gases.
- CO₂ safe threshold is now clearly stated as <0.5% by volume (5,000 ppm).
- Testing must be conducted after ventilation has stabilised.
- Testing for toxicity is required where relevant—flammability or oxygen levels alone are insufficient.

Permit to Work

- Entry permits must not exceed eight hours and are voided if ventilation stops or conditions change.
- Additional permits (energy isolation, hot work, working aloft, etc.) may be required depending on tasks.

Access Control & Signage

- Entry doors and hatches to enclosed spaces must always be secured against entry unless declared safe.
- Clear "Safe to Enter" / "Unsafe to Enter" signage and sealing arrangements are now required.

Prohibition of Solo Entry

- For the first time, MSC.581(110) explicitly prohibits single-person entry into enclosed spaces.

Time Pressure and Human Factors

- Companies must ensure adequate time is allocated for enclosed space operations, acknowledging that time pressure has been a recurring causal factor in past casualties.
- Training and Rescue Preparedness
- Crew must receive training in the operation, calibration, and maintenance of atmosphere testing equipment.
- Crew must be trained in rescue techniques, first aid, CPR, and use of recovery apparatus.
- Regular rescue drills are mandated under SOLAS, and MSC.581(110) emphasises reviewing and updating the enclosed space emergency response plan after each drill.

Simultaneous Operations (SIMOPS)

- Where enclosed space entry coincides with other operations, companies must set clear criteria to manage the added risks.

Creating a human-centric approach to workplace safety

A checklist ticked isn't a life saved. Real safety culture exists when crews are empowered to raise concerns and discuss solutions. Masters need to lead by example and embed safety as a day-to-day priority despite commercial pressures. Operators should also recognise that speed at the expense of safety undermines efficiency and creates more risk.

When safety becomes ingrained rather than imposed, when meeting requirements is not just procedure but instinct, and when every crew member looks out for the person working beside them, enclosed spaces become manageable risks rather than recurring incidents.

The technology to support safer working environments exists. The regulations exist. What's often missing is the culture and commitment to apply them effectively.

Conclusion

After nearly three decades of structured safety frameworks, enclosed-space fatalities should be a relic of the past. Yet they remain stubbornly prevalent. Existing procedures, while necessary, have not been sufficient on their own.

A cultural shift is essential. The long-term objective must be to eliminate the need for human entry into enclosed spaces wherever possible. Although challenging, industry bodies are increasingly aligned on driving safer standards, supported by improved regulation, technology and operational practices.

"Ultimately, every life lost is one too many. By working collectively, and by embracing a more human-centric approach to safety, we can ensure that every workplace becomes a safer place for those who serve at sea," concludes Capt. Arora.

This article was first published on UK P&I Club's website and is reproduced here with our thanks.





Importance of ship maintenance: Enhancing safety, efficiency and compliance

By Britannia P&I Club Loss Prevention Department

Ship maintenance is essential to ensuring the safety, operational efficiency and longevity of a vessel. Neglecting maintenance can lead to severe consequences such as accidents, detentions, and costly repairs. Nearly three quarters of all marine incident reports received by the Australian Maritime Safety Authority (AMSA) between 2019 and 2021 involved deficiencies or failures with on board equipment, systems, or structure.

Why a ship must be maintained

Safety: Regular maintenance ensures that all components of a ship are intact and functional, minimising the risk of accidents caused by loose parts or mechanical failures.

Compliance: Ships must adhere to international and local regulations such as the SOLAS (Safety of Life at Sea) and ISM (International Safety Management) Code. Maintenance ensures that ships comply with these standards and avoid detentions or penalties.

Legal Requirements: Shipowners must ensure their vessels are seaworthy. Failure to maintain the ship can lead to legal ramifications. If a ship fails to meet seaworthiness standards, there may be claims against the ship from cargo interests or charterers.

Operational Efficiency: Maintenance ensures that all systems are functioning optimally, reducing the chances of equipment failure and minimising operational disruptions.

Fuel Consumption: Regular maintenance helps identify inefficiencies, such as engine performance issues, which can affect fuel consumption. Rectifying these inefficiencies can lead to significant fuel savings.

Operational Costs: Preventive maintenance reduces the likelihood of major equipment failures, which can lead to expensive repairs and operational delays.

Equipment Quality: Proper maintenance can extend the lifespan of ship equipment, reducing the need for premature replacements and enhancing long-term cost efficiency.

Safety of life at sea convention (SOLAS)

The SOLAS Convention (Chapter I, Regulation 11) mandates that a ship and its equipment must be maintained in accordance with regulations to ensure the vessel remains seaworthy.

International Safety Management (ISM) Code

Clause 10.1 of the ISM Code stipulates that vessel and equipment maintenance is mandatory. Clause 10.2 further requires companies or operators to report non-conformities and take corrective action. Non-conformities include technical deficiencies, which refer to defects or failures in the vessel's structure, machinery, equipment, or fittings.

Operators must address deficiencies promptly and tackle the underlying issues within the maintenance management system that caused the problem. Poorly designed procedures such as those that are unclear, outdated, inaccessible, or not suited to the task, can lead to deviations and non-compliance. It is essential to align procedures with actual tasks and involve seafarers in their development whenever possible.

An effective maintenance management system stems from a comprehensive risk assessment. During this assessment, operators should consider:

- Manufacturer's maintenance recommendations and specifications
- Equipment history, including past failures, defects, damage, and remedial actions taken
- Results from third-party inspections
- The ship's age
- Critical equipment or systems identified
- Potential consequences of equipment failure on the vessel's safe operation.

What is a planned maintenance system PMS?

"A planned maintenance system allows shipowners and operators to plan, perform and document vessel maintenance at intervals complying with Class and manufacturer requirements. The objective is to ensure safe and reliable vessel operations, including equipment, in addition to compliance with all applicable regulations." (DNV, 2025)

There are different ways of achieving this, depending on the size and complexity of the shipping company and the types of vessels in operation. In all cases, a systematic approach to maintenance is based on risk assessment and begins with the establishment of a complete database of machinery, equipment and fittings.

An effective PMS not only helps meet safety and environmental objectives laid out in the ISM Code, but it is also an investment in the protection of the assets and optimisation of their management.

Between 15 January and 28 February 2022, AMSA conducted a focused inspection campaign (FIC) on planned maintenance. The campaign has revealed a high number

of ships failed to comply with the planned maintenance requirements.

271 ships were inspected during the FIC; AMSA detained 17 ships during the period of the FIC campaign, 7 of which were detained as a direct result of planned maintenance deficiencies.

Importance of planned maintenance

Due to the complex nature of the maritime working environment, maintenance-related issues are often a result of interactions between organisational factors and latent conditions.

Fast turnaround times in ports put crew under immense pressure, leaving little or no time to complete critical checks and verifications. This can lead to gaps in maintenance due to time constraints. Scarce resources mean crew and operators must make a trade-off between the time and effort taken to prepare for a task, and the time and effort expended doing it. Trade-offs involving shortcuts may allow the ship to be operational more quickly, but at the expense of thoroughness and safety.

A well-structured PMS, incorporating regular inspections, operational tests, and manufacturer-recommended procedures, can significantly reduce the risk of machinery failure. Maintenance and testing plans should include specific instructions to meet these requirements.

Our internal survey results show Despite having a PMS onboard, we've encountered some issues that slipped through the cracks during our condition survey program. However, these are exceptions, as most of the ships were found to be in good condition.

Some of the common findings are discussed below highlighting areas where maintenance efforts may need more attention.

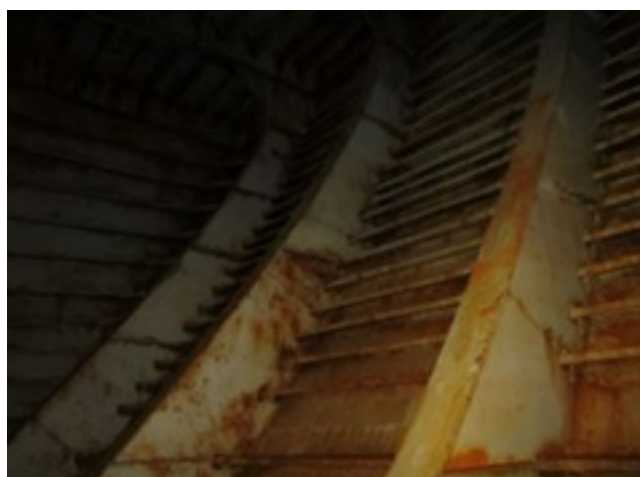
Corrosion

Corrosion can weaken structural integrity, resulting in leaks, reduced load capacity and safety hazards for crew members. It typically affects critical areas such as the deck, hull, walkways, pipelines and hatch covers.

Figure 1 Corroded container securing points



Figure 2 Ballast tank corrosion



On container ships, poor maintenance of securing points can lead to container block collapses, damaging adjacent containers and heightening the risk of cargo shifting or being lost at sea.

If left unchecked, corrosion in ballast tanks can lead to structural failure, undermining the vessel's stability during ballast operations. Corrosion on walkways, particularly crossing bays on container ships, presents a safety hazard, as weakened structures increase the risk of accidents. The corrosion of railings on cranes and emergency escape ladders also poses significant safety concerns.

Figure 3 Corroded Ventilator



Ventilator corrosion can impact cargo claims due to poor ventilation or ineffective sealing, which can also hinder firefighting efforts. Corrosion in pipelines not only affects safety but can also lead to pollution and cargo damage.

It was noted that on one occasion a sounding pipe passing through a cargo hold leaked while ballasting, the other sounding pipes were also found in a rusted condition.

Water ingress, for instance, can spoil cargo, and in tankers, corroded pipelines may cause cross-contamination, off-spec cargo claims, oil leaks, or spills.

Figure 4 Holed Fireline



Figure 5 Crane emergency escape ladder



Figure 6 Railing around the crane ladder



Figure 7.1 Deck grating and steps



Figure 7.2 Deck grating and steps



Figure 8.1 Corroded pipes



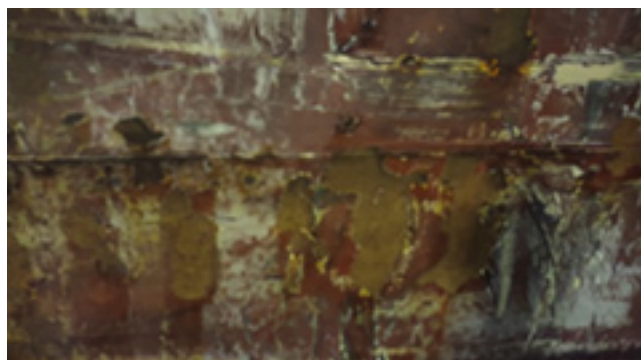
Figure 8.2 Corroded pipes



Figure 9.1 Corroded grating/deck



Figure 9.2 Corroded grating/deck



Similarly, corroded hydraulic pipes can cause pollution, and any breach in firefighting pipelines can become a critical issue during emergencies, putting lives at risk. Corroded electric conduit and refer sockets on container ships can bring large cargo claims. Additionally, we've observed corrosion in hydraulic consoles, which can lead to both pollution and malfunction of the systems they control.

Mitigation

Regular inspections, the application of protective coatings, and diligent maintenance are crucial for preventing corrosion and preserving the structural integrity of ships.

Mooring

Mooring lines on ships are a critical component for ensuring the vessel remains securely berthed. One of the common issues we encounter during surveys is the poor condition of mooring lines. When these lines are compromised, the risk of parting increases, which can have serious consequences. A parted mooring line can cause the ship to move unexpectedly or surge alongside the berth, potentially leading to damage to the quayside, shore cranes or even vessels.

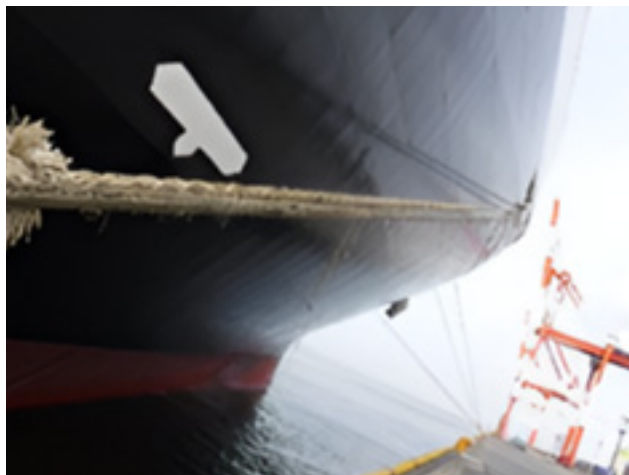
Figure 10 Holed Deck



Figure 11.1 Mooring line degradation



Figure 11.2 Mooring line degradation



All deteriorated or damaged mooring lines should be immediately discarded and replaced. A robust policy for the inspection and maintenance of mooring lines should be clearly outlined in the company's Safety Management System (SMS). Regular inspections, both by the crew and during formal inspection by the ship managers, are essential to ensure that mooring lines remain in good condition and to prevent accidents or damage.

Other common mooring issues we often observe include the deterioration of key equipment such as winches, windlasses, brake linings, and associated fittings:

Corroded windlass

The windlass is prone to corrosion due to exposure to the harsh marine environments. Corrosion can compromise its functionality, affecting both mooring and anchoring operations. A malfunctioning windlass can potentially lead to delays or safety risks during mooring operations.

Brake linings

Winch brake linings wear down over time, especially if not maintained properly. Thinned brake linings reduce the winch's ability to secure the ship during mooring. If the brakes fail to hold, the ship could drift or surge during docking.

Figure 12 Worn brake lining



Anchor chain

Anchor chains are exposed to constant friction and saltwater, resulting in thinning over time. Chain links that are excessively worn out or thinned can fail during anchoring operations. A weakened anchor chain may snap under stress, leading to a loss of anchoring capability and possibly grounding the vessel or causing it to drift.

Figure 13 Anchor chain



Frozen capstan/fairlead

Capstans and fairleads can seize or freeze due to lack of lubrication, corrosion, or mechanical wear. When this happens, they no longer rotate smoothly, which makes mooring operations difficult or dangerous. A frozen capstan or fairlead can prevent proper control of mooring lines, increasing the risk of parting lines or mishandling the vessel during mooring.

Figure 14 Fairlead in poor condition



Mitigation

Frequent Inspections: Regularly inspect winch and windlass brake linings, mooring lines and other mooring equipment for signs of wear and tear.

Timely Replacement: Any worn brake linings, corroded equipment, or thinned anchor chains must be replaced immediately to ensure safe operations.

Lubrication and Maintenance: Ensure capstans, fairleads, and other rotating equipment are well-lubricated and free from corrosion or mechanical issues to prevent operational hazards.

A winch braking test should be conducted as per SMS. Ensuring the upkeep of mooring equipment is critical for safe docking and anchoring procedures, reducing the risk of accidents and operational delays.

Leaks

The most common leaks occur in the engine room. This is a sign of poor maintenance which can lead to mechanical failure /loss of power, delays etc. Often the cause is the condition of gaskets, o-rings, and seals.

Figure 15.1 Oil leaks in engine room



On one occasion, oil leaks were reported in the engine room, with significant leakage from the main engine units. Fresh oil was also observed in the bilge, indicating ongoing issues with sealing or worn components which can lead to reduced efficiency and potential damage to critical systems.

Figure 16.1 Oil leaks in engine room



Figure 16.2 Oil leaks in engine room



The biggest risk from oil leak is fire in the engine room.

Figure 15.2 Oil leaks in engine room



Hydraulic oil leaks

Hydraulic oil leaks were observed in multiple areas, including crane systems, steering gear system, ramp control station on RORO ships and hydraulic jacks for hatch covers. These can lead to disruption and delays.

Figure 17 Saveall containing oil



Hydraulic oil leaks can reduce the efficiency of crucial systems, impair lifting operations, compromise steering control and increase the risk of pollution. Hydraulic fluid levels and condition should be monitored regularly, and fluid replaced according to manufacturer recommendations or upon signs of contamination.

Exhaust gas leaks

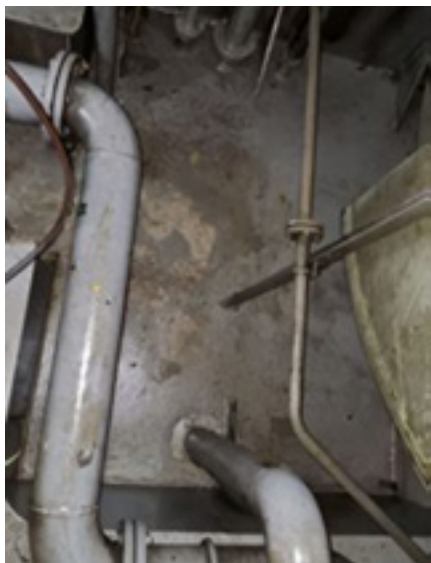
Leaks in the exhaust gas system can occur in engine rooms. Exhaust gas leaks decrease engine performance but also produce extreme temperatures near the leak, creating a fire or burn hazard. These issues emphasise the consequences of deferred or inadequate maintenance, which can lead to operational inefficiencies, potential safety hazards and expensive repairs.

Figure 18 Signs of exhaust leak



Mitigation

Figure 19 After cleaning in engine room



Prompt Repair: All leaks, particularly in hydraulic systems and engine components, must be identified and repaired swiftly to prevent contamination, mechanical failure and environmental damage. Any remaining oil water mix must be cleaned and removed immediately.

Routine Inspection: Regular inspections of hydraulic jacks, cranes, engine room components, and steering systems are essential for early detection and repair of leaks. Check for signs of fresh oil in the engine room bilge should be as part of daily operational checks.

Oil Management: Ensure proper containment and cleanup of any leaked oil to avoid pollution

Hatch cover maintenance

The condition of hatch covers is a critical aspect of our surveys for bulk carriers and general cargo ships, as they protect the cargo from water ingress and weather damage. While most ships were found to be in good condition, a few required immediate repairs. A common issue observed was the deteriorated state of the rubber packing.

Conclusion

Ship maintenance is an ongoing, complex task that requires coordinated effort between technical staff and management. Proper maintenance not only ensures safety and compliance but also reduces operational costs, optimises fuel consumption and extends the lifespan of the ship's equipment.

The consequences of neglecting maintenance, ranging from corrosion, equipment leaks, and leaking hatch covers, can be severe, leading to detentions and increased operational costs.

By implementing robust maintenance strategies and adhering to ISM guidelines, shipowners and operators can prevent costly repairs, improve safety, and ensure the smooth operation of their vessels.

Figure 20 Gaps in rubber packing



Figure 21 Packing coming off



In one case, a booby hatch entrance cover was found with a hole, heavily wasted due to corrosion. Additionally, the channels which hold the rubber packing of several void spaces were severely corroded and degraded. Quick-closing cleats were occasionally found rusty and frozen, making it difficult to secure the hatch covers properly.

Figure 22 Non return valve temporary patch work



Non-return valves from the drain channels were also identified as either ineffective or non-functional, which could lead to water accumulation and potential cargo damage.

Comprehensive guidance should be provided for hatch covers in conjunction with manufacturer recommended methods and tolerance and testing. An ultrasonic test will provide advance indication of the deterioration; therefore early intervention is possible.



The Earth 300 is a real nuclear-powered concept yacht designed to promote sustainable yachting

Could nuclear power work on boats?

By Koushik Paul

For decades, diesel has powered almost every large vessel on the water. It is reliable, energy-dense, and supported by a global refuelling network.

But as the marine industry looks toward lower-emission alternatives, new ideas are starting to surface. Hydrogen has already entered the conversation for superyachts. Now, an even more ambitious concept is being explored.

Could boats run on nuclear power?

It sounds extreme, but nuclear propulsion is not new. Submarines and aircraft carriers have used it for decades. The real question is whether the technology can be scaled down for civilian vessels.

Why the industry is even considering nuclear

Boats require large amounts of continuous power. Unlike cars, they push through water, which creates constant resistance. At the same time, emissions regulations are tightening, especially for large yachts and commercial vessels. This has pushed designers to explore alternatives like hybrid systems and hydrogen fuel cells. Hydrogen is promising, but it faces a major limitation. The infrastructure to produce, store, and refuel hydrogen at scale is still limited. That has led some designers to look further ahead and ask a more radical question. If hydrogen is difficult to deploy, could nuclear energy solve the problem entirely?

Nuclear power at sea is already proven

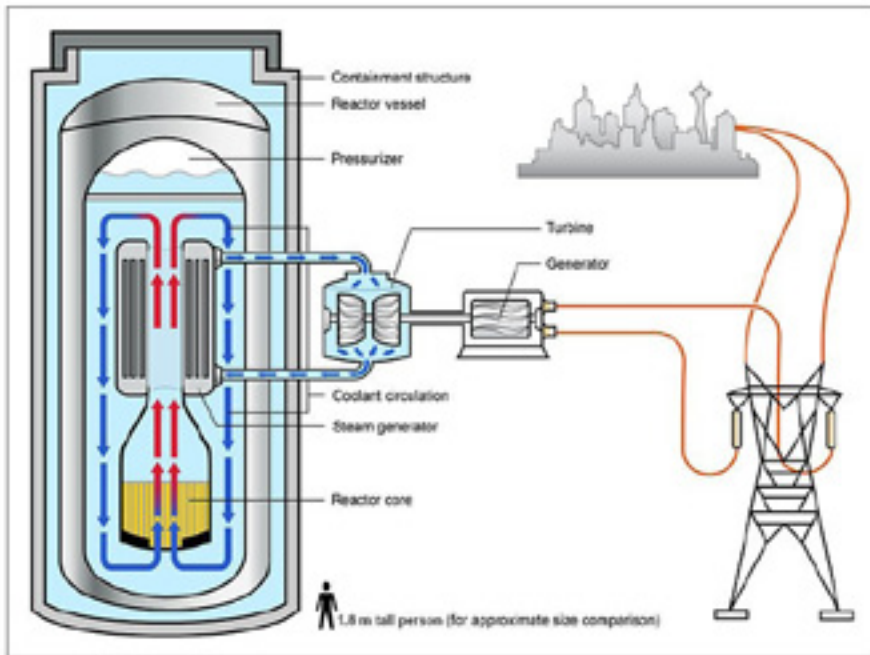
Nuclear propulsion is already used in military vessels because of its unique advantages.

Instead of burning fuel, a nuclear reactor generates heat through controlled reactions. That heat produces steam, which drives turbines and powers the vessel.

The benefits are clear:

- Extremely long operating range without refuelling
- Consistent power output over long periods
- No direct carbon emissions

This is why submarines can remain underwater for months and aircraft carriers can operate for years without refuelling. So, the concept works. The challenge is scaling it for civilian use.



Source: GAO, based on Department of Energy documentation. | GAO-15-453

*A diagram depicting the size of an SMR unit.
Photo credit: Telework.ro*

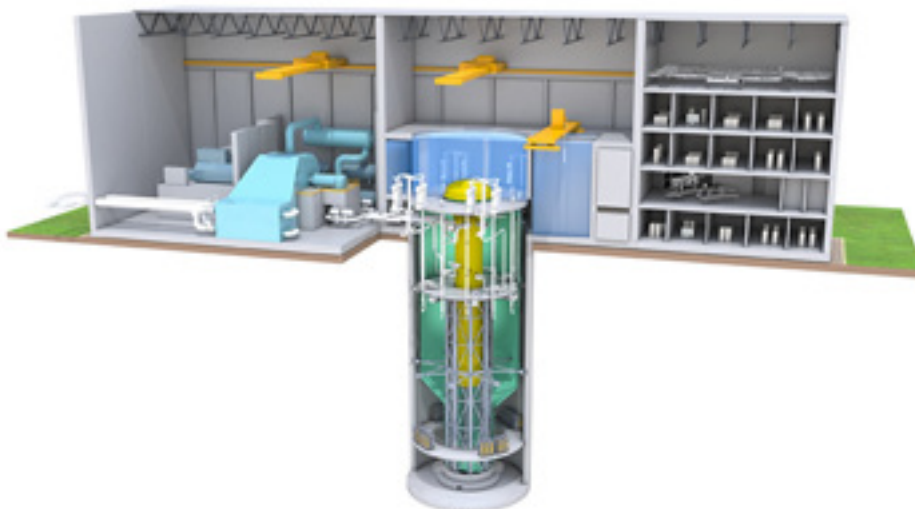
The rise of small modular reactors (SMRs)

Recent developments in nuclear technology have introduced Small Modular Reactors, or SMRs. These reactors are designed to be:

- Smaller than traditional nuclear plants
- Factory-built and modular
- Easier to transport and install

Organizations like the IAEA and governments such as Canada are actively developing SMRs, typically in the 50 to 300 megawatt range. On paper, this sounds like a breakthrough. Smaller reactors suggest the possibility of new applications, including marine propulsion.

But this is where reality sets in. “Smaller” in the context of nuclear power is still very large.



*A diagram depicting an SMR facility.
Photo credit: U.S. Department of Energy*





Could nuclear actually work on a yacht?

Some of the world's top yacht builders are already exploring the idea.

Feadship, for example, has studied nuclear-powered superyacht concepts that could operate for years without refuelling. These designs are aimed at the very top end of the market, where yachts exceed 100 meters in length. The appeal is obvious:

- Near unlimited range
- No reliance on fuel infrastructure
- Reduced emissions over long voyages

For ultra-large yachts, nuclear propulsion starts to look technically possible. But even at that scale, major challenges remain.



An AI rendering of a nuclear-powered superyacht concept

The real constraints: Size, weight, and safety

The biggest obstacle is not generating power. It is safely containing it. Nuclear reactors require heavy shielding to protect passengers from radiation. This shielding adds significant weight and volume. Even small modular reactors are still far too large for most vessels under superyacht size.

Then there is safety. A nuclear system must be designed to withstand collisions, grounding, and flooding. That level of protection adds even more complexity and cost. Regulation is another major barrier. Ports, governments, and international waters would all require strict oversight before nuclear-powered civilian vessels could operate.

And finally, there is public perception. Even if the technology is safe, many people may hesitate before stepping onto a nuclear-powered yacht.

How it compares to diesel

To understand the challenge, it helps to compare nuclear energy with diesel.

Diesel fuel is extremely energy-dense and easy to store. A relatively small tank can power a boat for long distances. Nuclear energy, on the other hand, produces far more power, but requires:

- Reactor containment
- Radiation shielding
- Cooling systems
- Safety redundancies

In simple terms, nuclear power is efficient in output, but inefficient in size and complexity when scaled down. This is why it works well on massive vessels but struggles to translate to smaller platforms.

Where it could work first

If nuclear propulsion ever reaches civilian boating, it will likely start with:

- Ultra-large superyachts
- Commercial vessels operating long distances
- Specialized research or expedition vessels

These platforms have the space, budget, and use cases to justify the technology. For boats under 40 or even 60 feet, nuclear power is not realistic with current technology.

The more likely path forward

Before nuclear becomes viable, the industry is more likely to adopt intermediate solutions.

Hydrogen fuel systems and hybrid propulsion are already being tested and deployed. These systems reduce emissions while maintaining familiar engine designs. In many ways, hydrogen may act as a stepping stone toward more advanced energy systems.

Nuclear remains further out on the horizon.

Final thoughts

Nuclear-powered boats are not science fiction. The technology already exists and has been proven at sea. But scaling that technology down for civilian use is a different challenge entirely. Small modular reactors represent progress, but they are still too large, too complex, and too heavily regulated for widespread marine use. For now, nuclear propulsion is only realistic for the largest vessels on the water. That said, the idea is no longer impossible.

As energy technology continues to evolve, it is not unreasonable to ask whether the boats of the future might one day leave the dock without ever needing to refuel. The real question is not just whether nuclear power can work on boats.

It is how small, safe, and practical it can become.





Key tips and guidance for managing catfines

Steamship Mutual P&I Club has issued guidance about the management of catfines in marine fuels, emphasizing best practices to minimize wear and ensure operational diligence.

Catfines, short for catalytic fines, are “left behind” microscopic particles comprising Aluminium Oxide (Al_2O_3) and Silicon Oxides (SiO_2) from the zeolite catalysts which are added to the catalytic cracking process utilized in crude oil refineries. The presence of catfines in fuels have been associated with damage to not only engine cylinder liners and pistons, but also to components in the fuel system such as injectors, fuel pumps and valves. As these catalysts are expensive, refineries attempt to recover and reuse them, until recovery is no longer economically feasible.

If catfines enter the combustion chamber, they may become lodged between the cylinder liner and piston rings, potentially leading to abrasive wear which can result in catastrophic damage to the engine in a short period of time.

MANAGING CATFINES

There are established industry best practice operational measures available for the removal of catfines. The effectiveness of these measures in achieving the desired outcome of reducing the level of catfines hinges on the optimal performance of the fuel conditioning systems and the diligence exercised by crew.

According to Steamship Mutual, the following best practices should be taken under consideration to avoid catfines.

SETTLING TANK(S)

An increased resident time of the fuel in the settling tank facilitates heavier catfines to gravitate to the bottom of the tank, from where they can be removed by periodic draining of fuel. Three factors influence the efficiency of removal of catfines in the settling tank:

- Resident time: An increased resident time of the fuel in the settling tank affords time for facilitating heavier catfines to gravitate towards the bottom of the tank.

- Temperature: Higher temperatures in the settling tanks lower the viscosity of the fuel, thereby aiding movement of the heavier catfines through the fuel to the bottom of the tank.
- Water: Owing to their hydrophilic properties, catfines tend to form an emulsion with water, which hinders their separation from the fuel.

Recommendations

- Plan and optimize fuel transfers to maximize the residence time of fuel in the settling tank.
- If two settling tanks are available, where possible, alternate their use to maximize fuel residence time.
- Ensure that fuel in the settling tank is maintained at a temperature between 80-85 °C, or at a temperature recommended for the fuel grade.
- Carry out frequent draining to ensure the removal of catfines and water collected at the bottom of the settling tank.

PURIFIERS

Fuel purifiers (also known as separators) are the most crucial equipment in the fuel conditioning system for minimizing

the catfines in the fuel. The temperature and flow rate of the fuel fed into the purifier influence its effectiveness in removing the catfines, along with entrained water and other contaminants.

Three factors influence the efficiency of removal of catfines in the purifier:

- Feed rate: A low fuel feed rate allows an increased resident time for the fuel in the purifier, improving its effectiveness in the removal of catfines.
- Temperature: Higher temperatures improve the separation of catfines in a purifier by lowering the fuel's viscosity, allowing the centrifugal force to more effectively separate the denser catfines from the fuel.
- Performance: The effectiveness of the purifier in removing catfines is dependent on its operational performance.

Recommendations

- Where available, have more than one purifier in operation to facilitate better removal of catfines from the fuel.
- Maintain the lowest possible feed rate in the purifiers, just sufficient to meet the fuel demand.
- Maintain the recommended temperature of the fuel at the purifier.
- Maintain the purifiers in accordance with the manufacturer's recommendations to ensure optimal operational performance.
- Perform periodic efficiency tests by initiating lab analysis of fuel samples before and after the purifier.

HEAT EXCHANGERS

The efficiency of heat exchangers and associated control instrumentation within the fuel conditioning system plays a significant role in aiding the removal of catfines.

In the settling tank(s), the efficiency of the heating coils has an impact on the time taken by the transferred fuel to attain the desired temperature, and consequently the resident time of the fuel in the tank under optimal conditions for effective separation of catfines.

The efficiency of the fuel pre-heater in continually achieving the desired

temperature has an impact on the effectiveness of the purifier in removing catfines from the fuel.

Recommendations

- Carry out functional tests of temperature control equipment and calibration of temperature sensors/transmitters.
- Inspect and clean settling tanks and heating coils of sludge build-up.
- Inspect and clean fuel purifier pre-heaters.
- Test heat exchangers for leaks.

FUEL FILTERS

Fine mesh filters (10-25 microns) in the fuel conditioning system serve as the final barrier in preventing catfines from reaching the engines. Whilst these filters are not the primary method for the removal of catfines from fuels, they can capture some particles that remain after treatment in settling tanks and purifiers.

Auto-backflush fuel filters are set to backflush at set intervals and on set pressure differential across the filter.

Frequent backflushing would indicate the filter is overloaded, suggesting that upstream operational measures are not being fully effective and require further optimization.

Recommendations

- Inspect fuel filters regularly to ensure their integrity in service.
- Clean fuel filters frequently to remove any accumulated catfines on the filter mesh.
- Ensure the fuel filters and replacement components are of correct specification.

ENGINE MONITORING

While consuming a fuel with high catfines, even if recommended operational measures are followed, it is prudent to closely monitor engine parameters that may be indicative of abnormal wear.

For instance, depending on the engine type, abrasive wear in a cylinder can manifest initially through an increase in cylinder liner wall temperature, whilst a drop in compression pressure would indicate damage to the piston rings and/or liner.

Additionally, utilizing test kits which analyse the iron content in scavenge drains has been found effective in detecting excessive liner wear during engine operations.

Recommendations

- Ensure that engineers on watch are fully aware of key engine parameters that indicate potential abrasive wear in the cylinders.
- Utilize test kits which can provide a real-time indication of abrasive wear in the engines.
- When elevated catfines are detected or machinery damage is alleged, maintaining comprehensive documentation pertaining to the bunker stem is essential for efficient and timely dispute resolution.

Operators are therefore encouraged to follow strict procedural and operational protocols during bunkering and onboard fuel conditioning, paying particular attention to the following key considerations:

- Proper bunker sampling procedures to be followed, obtaining and retaining representative samples of the supplied fuel.
- Correct bunker documentation and records are completed and retained on board.
- Lab analysis reports, including any recommendations for fuel management, to be reviewed and implemented, as appropriate.
- Industry best practices to be implemented for optimization of fuel conditioning capabilities.
- Engineering watchkeeping to be diligently carried out with oversight of the Chief Engineer.
- Engine logbook records to detail all relevant fuel handling parameters and additional supporting documentation to demonstrate appropriate levels of due diligence and serve as evidence in defending potential claims.
- Fuel conditioning equipment to be maintained in accordance with the maker's recommendations.
- Records of inspection, maintenance, tests and calibration activities for equipment within the fuel conditioning system to be meticulously maintained.

AI Technology in marine surveying: A utility assessment



By Joel Lloyd Pinheiro FIIMS (Quest Marine LLC)

Marine surveying has long been regarded as a profession which has been shaped (not merely) by technical knowledge, but by experience, instinct and judgement, developed over years at sea, in shipyards and “on job training”. Traditionally, a marine surveyor arrives on board equipped with a notebook, camera, torchlight and (most importantly) a trained eye. Observations are handwritten, photographs are selectively taken and conclusions are drawn based on evaluation of accumulated knowledge of vessel’s operations, machinery behaviour and assessment of real-world failure patterns.

Today, however, the emergence of artificial intelligence has introduced a new dimension to surveying. An **“AI Surveyor”** can process documents, interpret images, analyse certificates and identify inconsistencies within seconds. Tasks that once required years of experience can now be **(partially)** replicated by a digital model.

Yet, the key question remains: Can AI replace the traditional surveyor, or does the future lie in a hybrid approach?

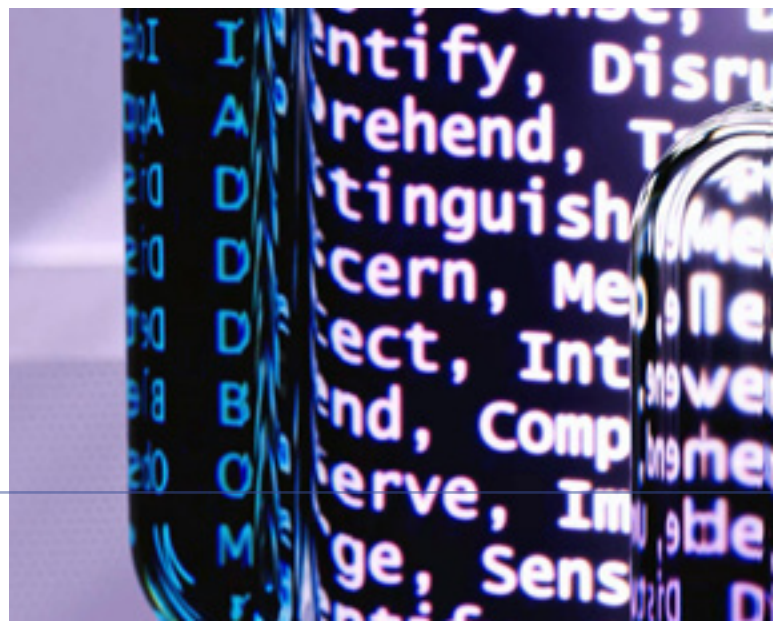
Defect Finding Vs Fact Reporting:

In the field of marine surveying, no two attendances are ever identical. Whether assessing the aftermath of a casualty, evaluating an asset for pre-purchase, or tracing the origin of cargo damage, the job goes far beyond a standard protocol or a checklist. In this dynamic environment, the true measure of a surveyor’s efficiency hinges on his/her practical foresight and his/her ability to blend sharp visual observations (coupled with a mariner’s understanding of daily vessel operations). It requires an intuitive grasp of how machinery actually “behaves and fails” during its operation. The surveyor’s conclusion is anchored by decisive situational judgement.

A seasoned surveyor does not merely **“find defects”** but he/she **interprets them**.

For example, a newly built vessel leaving a shipyard may appear flawless to the untrained eye. However, an experienced surveyor may identify subtle misalignments like early stage coating failures, or installation inconsistencies that could later evolve into significant operational risks.

At its core, a valuable survey goes far beyond simply handing the master a punch list of defects (i.e a mere exercise of listing every defect). The challenge lies in rigorous application of risk prioritization. An expert surveyor acts as a critical filter, assessing which structural or mechanical anomalies pose an imminent threat to the vessel, her crew, the environment and which represent immediate operational vulnerabilities. They must accurately determine what constitutes a routine maintenance item suitable for onboard management, versus a material risk / onboard or shore management failure, requiring urgent escalation to H&M underwriters or P&I Clubs. This nuanced calibration of exposure and liability cannot be explained in a classroom; it is the culmination of years of frontline exposure, technical post-mortems and continuous hard-earned experience.



Artificial intelligence introduces a fundamentally different capability. AI based systems can:

- Analyse large volumes of documents instantly
- Interpret handwritten notes (with OCR integration)
- Review certificates for validity, expiry, and compliance
- Identify inconsistencies in reports and documentation
- Cross-reference data across multiple sources
- Generate structured, insurer-grade reports

A “fresh surveyor” equipped with AI tools can, in theory, perform at a level that previously required years of experience. For instance, AI can:

- Flag expired statutory certificates
- Detect missing documentation
- Identify inconsistencies between reports and supporting evidence
- Analyse photographic evidence for visible defects
- Compare maintenance records with expected standards

This significantly enhances efficiency and reduces the risk of human oversight. However, AI operates within a defined framework only. It identifies what is **visible and structured**, not necessarily what is **operationally significant**. The fundamental difference between a traditional surveyor and an AI-driven surveyor lies in **practical interpretation**.

AI can identify that:

- A certificate is expired
- A report is incomplete
- A parameter is outside standard limits

But it cannot fully understand:

- Whether a defect is operationally critical
- Whether a deviation is acceptable under real-world conditions
- Whether corrective action has already been effectively implemented onboard

Example: Consider a lubrication oil analysis report. An AI model may flag abnormal parameters and classify the condition as a defect. However, an experienced surveyor, after reviewing:

- Engine room logbooks
- Maintenance records
- Purifier operation logs
- Oil replacement history

May conclude that:

- The oil was recently purified after the report was issued
- Contamination levels have improved
- The machinery is currently operating within acceptable limits, as overhauls had just been completed

Thus, what appears as a “defect” on paper may not be a defect in practice.

This distinction is critical in marine surveying, where decisions directly impact :

- Vessel safety
- Insurance claims
- Operational continuity
- Financial liabilities

Modern shipping relies heavily on documentation. A vessel may appear fully compliant (on paper) with:

- Valid certificates
- Complete maintenance records
- Proper documentation

Yet, operational reality may tell a different story. A spotless document trail does not guarantee proper maintenance or correct operational practices or actual equipment condition. The traditional surveyor bridges this gap by physically verifying the equipment’s operational condition, observes the crew practices and understands the overall behaviour onboard. The human interaction to understand the competency of the crew / officers.

Artificial intelligence is primarily document driven and has a fundamental limitation, when dealing with the physical realities of ships.

An inexperienced surveyor (relying on AI generative tools) might easily produce a voluminous, seemingly comprehensive report, but, if the physical investigation misses the mark, that massive document effectively buries the real issues.

The maritime industry operates at a relentless pace, such that vessels depart ports, cargo is discharged, repairs commence rapidly and volatile electronic data is quickly overwritten. True surveying capability means knowing exactly what to look at, and what to secure, in those critical first hours. Added to that is the responsibility of summarising the findings and documenting them in a “fair and logical” manner.

Ultimately, an AI-generated word count does not equate to a competent survey. A satisfactory report must strictly adhere to the instructing Principal’s mandate, present unvarnished facts and exclude any speculative tangents that could prejudice the instruction.

AI can validate
documentation, **but it
cannot** comprehensively
validate reality.



Information Security: The Hidden Risk of the AI Surveyor

As the industry moves toward AI-driven surveying, a critical concern emerges regarding **“data security”**.

Marine surveyors routinely handle highly sensitive information, including:

- Insurance policies
- Claim documents
- Cargo details
- Vessel specifications
- Crew lists (personal data)
- Commercial agreements
- Financial records and invoices

Uploading such data into AI systems, raises serious questions:

- Where is this data stored?
- Who has access to it?
- Is it being used for model training?
- Can it be leaked or misused?

Responsibility of a surveyor extends beyond technical assessment, it includes **“data stewardship”**.

International standards provide guidance on handling sensitive information, such as:

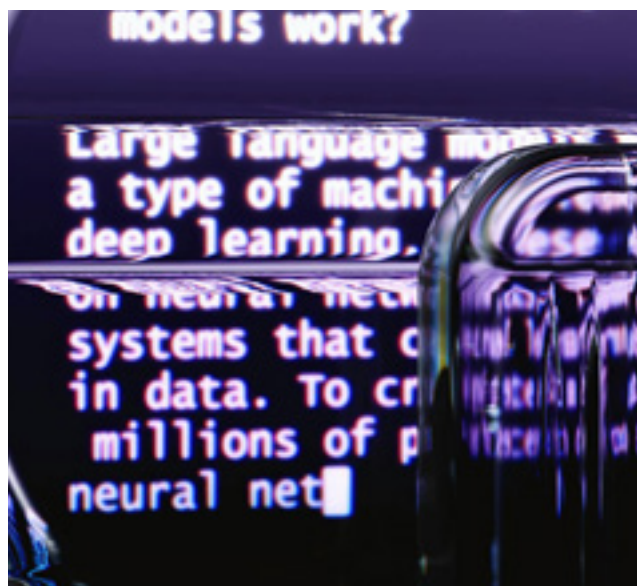
- ISO/IEC 27001 (Information Security Management Systems)
- Data protection regulations (GDPR and similar frameworks)

Surveyors and organisations must ensure:

- Secure data storage
- Controlled access
- Encryption of sensitive files
- Clear data usage policies

Failure to manage this properly can lead to:

- Breach of client confidentiality
- Legal liabilities
- Loss of professional credibility



Legal and Ethical Responsibilities of Surveyors

Unlike generic data, survey information is often **owned by the client**, not the surveyor.

This includes:

- Insurance data
- Vessel operational details
- Crew personal information
- Commercially sensitive records

The surveyor acts as a **custodian**, not as an owner.

When integrating AI into surveying workflows, the following must be considered:

- Has client consent been obtained before using AI tools?
- Are third-party platforms compliant with data protection laws?
- Is the data anonymised where necessary?
- Are there clear contractual terms regarding data usage?

The legal implications of mishandling such data can be severe, particularly in international maritime operations.

Rise of the Hybrid Surveyor

The future of marine surveying does not lie in choosing between AI and traditional methods, it lies in **integration**. An effective surveyor of the future will be a **Hybrid Surveyor**, combining:

From Traditional Surveying:

- Experience
- Practical understanding
- Operational judgement
- Risk-based thinking

From AI Systems:

- Speed and efficiency
- Data analysis capabilities
- Documentation review
- Structured reporting

In practice, this means:

- Using AI to pre-analyse documents before attending a survey
- Leveraging AI to identify potential red flags
- Validating AI findings through physical inspection
- Using experience to interpret AI-generated insights

The above approach (**of Hybrid surveyors**) enhances both **“Accuracy and Productivity”**, while maintaining professional integrity.

Training the Next Generation

One of the most significant impacts of AI, will be on **training of new surveyors**.

Traditionally, surveyors developed their skills through:

- On-site experience
- Mentorship
- Progressive exposure to complex cases

With AI tools, new surveyors may:

- Rely heavily on digital outputs
- Skip foundational learning processes
- Develop limited practical understanding

This creates a risk of creating **“Technically capable, but operationally inexperienced marine surveyors”**.

To address this challenge, training programs must evolve to:

- Emphasise practical exposure
- Teach critical thinking beyond AI outputs
- Develop judgement and decision-making skills
- Encourage questioning of AI-generated conclusions

AI should be treated as a **support tool**, not as a **substitute** for learning.

Conclusion: A Question of Balance

It is difficult and perhaps unnecessary to conclude which is superior: the “AI Surveyor” or the “traditional Surveyor”. The real value lies in **balance**.

AI can enhance efficiency, reduce oversight, and support decision-making. However, it cannot replace the human ability to:

- Interpret context
- Understand operational realities
- Exercise judgement under uncertainty

Marine surveying is not merely about identifying defects and submitting lengthy reports, it is about understanding **what matters, what does not, and why**.

In an industry where safety, liability and trust are paramount, the role of the surveyor remains fundamentally human. The rapid acceleration of maritime technology has severely outpaced the evolution of statutory frameworks and case law, frequently resulting in jurisdictional mismatches and protracted claims disputes. By the time complex technological disagreements reach apex tribunals - such as the Supreme Court or the House of Lords - the technological landscape has often already shifted, rendering newly established legal precedents practically obsolete upon publication. To mitigate this, regulatory bodies must pivot from reactive legislation to anticipatory governance.

Furthermore, the integration of Artificial Intelligence introduces a critical vulnerability regarding trust. Marine insurance is foundationally anchored in the principles of indemnity and *Uberrimae Fidei* (**utmost good faith**). As surveyors increasingly rely on modern technology, underwriters face two paramount concerns:

- First, can the AI-assisted findings of a surveyor be validated as strictly accurate?
- Second, there is a severe risk of proprietary vessel, voyage, or cargo data inadvertently entering the public domain through open-source AI models, thereby exposing the Assured, the Insurer, or the Charterer to unforeseen liabilities.

Challenge lies in safeguarding confidential information and maintaining good faith.

It is my considered opinion that the Insurers must mandate a disclosure clause, such that whenever a marine surveyor submits a report, they must specifically declare the type, scope and specific AI tools utilized in their assessment.

The future is not about replacing the surveyor with AI, It is about empowering the surveyor with intelligence, both human and artificial.

Joel Lloyd Pinheiro FIIMS
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Optimism continues as bulk carrier market enters a new phase



Dry bulk shipping is entering a new era of both opportunity and challenge. Robust commodity demand and evolving trade patterns, driven by China's quest for supply security, are transforming global flows. At the same time, regulatory pressure and sliding sustainability goals are redefining strategies for shipowners and operators worldwide.

*By Morten Løvstad,
Vice President,
Business Director
- Bulk Carriers,
DNV*



After years of volatility, shaped by pandemic-driven disruptions and geopolitical uncertainty, the sector is entering a phase of cautious optimism. Demand for iron ore, bauxite, and agricultural commodities continues to underpin tonne-mile growth, while infrastructure projects, like Simandou in West Africa, signal long-term opportunities.

Global economic momentum and dry bulk trade

Despite geopolitical uncertainty and inflationary pressures, global economic growth has supported steady demand for raw materials. Dry bulk trade surged in 2024, driven by iron ore and grain shipments, before moderating in 2025 due to declining coal demand and weaker steel production. Still, tonne-mile expansion persists, driven by new and longer trade routes, most of them originating from West Africa.

"Global dry bulk commodity demand growth may be modest, but it's consistent enough to underpin relatively strong demand for larger tonnage," says Morten Løvstad, Vice President and Global Business Director for Bulk Carriers at DNV. "This reflects a shift toward supply security and infrastructure-led projects rather than broad-based industrial expansion. Energy transition and fleet renewal will play only a minor role in newbuild demand over the next two to three years."

Bulker market on cusp of major change

For well-established bulk carrier market trade routes, such as Australia to China, and South America to China, markets are in a state of relative balance. Soybeans remain the fastest

growing commodity at around 6% annually, shipped mainly from the US, Brazil, and Argentina to China using Ultramax and Kamsarmax vessels. Kamsarmax vessels also increasingly serve as back-haul carriers for deck cargo, such as large wind-turbine blades. Freight rates for these segments hover near the 10-year average, with no major spikes expected in the short to medium term.

"Agricultural commodities such as soybeans and grains continue to inject seasonal volatility, while minor bulks like bauxite are gaining traction thanks to aluminum demand and renewable energy supply chains," adds Løvstad. "This is offsetting declines in coal exports, creating a relatively balanced total market. However, new forces are reshaping the game."

Bauxite trade a game-changer for capesize tonnage

Bauxite exports from Guinea have surged dramatically over the past decade, transforming global trade flows. From just 20–30 million tonnes exported in 2015, Guinea shipped nearly 175 million tonnes in 2025, overtaking Australia as the world's leading supplier. Most of this volume heads to China – where demand for bauxite is being driven by the electric vehicle and renewable energy infrastructure markets – generating three times more tonne-miles than Australian shipments.

Crucially, since 2015 – and even more so since 2020 – a structural shift has taken place with this commodity, with bauxite transport shifting away from smaller Supramax and Kamsarmax vessels towards larger vessels such as Capesize, Newcastlemax, and VLOCs.

"Guinea's rise as a bauxite powerhouse is reshaping the bulker landscape," says Morten Løvstad. "Once a marginal contributor to Capesize demand, bauxite accounted for around 16% of Capesize tonne-mile demand in 2025, equivalent to around 250 additional vessels compared to 2015 levels, marking one of the most profound shifts in bulk trade dynamics this decade."

Iron ore shipments from West Africa driving more future growth

Iron ore flows are also set for a major shake-up as Guinea's USD 20 billion Simandou project comes online. Forming another part of China's Belt and Road Strategy which aims to increase supply security, this project is expected to gradually ramp up iron ore production to 120 million tonnes per year over the next two to three years, servicing the mechanical and construction industries in China. This will reduce China's dependence on imports from Australia and Brazil, while also displacing lower-grade domestic production in China.

"Simandou is a game changer. Like the bauxite trade, most of this ore will sail to China on Capesize, Newcastlemax, and VLOC vessels via routes three times longer than Australia–China, injecting significant tonne-mile growth into the market," explains Løvstad.

"As this project ramps up from 20–40 million tonnes in 2026, it aims to reach the steady volume of 120 million tonnes per year by end 2027–mid 2028. A standard Capesize with a capacity of 180 k DWT is capable of making four round trips from Guinea to China per year, on average. So, the tonne-mile addition from Guinea iron ore alone could tie up almost 200 Capesize vessels."

Strong bulker newbuild market ahead, boosted by freight rates

With as much as 25–30% of the Capesize fleet projected to be absorbed by bauxite and iron ore trades from West Africa, a structural imbalance is emerging in the market. This could be setting the stage for a major newbuild cycle, to offset a potential imbalance between demand and supply of Capesize, Newcastlemax, and VLOC vessels over the next few years.

This is being reinforced by freight rates: Capesize earnings surged in late 2025, lifting the Baltic Capesize Index above 5,000 points in December 2025. With undercapacity persisting into 2026, freight rate strength is expected to endure well beyond the short term, although at more modest levels than the December 2025 spike and with seasonal variations.

Scale and flexibility driving vessel selection

The choice of vessel size increasingly reflects each owner's strategic priorities. While Newcastlemax has dominated recent orders thanks to economies of scale and faster turnarounds, a shift is underway.

"We expect ordering to rebalance in 2026, with Capesize and Newcastlemax ordered in tandem, as many owners value the Capesize's greater flexibility and broader port access, thanks to its narrower 45 metre beam," explains Løvstad.

Demand for larger, more specialized VLOCs is also emerging. "Traditionally optimized for iron ore, VLOC designs are now being adapted for bauxite carriage as Guinea's exports surge. This trend enhances efficiency and lowers carbon footprint per tonne mile," adds Løvstad.

Yard space constraints impacting bulk carrier newbuild cycles

The pace of newbuild activity will hinge on owners securing yard capacity, particularly because shipyards tend to prioritize higher-margin projects, such as container vessels and gas carriers.

"While the current container vessel cycle might be starting to stabilize, this market is likely to remain solid throughout 2026," says Løvstad. "This may delay the ordering of smaller bulk carriers, probably until 2028 or later. Larger Capesizes, however, are less exposed to these constraints since they are typically built in different yards, and the profitability gap compared to container ships is less pronounced than for smaller bulkers."

Looking further ahead, a second wave of demand may emerge. "After this surge, from around 2028, we are also likely to see a strengthening newbuild market for smaller bulk carriers, especially Handysize vessels of around 40–45,000 DWT, driven by the need for fleet renewal," adds Løvstad. "However, this remains unpredictable and will depend on freight rates and regulatory developments."

What will the new Capesize vessels look like?

With the wider maritime industry pushing for emissions reduction, newbuilds in the bulk carrier market will reflect this trend.

"We expect these new vessels to be highly energy efficient," says Løvstad. "Shaft generators and hull optimization are becoming standard, complemented by a wide range of energy-saving devices. Larger Capesize vessels are also well suited for wind-assisted propulsion systems

and may be prepared for these technologies, driven by cargo owners' involvement."

However, alternative fuels largely remain a longer-term play. "While some larger vessels on fixed trades could adopt dual-fuel engines, uptake will be limited in the near term," Løvstad notes. "Conventional engines will dominate, supplemented by biofuels when necessary. Longer term, operators may reserve space for onboard carbon capture and shore power solutions. Methanol, LNG, and ammonia could become strategically important on specific trades, but until there is clarity on the IMO Net-Zero Framework, or its revision, there are few incentives to be a first mover."

Chinese owners and yards shaping bulk carrier markets of the future

As global trade routes evolve, the bulk-carrier market is poised for strong growth in the coming years. This will be heavily shaped by the growing presence of Chinese owners – now representing about 50% of the DWT of new bulk carrier orders in 2025, compared to just 5% a decade ago – and the concentration of orders in Chinese yards.

"China remains the epicenter of the global bulk carrier market and at DNV we are strengthening our presence there. Last year we established a dedicated bulk carrier expert team in China, providing localized expertise to our customers there," says Løvstad.

With shifting trade flows, regulatory pressures, and emerging technologies driving transformation, those who embrace innovation and sustainability will be best positioned to thrive in this new era of bulk shipping.





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Toys and lithium-ion powered devices can cause devastating marine fires



By **Mike Schwarz**, Chief Executive Officer,
International Institute of Marine Surveying.

In this article, I do not plan to address the specific issues of lithium-ion (li-ion) battery fires on electric powered boats or ships, nor will I discuss the electric vehicles that have caught fire in high profile, well-reported incidents at sea in recent years, whilst being transported on board car carrying ships. That's a topic for yet another day!

Neither is it my aim to scare people in what I hope is a well thought out article, that articulates and reflects where we are at in our current relationship with li-ion as a significant power source. There are millions of li-ion powered devices in existence throughout the world, and the vast majority perform their function without drama or malfunctioning. But there is growing evidence now to show that li-ion batteries, for all their good points, present some significant challenges when things go wrong, especially in the maritime sector.

For balance, it is important to state that statistically there is no evidence to suggest that a li-ion battery conflagration is more likely to occur than a conventional fire,

but the reality is that when one does happen, the results are usually rapid and explosive often leading to a total loss. The inferno represents immediate danger to crew, passengers and the vessel itself, as well as neighbouring boats and even harbour infrastructure. Unlike a fire in an electric vehicle on the road, where the driver has an opportunity to pull over and effect an escape, that luxury is not afforded to those at sea should a similar emergency situation occur.

In recent years, the number of fires aboard vessels has risen dramatically. While there are many potential causes, li-ion batteries have been directly linked to, and proven to be the cause of a number of these incidents.

Li-ion batteries are commonplace these days and the plethora of high-end water toys and electric devices are causing catastrophic fires on boats, often due to overheating while charging, or damage in storage that has agitated the batteries. Some examples include e-scooters, e-bikes, drones, electric surfboards, seabobs, phones, tablets and so on.

Each of us personally could have up to half a dozen li-ion batteries in close proximity - a watch perhaps, laptop, mobile phone, handheld UHF radio, flashlights, other wearable tech, and even vapes - are just a few examples. Unfortunately, the power of li-ion batteries and their convenience come with risks that we need to be aware of so we can take mitigating action when and if required.

Lithium is a highly reactive alkaline metal and the chemistry behind li-ion batteries is complex. This makes it ideal for storing large amounts of energy in battery form but also makes it potentially explosive when something goes wrong. The key is in the construction of the cells which make up the particular battery type. When in use, electrons flow between the cathode and the anode through a perforated separator. If this membrane breaks down, either through poor manufacture, old age or mishandling, a short circuit can occur. Then the cell quickly heats up, the electrolyte expands and a toxic, flammable gas is vented, sometimes explosively. In bigger batteries with multiple cells, the heat starts to damage neighbouring cells, which then also malfunction. This process is called thermal runaway and once triggered, it is near on impossible to stop. When the cell is breached, highly reactive lithium simply adds fuel to the fire.

Thermal runaway is a dangerous, self-sustaining chain reaction in li-ion batteries where internal heat exceeds heat dissipation, leading to excessive temperatures. It causes rapid, uncontrollable temperature rises, releasing toxic and flammable gases - known as off gassing - and often resulting in fires or explosions. The toxic gages are a rarified mix of substances, and if inhaled could kill.

Fire suppression systems and extinguishers are not yet effective enough to guarantee to put out a li-ion fire once it has taken hold, and worryingly, there is an ongoing risk that the device could reignite hours, days, or even some weeks later after the event.



Case Study 1 **Crude tanker S-Trust fire caused by lithium-ion battery is investigation finding**

Image credit: NTSB



The National Transportation Safety Board released an investigation report into the blaze on the bridge of the crude tanker S-Trust on 13 November 2022 when a fire started on the bridge of the crude tanker S-Trust. Fortunately, fire teams from the vessel's crew extinguished the fire. The damage to navigation and communication equipment on the vessel was estimated at \$3 million.

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).

Case Study 2 **Fire Service issues reminder on dangers of lithium-ion batteries following Gayton Marina boat fire**



Early on the morning of 5 August 2025, a li-ion battery fire occurred at Gayton Marina in Northamptonshire on a day boat which had been left on charge overnight. It was the first known event of its kind on the UK canal network. The explosion literally shook the marina, the boats moored in it and rocked the wider canal community; yet this story did not make national news headlines.

Just moments before the local fire brigade were ready to start tackling the flames, the boat exploded with such force that it seems improbable anyone on board would have survived the blast. The results of any subsequent internal investigation, if indeed there was one, remain unknown.

Area Manager Neil Sadler, of Northamptonshire Fire and Rescue Service, said, "Lithium-ion batteries come in all shapes and sizes and are used in everyday items we all own, so we want to remind people of the hazards they can sometimes pose. "If they overheat or are punctured, crushed or overcharged, then they can release a flammable vapour which can ignite, burn or in some cases explode.

"We want to ensure people follow the appropriate safety advice to mitigate any risks that lithium-ion batteries can pose in products we use every day, such as mobile phones, electric cars, charging devices and tools.

"The main advice is for people not to put these batteries in the bin. Make sure you take them to your local household recycling centre so that staff there can dispose of them safely."

Protection is key and there are some simple yet essential things that can be done

In most cases, regulators remain behind the curve as far as li-ion battery technology is concerned. However, there are industry guidelines emerging as more becomes known. The US Coast Guard Safety Alert 14-25, for example, covers those hazards that are linked to li-ion batteries and urges the importance of proper inspection regimes and crew training.

Additionally, there are practical, common sense steps that should be taken. Make sure that li-ion batteries are certified to UL, CE or IEC standards. At all costs, avoid cheaper products, such as chargers, and stick to the manufacturer's specifications always.

Mixing battery types must be avoided. Compatibility between batteries, devices and chargers must be verified to avoid electrical mismatches that could cause overheating or failure. For shipboard use, all procurement should be documented in inventory logs to ensure traceability and accountability.

Storage considerations

Li-ion batteries do not like excessive heat or cold and must be stored in cool, dry, well-ventilated areas. Li-ion fireproof containers and special bags should be used where possible and kept well away from flammable materials. Crew should avoid stacking batteries, which can cause short circuits and fires, and ensure that personal devices and power banks are stored separately from combustible items.

Some practical safety tips and advice

- Any li-ion battery propulsion installation should have been installed by a competent person. Are you able to check this is the case? And does it meet the *ISO 23625:2025 Small craft - Lithium-ion batteries* standard published last year? This document specifies requirements and recommendations for the selection and installation of li-ion batteries for boats, as well as requirements for the safety information provided by the manufacturer.

- It is recommended that devices should never be left on charge overnight unattended. Even when charging in the daytime, it is good practice to be able to have line of sight to your device on charge.
- Checking batteries regularly is a good and sensible practice. Look for any signs of swelling, corrosion or weeping. If you see something that looks wrong, be vigilant as the device could misbehave without warning. Isolate it in a secure place if it is safe to do so.
- Never accept a charger offered by someone else because you have left yours behind. You cannot vouch for its authenticity.
- Buy replacement batteries or chargers from trusted suppliers, and always choose a genuine, branded product.
- Never cover chargers and make sure they are charged in a well-ventilated area.
- Always charge in cool, open areas and avoid charging in direct sunlight or hot environments.
- Never charge a li-ion battery device in a place where you would need an escape route in the event of a fire - the speed and rapid spreading of any fire could block your way out.
- If you see white vapour that may look like smoke coming from a battery then get out, stay out and call the fire service immediately.

In conclusion

Having some knowledge about li-ion battery technology and its associated risks, (much of which is simply common-sense), can surely only be a good thing in both our personal and professional lives. You are encouraged to share some of what is now known about li-ion battery fires with your own networks.





The road to trouble is paved with many good intentions

The use of lithium-ion batteries in the maritime sector is increasing. Many see battery energy storage as the most suitable decarbonisation solution for the small craft, and pleasure sector. This is debatable, however, with the supply of sustainable fuels such as HVO that can be used in diesel engines without any conversion of the engine; but battery technologies will certainly have a role to play in a low emission future.



By **Marcus Jones** Jones AMIMarEST, DipMarSur(IND) www.lsemarine.com

In this race to lower emissions, the safety challenges of lithium-ion batteries are poorly understood, or even completely ignored. Leading edge safety research and testing of lithium-ion batteries and emerging battery chemistries are revealing a huge amount of new detail about the complexity of battery failure, and about the nature of the hazards that will create new risks from marine application of these high energy batteries.

There is commonly a long lead time between research findings and the updating of industry safety regulations. As a result, regulations regarding the testing, and installation of lithium-ion batteries in the marine sector are inconsistent, or confused at best. These gaps in the knowledge of what safe installation or best practice is, in comparison to what safety testing is showing, is allowing unintentionally unsafe installation designs to enter into use in the marine industry. This poses serious safety risks for the public, for marinas, harbours, marine surveyors, ports and waterways authorities, and real concerns for insurance companies, P&I clubs and flag state authorities.

This confusion and conflict is further increased by classification bodies and flag state authorities seeking to plug these knowledge gaps in the International Electrotechnical Commission (IEC) and ISO core standards with guidelines which miss important details, and neither of which fully understand the complexity of the safety challenges either. Catastrophic battery failures are rare but high impact when they do occur! So far, only good fortune has prevented serious injuries or something far worse in the marine sector.

The safety challenges are complex, and we have already covered the nature of these (see the March 25 edition of The Report magazine and the Maritime Professional Council's 'Lithium-ion battery fires: What we know so far' guide), so I will not go into huge details again. However, here is a brief reminder of the key elements of lithium-ion battery failures.

- Failure is not a fire, it's heat! No active fire is required for failure (thermal runaway) to be present.
- All the existing chemistries we use - including the new ones - can experience failure, but different chemistries will express this failure in differing ways, giving varying primary hazards.
- Currently there is no full resolution to failure, other than the ability to slow reactions down, buying time and possibly limiting propagation of the failure.

The safety challenges stem from the high energy density of these battery chemistries. As the energy density increases so do the hazards from any failure. It's the same energy density that makes these new battery technologies so useful but also makes them so hazardous should a failure occur.

So what standards are currently on the menu?

Cell, module or battery and system level test standards

- IEC 62619:2023: Secondary cells or batteries containing alkaline or other non-acid electrolyte - safety requirements for secondary lithium cells and batteries, for use in industrial use.
- IEC 62620:2023: Secondary cells or batteries containing alkaline or other non-acid electrolyte – secondary lithium cells and batteries for use in industrial application.
- UL 1973: Batteries for use in stationary and motive power applications.

IEC 62133-2:2017: Design and electrical construction standards for lithium batteries tested in IEC 62619:2023 and IEC 62619:2023.

- UL 9450A:2019 - Test methods for evaluating thermal runaway fire propagation in battery energy storage systems.
- IEC 62984:2020 - Safety requirements for high temperature secondary cells and batteries in battery energy storage systems (Up to 1500VDC).
- IEC 63056:2020 - Safety requirements for secondary lithium cells and batteries in battery energy storage systems (Up to 1500VDC).

Marine installation guidance documents:

- ISO 26325:2021 Small craft lithium-ion batteries.
- MGN 550: Electrical installations. Guidance for safe design, installation and operation of lithium-ion batteries.
- ABS (American Bureau of Shipping): guidance on the Use of Lithium-Ion Batteries in the Marine and Offshore Industries
- Lloyd's Register: Battery Installations -- Key hazards to consider and Lloyd's Register approach to approvals (second edition Jan 2016).
- RINA Type Approvals.
- BV (Bureau Veritas): Type approvals.
- DNV (Det Norske Veritas) Type approvals.

It can be seen from the above list of regulations that the number of available options are huge. This gives a very wide range of ideas of what "safe" looks like, depending on the flag state, or classification society requirements a ship system is designed to and the core IEC, UL or ISO standards referenced. The main testing standards commonly referred to in marine guidelines are IEC 62619:2023, IEC 62620:2022, and IEC 62133-2:2017, plus the occasional referral to UL 1973, IEC 62984 referenced by some class or flag state authorities. The types of test used are common to all these standards, however, the test requirements and pass or fail conditions can vary widely between them. See figure 2.

For example, under IEC 62619:2023 a test pass requires **no active fire/flames from, or explosion of the cell under test** in all the listed tests. Venting of gases is seen as good, as this relieves pressure in the cell or module. In fact, cells are designed to vent gases or vapour, but the venting of gases is not monitored or seen as a failure mode under any of the IEC 62619 standard tests, and can go on as long as it likes, or until ignition occurs, which would only then be seen as a failure.

The requirements in UL 1973 and IEC 62984 are more detailed. The majority of tests require **no flammable gas emissions** and **no toxic vapour release** among other requirements to pass, so UL 1973 does regard venting of gases or vapour as a failure mode, and explosive volume is monitored and must be below gases LEL to pass under some of the UL 1973 tests at battery and module level, but not all. However the rate of gas release is seemingly not measured at all, which would be valuable information to have when designing a ventilation management system for a marine battery installation.

There are additional variations. The "thermal abuse test" for example, has widely different temperatures and exposure periods for the test. IEC 62619:2023 test heats cells or cell blocks to 80C for 3 hours and waits for temperature fall afterwards, while UL 1973:2022 tests at battery or cell or battery module level by heating to 130C for 30mins and observes the battery for 24hours post heating period.

Standard Tests	Test LEVELS		
	IEC 626219	UL 1973	IEC 62984
Thermal shock and cycling	NO	Cell or battery	NO
External short circuit protection	Cell block	Cell or module	Module or battery
Over charge protection	Cell / System	Battery / System	Module or battery
Over discharge protection	Cell or cell block	Battery / System	NO
Over temperature protection	System	System	Module or battery
Thermal propagation	Battery / System	Battery / System	Battery / System
Mechanical damage by external force	Cell or cell block	Battery / System	NO
Impact test (drop test)	Cell or cell block	Level not specified	Module or battery
Thermal abuse (fire)	NO	Battery / System	Module or battery
Emission of gas: Only UL 1973, IEC 62984 monitors this			

Figure 1: Table of test types and testing levels

Standard Tests	Test pass or failure requirements		
	IEC 626219	UL 1973	IEC 62984
Thermal shock and cycling		Cell or battery	
External short circuit protection	Cell or cell block	Cell or module	Module or battery
Over charge protection	Cell / System level	Battery or system	Module or battery
Over discharge protection	Cell or cell block	Battery or system	
Over temperature protection	System	Battery or system	Module or battery
Thermal propagation	Battery system	Battery or system	Battery system
Mechanical damage by external force	Cell or cell block	Level not specified	
Impact test (drop test)	Cell or cell block	Module	Module or battery
Thermal abuse (fire)		Battery or system	Module or battery
KEY			
No fire / No explosion, No vapour release, No leakage, No gas emission		No fire / No explosion	

Figure 2: Table of Pass/Fail requirements

The variation in test requirements means the tests under the currently framed standards don't consistently reflect the nature of battery failure, or monitor the hazards that are going to cause risks in a marine installation; the release of toxic and flammable gases that occur long before flames, and create the risk of Vapour Cloud Explosion (VCE) in the confined spaces within a ship or small craft.

So, what possible solutions might there be?

First of all, we need a complete review of the current standards and guidelines in the current menu. This is what the IMarEST MESIG is aiming to do with regard to what independent safety testing is telling us about failure, and what hazards a failure is likely to cause in a marine installation on various types of vessels. Any new standard would likely be created as a IEEE standard to apply at an international level.

Requirements under IEC 8846 for intrinsically safe electrical devices in battery spaces might seem to be a solution, but that will not include a failing battery module within that space. Good ventilation management seems more helpful, but the battery testing in standards needs to allow this to be calculated for by measurement of vapour release and volumes over time. This can only really be achieved by creating a standalone clear single marine lithium-ion battery test and installation standard that will clearly tell the battery suppliers what safety performance we want for marine

batteries, rather than the battery manufactures telling us in the marine industry what we are going to get. However, an IEEE standard could still contain elements from the exiting standards available. This has been done for other industry standards, such as SAEs and IEC 61982 for EVs and CAA and ICOA requirements for aviation with reference to IEC 60952 for example.

A single standard could cover all vessel types and applications of lithium-ion batteries aboard. This would mean safety systems would be common between ships, allowing a common training system for crews, surveyors, emergency response, and safety management systems like ISM. This would also make third party maintenance easier and safer, even after an Original Equipment Manufacturer (OEM) has gone out of business; a problem that has caused battery failure after repairs by a third party to keep a system operational. A single standard would mean that classification societies, insurance companies, and P&I clubs would have clear minimum rules that they can require ship yards, vessel builders and owners to follow, and they would not need to try and plug gaps in a way that further confuses the understanding of what is safest, or best practice. It would also help the establishment of formal training courses like the UK MCA Advanced engineering course AEPC 1 and 2 rather than isolated islands of understanding leading to widely varying training on what safe system is.

Another issue raised by IIMS surveyors to be addressed in a marine lithium battery standard is the design of BMS systems and access to battery system information, giving an agreed safety related set of data using a common protocol, such as NEMA or CAN bus networks, thus allowing anyone with a compatible device to down load data from a BMS unit locally, without referral to a OEM system supplier. The upcoming EU battery passport requirements might help in the drafting of this. This would require a review of the existing IEC 62620 which covers battery management systems and electrical specifications, but again there is no reason why a new single IEEE standard could not include a clearly specified set of data requirements.

A clear set of goals is needed that tells the industry how to use lithium-ion and high energy density batteries appropriately and ensure they are treated with a respect for what they really are. The safety challenges are going to increase as the energy density of batteries increase with All Solid State types and Sodium Ion chemistries, which might not really be part of the lithium-ion family, because they have lithium metal anodes making them lithium metal batteries with sulphide based electrolytes like SPL. These chemistry changes also mean that water based agents are not going to be a good choice for fire suppression or cooling. A single marine standard would be easier for a coordinating group to keep up to date as battery technologies are developing rapidly.

With all this, lithium-ion and other new battery chemistries have much to offer the marine world. We should not be scared of them, but we should be aware of the safety challenges they can present and equip regulations to address the hazards of a failure. Fire service professionals, battery safety researchers, the BSS, IIMS, IMarEST, leading scientists and many others I have contact with are already highlighting these potential problems and are discussing

solutions and trying to increase public and industry awareness. But from responses, or the lack of them at various maritime industry events mainly in the pleasure sector, I am worried. The concern I have is that marine business leaders, and local authorities are not understanding the safety challenges that current and future battery chemistries present and are underestimating the hazards and risks from a battery failure occurring aboard a vessel in a UK harbour, marina or in coastal waters.

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Overview of battery safety tests in standards for stationary battery energy storage systems

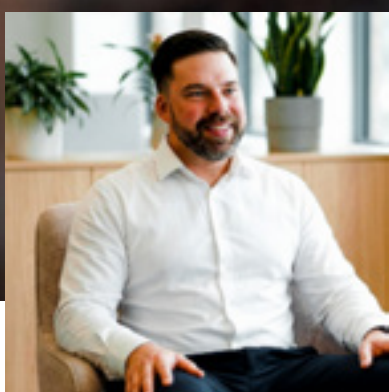
Authors: H Idlebrand S, Eddarir A , Lebedava N

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Ahead of the spark: Fire safety for workboats and offshore fleets

Image credit: Ramtech



By Morgan Davis, Business Development Manager at Ramtech

Fire risk during maintenance and refit is under renewed scrutiny across the maritime sector, writes Morgan Davis of Ramtech, which designs and develops industry-leading end-to-end Internet of Things and innovative wireless solutions to suit a variety of industries.

The 2020 blaze aboard the USS Bonhomme Richard caused more than \$3 billion (€2.5 billion) in damage and led to the vessel being scrapped, and a December 2025 Government Accountability Office report highlighted ongoing gaps in fire safety oversight.

This resonates across Europe, where workboats, harbour craft and offshore wind service vessels face similar risks during hot work, temporary power use and operations in confined spaces. Morgan Davis stresses that operators must move beyond labour-intensive fire watch and adopt smarter approaches to maintain visibility and control before sparks turn into full-blown engine-room incidents – lessons that resonate across Europe’s workboat and offshore wind sector.

At the time of the Bonhomme Richard fire, manual fire watch remained a cornerstone of marine fire prevention. Human monitors were tasked with observing hot work areas and raising the alarm if

smoke appeared. This relies on people being in the right place, at the right time, fully alert. Fatigue, shift changes and poor communication all create risk.

Hot work will always carry risk

This challenge is equally acute during maintenance, retrofit and port operations for European workboats, harbour craft and offshore wind service vessels. Designed for service lives of 20 years or more, these vessels undergo structural alterations and system retrofits over time, which can reduce access to enclosed cavities and make inspection and monitoring more complex.

Over the past decade, engine room fires on crew transfer vessels, such as the Windcat 3 in 2010 and the Windcat 8 in 2017, have required rapid intervention, often involving fixed CO₂ systems and coordinated crew responses.

In some cases, smoke and confined spaces made access difficult, underscoring the need for early detection, resilient monitoring and robust safety procedures. These incidents demonstrate just how critical early detection is – a gap that wireless monitoring is designed to fill.

The limitations of fire watch and wired systems

As detection windows narrow and operational complexity increases, the case for more resilient monitoring becomes stronger. Tight schedules, ageing vessels and complex retrofits not only elevate fire risk but also increase insurance exposure and potential downtime, making rapid detection and effective mitigation critical for both safety and business continuity.

It is also important to recognise that ships contain numerous voids: unmanned spaces where debris can accumulate over years of service. These concealed areas present a significant hazard, particularly during hot works such as cutting through bulkheads, where sparks and heat can ignite hidden combustible materials and allow fire to spread undetected.

Hot work remains one of the primary ignition sources during maintenance. Temporary generators, welding operations and confined spaces amplify the danger, particularly where fuel systems, engine rooms and auxiliary machinery are located close together. In some vessels, small diesel engines may even be positioned above boilers, creating additional risk if leaks or residual fuel are present. In such environments, even minor fuel leaks can escalate rapidly if not detected early.

Manual fire watches are resource intensive and costly, and they leave room for human error. Operators are increasingly turning to smarter, adaptable monitoring solutions that provide continuous oversight across concealed spaces and can adjust to changing conditions during complex maintenance operations.

There are also practical limitations with wired setups. Installation can be slow and inflexible, while cables are vulnerable to vibration, accidental damage or environmental interference, potentially leaving critical areas unmonitored during high-risk periods. In addition, wired systems can compromise the

integrity of fire zone boundaries. Where cables pass through bulkheads and decks, fire zone boundaries may not be fully secured, increasing the risk of fire or flooding spreading through the vessel.

The business case for wireless fire safety

Across both the US and Europe, the cost and labour demands of continuous manual fire watch efforts make wireless detection increasingly attractive. Over extended refits, investing in flexible monitoring strategies can reduce risk, downtime and insurance exposure. Such approaches can often be redeployed across multiple projects, offering long-term operational value.

For operators, the goal is not just regulatory compliance but demonstrable risk reduction. Smarter monitoring provides coverage across concealed spaces, supports evolving regulations and strengthens crew response without over-reliance on human vigilance.

Investment in modern detection and monitoring technologies enables round-the-clock oversight, whereas post-hot works stand down periods with personnel typically range from 30 minutes to three hours, creating potential gaps in oversight once human supervision is withdrawn.

The maritime sector has reached a point where dependence on manual processes is no longer proportionate to the risk. Integrating adaptable detection and awareness strategies allows operators to maintain safe, resilient fleets in demanding conditions without compromising operational efficiency.

In an era of high fleet utilisation, tight margins, shrinking skills pools and growing regulatory scrutiny, operators must embrace smarter fire safety approaches or risk costly incidents, lost availability, and reputational damage. For Europe's workboats and offshore fleets, staying ahead of fire risk is no longer optional – it's a matter of operational survival.

Ramtech website: <https://ramtechglobal.com/>

This article first appeared on the Maritime Journal website and is republished here with our gratitude.



Heavy weather at sea: managing risks on passage



Mark Russell

*By
Mark Russell, Vice President, Global Claims
Lead, and Bruce Liu, Loss Prevention Executive -
both from Gard P&I Club*



Bruce Liu

This article analyses the sea passage when vessels may be more exposed to sustained or deteriorating conditions. We examine scenarios, decision points and operational pressures that can turn heavy weather into a potential casualty.

In this Insight we focus on the sea passage, when the ship and those onboard can soon find themselves without shelter and with limited assistance.

Commence or delay the passage?

Before the ship leaves shelter for a sea passage, it is prudent to assess whether departure should be delayed. It can allow heavy weather to pass through or more time to complete additional cargo and ship securing. The master may feel under commercial pressure to sail despite a deteriorating forecast or an under-prepared ship. Even without such pressure, there can be danger in leaving a decision to sail solely with the master. That was the indication from this investigation into a cargo shift that punctured tanks and flooded the hold, causing the vessel to list up to 45 degrees. Several crew members were injured, and all were evacuated before the vessel was finally salvaged.

Securing for departure

It is normal to secure the vessel for potential heavy weather on passage, including anchors, openings and loose gear, especially on deck. The danger of leaving this work until after the vessel has left shelter is made clear further below. The forecastle needs particular attention as it will face the brunt of slamming forces and wave impact with potential for water ingress. Anchor securing also needs double checking. There are several known occurrences of an anchor becoming dislodged from its housing in heavy weather, with the vessel continuing underway not realizing that the paid-out anchor drags along the seabed damaging sub-sea infrastructure. In one case involving sub-sea cable damage, the crew assumed the increased engine load was a machinery issue in heavy weather. It was estimated the anchor had been deployed for approximately 31 hours before the crew discovered it.

Passage planning and weather routing

Weather has always been a key consideration in passage planning and today high-capacity broadband makes it possible to provide connected ships with more real time information. Routing costs, schedules, fuel efficiency, and emissions, even harnessing wind for propulsion, make routing decisions today more operationally important than ever before. This has led to many more ships receiving weather routing services from specialist companies ashore. Adjustments to passage plans are now made with increased frequency in the pursuit of optimization. Whoever stands to benefit most, increasingly complex commercial considerations are influencing decision making onboard.

Even though SOLAS makes clear that masters shall not be constrained from taking decisions necessary to maintain the safety of the ship, support from their own company ashore remains important. This is particularly the case where a master may sense some commercial pressure to maintain a schedule or from a charterer who stands to benefit from route optimization. Relevant charterparty clauses recognize the discretion of a master to deviate from a charterer's preferred route. The sophistication of weather routing services may nevertheless encourage greater reliance on assessments made by specialists ashore. These assessments may suffer some shortcomings and the company ashore can assist a master with objective review. In a recent arbitration, the owners lost a dispute with charterers over hire and bunkers when a master decided to turn the ship around to take a safer route. The tribunal found that it was reasonable for the master to reject the weather routing company's recommended route with forecast wave heights over 9 meters. However, they also found that the master should have critically evaluated the recommended route prior to sailing and his delay amounted to a breach of a legal duty to proceed with due dispatch.

This brings us back to the importance of passage planning. Early identification of weather systems of concern that may affect the route allows them to be checked at regular intervals for the latest information. Courses and speeds can then be adjusted to manage the risks. Even if heavy weather cannot be avoided, there may be a need to increase the safety margin provided for in the original plan or ECDIS generated route. If for example, the vessel can be expected to spend considerable time adjacent to a rocky coastline to leeward with no shelter, it may be prudent to increase the

passing distance. As the incidents in this series of articles show, if something does go wrong, the time to react can become very precious. Owners can consider including heavy weather routing reviews in navigational audits. Routing service providers should be part of the conversation if they may also benefit from insights or lessons learnt from accidents and near misses.

In the path of a storm

When the ship finds itself in the path of an unavoidable storm, decision making can become even more critical, especially if not made early and decisively to avoid the more dangerous side and to increase the passing distance. Regional meteorological bodies provide useful guidance in addition to that found in nautical publications. Riding out a storm will put extra stress on the ship's hull and strain on the machinery. It may be necessary to heave-to at a low speed sufficient to maintain steerage for a heading that best minimizes pitching and rolling and, if closer to a lee shore, reduces the rate of drift. The drift should be closely monitored, and some Class societies include this in emergency response services. Emergency use of the anchors may ultimately become necessary if the water depth makes it feasible and the holding ground is suitable. There was a successful outcome for this vessel, which found itself beset by 58-mph winds and 29-foot seas on a rocky lee shore. The ship was commended for early notification to the authorities, which allowed contingencies to be put into place.

Direct impacts for those onboard

For crew, working on deck in heavy weather continues to cause fatalities and serious injuries. The table below gives an overview of just some of the investigations conducted into crew fatalities and injuries from 2020-2023. There have been more since and Gard is handling a recent fatal accident involving a container ship crew attempting to clear entangled mooring lines on the forecastle. That is where most of the accidents in the table below occurred, though one also occurred on the poop deck.

Seas on deck causing crew to be crushed or swept overboard can happen suddenly and unexpectedly, and despite precautions. In the tabled cases high wave heights were prevailing or forecast and those that led to accidents were likely higher. Forecasts are usually based on the significant wave height and it is important to note that this is usually defined as the average height of the highest one-third of waves (sea and swell) experienced over time.





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One in every seven waves may be higher than the significant wave height and the maximum can be up to twice as high. Even higher rogue waves can occur and research into predicting them is ongoing. The investigation into the VLCC fatalities below concluded that a rogue wave was involved and the report provides valuable insights.

The Code of Safe Working Practices for Merchant Seafarers (COSWP) makes clear that no one should be on deck in adverse conditions unless it is absolutely necessary for the safety of the ship or life. Any task that must proceed requires the master's authorisation and full risk assessment with a permit to work.

Seas on deck are not the only danger to crew during heavy weather. Fatalities have also occurred under-deck, as was the case in this investigation, when crew were assessing a cargo shift. In prolonged heavy weather, decision making onboard can be impaired by fatigue or anxiety. The company ashore has a role in encouraging open communication and "stop work" authority when assessing the hazards versus necessity of the work. Just because a heavy-weather checklist refers to rigging of safety lines and adjusting the course and speed to mitigate conditions onboard, this does not mean that work should be undertaken.

Gard has also recently seen that serious injuries can occur during extreme rolling, especially if it causes inadequately secured items to break loose in internal spaces. Whilst more violent ship motions can be unpredictable, they can be more likely when making course alterations so those onboard may need to be forewarned. Fatigue coupled with heavier motions amplifies the risk of more typical slips, trips and falls, not only to crew but also passengers who may be safer in cabins or at an inboard location. The above-mentioned VLCC accident occurred off Cape Horn, which has a reputation for dangerous waves. This was also the scene for another fatal accident on a cruise ship and an example of how powerful waves can expose weaker parts of a vessel such as the windows. The investigation found that the wave was not abnormally large or outside what the ship was designed to withstand. However, it rose far higher up than the crew had reason to expect. Investigations have referenced similar incidents from the past and a more recent wave in the North Sea smashed bridge windows disabling the ship.

Propulsion failure

Losing the ability to manoeuvre the ship in heavy weather, even temporarily, can leave it exposed to violent rolling from beam seas or increased drift towards a lee shore. Even well-functioning machinery and equipment are put under greater strain in heavy weather. Problems may be exacerbated by the loaded condition, as indicated by this investigation where a bulk carrier in ballast was overwhelmed by severe gale-force winds as it attempted to turn and run with the weather until the storm abated. The effect of the wind on the sail area prevented the turn from being completed and despite maintaining propulsion, the vessel was blown broadside over 7 miles until it suffered a collision.

If there is machinery failure, as was the case in another investigation, even the best efforts of the crew may not be enough. The vessel lost power four miles from an offshore rock, which it eventually struck. This was despite the best efforts of engineers to repair a cracked lubrication oil pipe, a repair that was extremely difficult, if not impossible in such adverse conditions. On the bridge the master deployed the anchor which helped to change the heading, but not the rate of drift due to the water depth.

Structural failure

The loss of a ship from structural failure is now extremely rare due to lessons from past casualties. Although often connected with heavy weather, when these losses have occurred, they are more typically associated with a ship specific issue such as a design defect or poorly conditioned hull. Improvements in design modelling, ship building materials and standards, IMO and Class requirements as well as more rigorous maintenance and inspection, means that modern hulls are strong enough to cope with weather they can reasonably expect to encounter. For older vessels or those with extensively altered hulls, in trades causing higher stresses, effective condition monitoring becomes more important as heavy weather and fatigue can combine to overwhelm residual structural strength.

Cargo failure

Cargo failure is a common risk in heavy weather and mostly associated with ships carrying multiple cargo units, such as containers, vehicles and break-bulk. However, it can also affect bulk cargoes at risk of capsize from liquefaction under the stimulus of compaction and vibration. For Group A cargoes the IMSBC Code guides crew to check the appearance of the cargo regularly during the voyage. The incident featured at the beginning of this article also involved a near capsize when 60-ton pieces of cargo broke lashings inadequate for the forecast conditions. Heavy or large non-standard cargo units such as this pose extra risk, and the ship may need support from lashing specialists in the company ashore. Units on deck are usually exposed to higher forces and can endanger the crew when attending lashings during the passage. If units fall overboard, they present a risk to other ships and the environment.

As Gard observed in another Insight, the recent re-routing of vessels around South Africa led to several incidents of cargo failure in unforgiving seas. Notably a Class approved Cargo Securing Manual (CSM) reflecting standards set by the Code of Safe Practice for Cargo Stowage and Securing (CSS Code). The Code's general principles importantly link decisions to the most severe weather conditions which may be expected by experience for the intended voyage. It also contains guidance on avoiding excessive accelerations caused by

heavy weather and which should be part of the CSM. For the passage, this may involve alterations of course and/or speed as well as timely ballasting or de-ballasting to improve behaviour of the ship. The stability condition is a very relevant factor as a higher metacentric height (GM) produces greater acceleration forces.

Gard's studies specifically into container losses have shown that more units usually mean more risk, as does the duration of exposure to progressively worsening weather and the wave heights encountered. We have also highlighted that when routing around South Africa options to re-route for weather are more limited. Whilst losses of significance off South Africa in 2024 were not repeated in 2025, they continue to occur elsewhere and reporting is now mandatory. Factors causing container stack collapses are numerous. AMSA has more recently published a bulletin on issues arising from accident investigations which have provided valuable input to the Top Tier project aiming to reduce container losses.

A fuller review of the Top Tier project is beyond the scope of this article, so comment here is limited to some reflections on where support to the crew is more relevant.

- It can be difficult to predict conditions that can lead to resonant or parametric rolling and which have been found to cause most large-scale collapses. Crews benefit from digital tools that provide real-time risk warnings. More basic tools and a lack of experience can mean less attention to the risk of these dangerous conditions.
- Lashing force calculations can differ between Class societies and a ship may use different lashing software from that used by a stow planner ashore. A lack of harmonised standards may result in stow planners using less prudent design limits. Masters facing schedule pressure may feel influenced to accept the shore plan even where the ship's software shows excessive lashing forces.
- In one accident investigation involving a 7000 TEU ship, the CSM listed over 13,000 twist locks and nearly 4,000 lashing rods and turnbuckles. On top of checking deck fittings for wear and tear, maintaining and inspecting such large volumes presents a significant challenge.

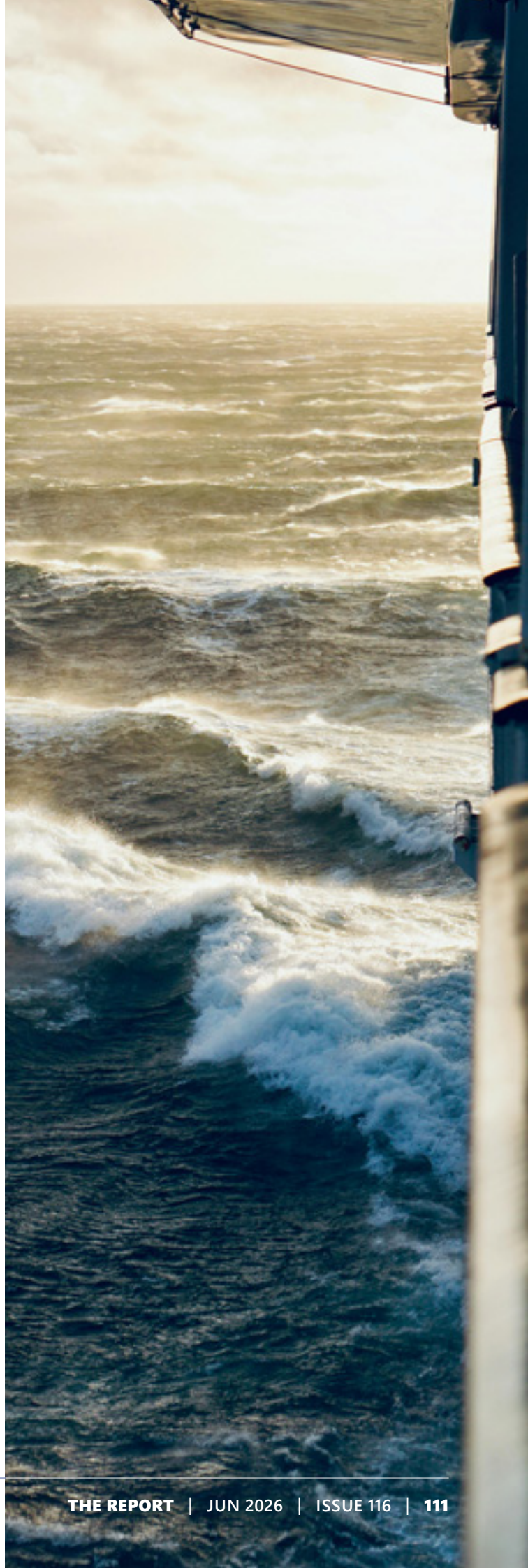
Key takeaways

We have seen in this article that decision making on passage can be safety critical. This can be impaired by fatigue from prolonged heavy weather and decisions can also be influenced by commercial factors. Technology increasingly aids decision making but it serves to remember the Breton Fisherman's Prayer, long since referenced in the opening pages to nautical publications for ocean passages. It reads:

"Oh God be good to me, Thy sea is
so wide and my ship is so small".

This respect for the sea, with support from the company ashore, can make all the difference.

This article was first published on the Gard P&I Club's website and is republished here with our thanks.





AI, Analytics, and Automation: The New Currents in Maritime Operations

By **Yurii Biryukov**

For decades, maritime operations have been defined by tradition, by paper logs, phone calls, and manual entries that somehow coordinated one of the most complex systems in the world. That era is ending. Today, software is doing what steel and fuel once did for the industry, powering global trade at scale.

Having worked closely on large-scale maritime HR and compliance systems, I've seen how digitalization is no longer about convenience. The shift from manual, disconnected workflows to integrated, data-driven operations is redefining how fleets manage people, payroll, and safety in real time.

The human core of maritime tech

The global maritime digitization market, valued at around \$176 billion in 2023, is projected to reach \$361 billion by 2030, growing at an annual rate of over 10 percent. That acceleration is not driven by hype; it's being pulled forward by real-world pressures - regulatory demands, labour shortages, and the industry's shift toward data-driven decision-making.

At the heart of this digital transformation are the multinational crews who make global trade possible. Managing them has always been one of the industry's most complex tasks. Each vessel is, in effect, a moving jurisdiction, operating across borders, tax regimes, and labour laws.

New software systems are finally keeping pace with that complexity. Automated payroll and compliance engines now handle multi-currency, multi-jurisdiction operations with precision, cutting human error and compliance risks. For shipowners, these tools don't just simplify accounting; they build trust and transparency across the fleet.

The key innovation today lies in translating complex maritime labour conventions into dynamic compliance logic, where rules are enforced automatically through data validation, not post-facto audits. This is turning maritime HR into a domain where software intelligence complements human decision-making.



From paper to predictive: A compliance revolution

Crew compliance and welfare have become critical focus areas for both regulators and operators. Maritime labour conventions require meticulous tracking of working hours, rest periods, certifications, and safety training. For years, this was handled manually, often with paper-based systems vulnerable to error.

Today, modern platforms, such as DNV ShipManager Crewing, COMPAS (OneOcean), Mintra OCS HR, and other crew-management systems support increasingly automated crew-compliance workflows. If a certificate is about to expire or rest-hour thresholds are at risk, many systems can provide real-time alerts to both ship and shore teams.

This proactive visibility can help to reduce violations and improve both safety and morale, turning compliance from a reactive burden into a more predictive system of accountability.

Modern crew-management systems now operate on event-driven architectures. Every change, from a certificate update to a rest-hour log, triggers validation workflows and alerting mechanisms both onboard and on shore. These systems can help identify potential compliance risks hours or days in advance, allowing fleet managers to take corrective action long before a violation reaches audit level.

The connectivity challenge

Digital transformation at sea is uniquely difficult because ships often operate without reliable internet. Platform architecture can't assume constant cloud access. Connectivity at sea remains one of maritime IT's hardest engineering problems. Ships often operate with limited satellite bandwidth, so critical HR, payroll, and safety systems must continue functioning even when offline.

To handle this, modern maritime platforms use a hybrid design: an onboard database that records transactions locally, a replication service that queues updates, and a synchronization layer that exchanges data once satellite connectivity resumes. This architecture guarantees operational continuity while maintaining data integrity across ship and shore.

With the rise of low-Earth-orbit networks such as Starlink for Maritime, replication cycles that once took days are now reduced to minutes, unlocking real-time dashboards, analytics, and even AI-driven decision support at sea.

Addressing the global labour shortage

The maritime industry is facing one of its toughest labour environments in decades. Reports from BIMCO and ICS project a shortfall of nearly 90,000 officers by 2026. Software can't fill the pipeline alone, but it can help operators respond smarter.

Recruitment and training modules within crew management platforms now track skills, certifications, and career paths globally. This makes it easier to deploy qualified personnel and forecast shortages, creating a more agile, data-informed approach to workforce planning.

AI at sea: From automation to insight

Artificial intelligence is no longer a futuristic concept in maritime operations. It is becoming part of everyday workflows. AI-powered rostering analyzes fatigue and performance data to optimize scheduling. ML models flag anomalies in payroll or rest-hour records that may indicate compliance issues.

AI is moving from pilots into real operational deployment, signalling that intelligent systems are no longer a 'future promise' in maritime operations, but a present day capability.

At the Port of Corpus Christi, Texas, the OPTICS digital twin platform combines live vessel-tracking, geospatial models, and law enforcement dispatch data into a single, interactive 3D interface.

Using machine learning to fill gaps in ship movement data, OPTICS allows port authorities to monitor real-time vessel positions, simulate emergency scenarios, and coordinate resources more efficiently. The system has already improved situational awareness, reduced response times, and streamlined operations at one of the U.S.'s largest crude-export terminals.

Overcoming integration debt

For most shipping companies, the biggest obstacle isn't the lack of new technology. It is the weight of old systems. "Integration debt," or the accumulation of siloed tools that don't communicate, slows progress.

Many maritime organizations are shifting to API-first ecosystems, allowing HR, payroll, logistics, and compliance systems to communicate through secure REST interfaces. This approach enables gradual modernization: companies can retain stable legacy modules while introducing new digital layers without disrupting existing workflows.

The solution isn't a complete overhaul but a gradual migration to API-first ecosystems, where data can move seamlessly between payroll, compliance, logistics, and HR systems.

Clean data is the true engine of maritime digitization. Without consistent, high-quality information, even the best analytics platforms can't deliver value. Successful transformation requires not just technology but also investment in data governance, user training, and cultural change.

The decade ahead

Over the next five years, we'll see a shift toward hybrid architectures that blend onboard intelligence with cloud-based analytics. Compliance, payroll, and crew management will become modular, configurable, and increasingly AI-assisted.

Maritime companies will start to integrate specialized digital tools, from health monitoring to predictive maintenance, through marketplace-style ecosystems rather than monolithic platforms.

In the next decade, the most successful maritime organizations will treat data as their core infrastructure. We'll see ships equipped with onboard analytics engines that interact seamlessly with cloud platforms, predicting crew fatigue, optimizing rotations, and automating compliance in near real time.

The competitive advantage will no longer depend solely on vessel tonnage or fuel metrics, but on how intelligently an operator can manage and interpret its human and operational data.

Yurii Biryukov is a senior software and delivery executive specializing in the maritime and enterprise technology sectors. With over 13 years of experience leading international development teams, he has overseen global implementations of enterprise systems and next-generation crew management applications. His work focuses on helping shipping and cruise companies streamline compliance, payroll, and workforce operations through innovative, resilient digital solutions.





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FIRE DAMPERS: A CRITICAL DETENTION RISK IN FIRE SAFETY

Fire safety has consistently remained one of the highest detention areas during Port State Control (PSC) inspections. Within this category, fire dampers frequently appear among the most cited deficiencies.

PSC reports worldwide indicate that fire dampers often fail inspections because they do not close properly, are heavily corroded, or their operating mechanisms are inoperative. In some cases, dampers may pass an operational test but fail during visual inspection, revealing hidden deterioration such as corrosion, wastage, or damaged sealing arrangements.

Under PSC regulations, the deficiency category "Fire Safety" may be classified not only as a detainable deficiency but also as an ISM-related deficiency, indicating potential shortcomings in the vessel's Safety Management System.

Common PSC Deficiencies Related to Fire Dampers

Deficiency code 07115 – Fire Dampers consistently ranks among the most reported fire safety deficiencies.

- Fire dampers unable to fully close
- Broken or seized closing wires
- Remote control systems not operational
- Hydraulic or pneumatic leakage

- Handles and operating positions not clearly marked
- Operating instructions missing at control stations
- Hardened or missing gaskets
- Corroded or seized damper flaps
- Inadequate damper condition
- Excessive corrosion or holes in fire dampers
- Means of closing fire dampers inoperative
- Fire dampers not closing tightly
- Open and closed positions not marked
- Engine room supply fan damper corroded at edges
- Air conditioning vent unable to close due to wasted seal bar

Safety Incident During PSC Inspection

A real incident highlights another important aspect of fire damper operation - crew safety.

During a PSC inspection, the engine room crew were asked to demonstrate the closing of an engine room ventilation fire damper. While operating the lever, a crew member held it in the middle and pulled it to close the

damper. The damper shut rapidly and stopped against a welded limiter block.

Unfortunately, the crew member's finger became trapped between the lever arm and limiter block, resulting in a serious squeeze injury.

Neither the lever nor the limiter block had hazard markings, which contributed to the accident. Since fire dampers are rarely operated during routine ship operations, crew members may not always be familiar with the specific design or operating characteristics of each damper system.

Lessons Learned

- Clearly identify and mark hazards on damper levers and limiter blocks
- Conduct regular practice of damper operation when the vessel is in port and main engines are stopped
- Ensure crew are familiar with damper locations and operating procedures
- Treat every incident or near-miss as an opportunity for safety improvement

Understanding Engine Room Fire Dampers

In the event of an engine room fire, it is essential to quickly shut off both air supply and fuel sources. Engine room ventilation air is shut off using fire dampers installed in ventilators.

Ventilators may be:

- Free-standing units on deck or superstructure
- Integrated structures within the ship's superstructure or funnel

Fire dampers are commonly designed in several forms:

- Fire flap inside the ventilator – operated locally by lever or remotely via wire or hydraulic/pneumatic actuator
- Multiple fin flaps installed at air inlets
- Manual hinged covers with sealing gaskets and securing dogs
- Screwed disk closures on free-standing ventilators

Each design must ensure quick and reliable closure to prevent air supply to the fire.

Inspection and Testing of Fire Dampers

Regular inspection and maintenance are essential to ensure proper operation.

Hinged Covers

Inspect the condition of covers and gaskets, ensuring there is no wastage or damage. Covers should move freely and close properly without deformation. Hinges must rotate freely, and all securing dogs should be fitted, greased, and operational. Particular attention should be paid to gasket integrity, especially at corners, ensuring it has not hardened.

Fire Flaps and Multiple Fin Dampers

Verify that "Open" and "Closed" positions are clearly marked. Inspect the condition of flaps and confirm they can provide an effective seal. Ensure the flaps are properly connected to the rotating rod and that the rod is correctly fitted within its supports.

Operate the closing device and move the damper to the fully closed position, ensuring the lever mechanism is properly greased. In multiple fin dampers, all fins should be connected to the operating lever and move freely together.

Also inspect the structural condition of the casing, ensuring there are no holes, wastage, or temporary patches, and that the casing is securely connected to the deck.

Check the closing wires, confirming they are structurally sound, properly connected, and long enough to allow complete movement of the flaps.

Hydraulic or Pneumatic Remote Control Systems

Remote operating systems should be checked to ensure pistons are correctly installed and connected. There should be no leakage of hydraulic or pneumatic fluid, and sufficient operating fluid must be available. Control stations must be clearly marked with operating instructions and legends, and an additional local operating arrangement should always be available and functional.

Screwed Disk Arrangements

Inspect the casing condition, ensuring there are no holes, wastage, or patches and that the unit is properly connected to the deck structure. The screwed wheel mechanism must be functional and capable of moving the disk freely to the fully closed position. The gasket must be correctly fitted and not hardened to ensure proper sealing.

Final PSC Insight

Fire dampers are rarely operated during normal vessel operations, which makes them particularly vulnerable to seizure, corrosion, and operational failure. Regular testing, proper maintenance, and crew familiarization are essential to ensure these critical safety devices function effectively during emergencies—and pass PSC inspections without deficiencies.



**FIRE DAMPERS:
REGULAR TESTING, PROPER
MAINTENANCE, AND CREW
FAMILIARIZATION
ARE ESSENTIAL**

Hydrogen-fuelled ships need design based safety approach



DNV has delivered a multi-year study on "Safety of hydrogen for use in ships." Commissioned by the European Maritime Safety Agency (EMSA), the study concludes that design based safety is required for hydrogen-fuelled ships and recommends secondary enclosures across all hydrogen carrying components, including on open deck.

Linda Hammer, principal consultant at DNV and lead author of the study said: "The study concludes that safety for hydrogen-fuelled ships must be based on technical safety barriers, with robust containment, secondary enclosures, and automated protection systems forming the first line of defence. This reflects both the speed at which hydrogen incidents can escalate and the limitations of detection and response once a release has occurred, particularly in complex maritime environments."

Hydrogen is emerging as a potential fuel option for shipping, but wider uptake is expected to take time. The study shows that hydrogen hazards differ from those of other alternative marine fuels such as LNG. Even smaller leaks can quickly form ignitable gas clouds and combined with hydrogen's low ignition energy and challenges associated with leak detection, this implies the need for additional onboard technical barriers to reduce explosion risks, particularly where leakage management and protection systems are concerned.

Cristina Saenz de Santa Maria, interim CEO maritime at DNV said: "Hydrogen has a viable path as ship fuel but carries safety risks. As new fuel technologies develop, robust safety principles must be built in from the outset.

That requires new thinking, early-stage integration, and close collaboration across the value chain, while keeping seafarer safety firmly at the centre."

Due to its high flammability and the low storage temperatures of its liquefied form, hydrogen also introduces new occupational hazards for seafarers. According to the study, this changes the conditions under which crews operate. As a result, seafarers must be trained to recognize the specific hazards related to using hydrogen as a ship fuel and how to mitigate them. This should be supported by clear procedures for operation and safety management systems, with human behaviour and organizational safety culture providing an additional layer of risk control.

As the maritime industry moves towards decarbonisation, hydrogen has emerged as a potential alternative to conventional marine fuels. Hydrogen can be used either through fuel cells or through engines adapted for its use.

It is still in the early stages of use as a fuel, however, with a small number of vessels, including ferries and inland vessels, already using it. Research is continuing into its suitability for ocean-going ships.

However, there are a number of safety challenges associated with the use of hydrogen as a fuel for shipping, including its high flammability properties, which exceed those of natural gas. As a result, in order to support national administrations and industry in the sustainable transition of the maritime sector, EMSA has finalised a series of reports into the safety of hydrogen for use in ships.

The full report comprises five parts which are available for download below.



Part 1 of the report includes an analysis of hydrogen's main characteristics to frame which safety hazards, system threats and risks to be considered and mitigated when using hydrogen as ship fuel. Natural gas – for which the IGF Code has put internationally recognised safety barriers in place to ensure its safe use – is used as a benchmark. Established principles for mitigation and control, and lessons learned

from hydrogen accidents are briefly reviewed. Hydrogen modelling techniques and tools are validated. Statutory regulations and classification rules, standards, and best practices relevant to hydrogen-fuelled ships are reviewed to identify hazards and risks considered and mitigated in existing rules and regulations.

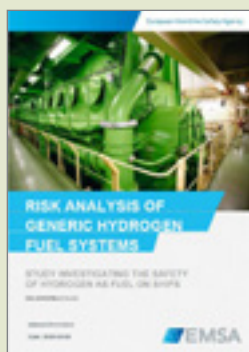
Download Part 1 at <https://bit.ly/4uCJEQp>



Part 2 reports on the results of the reliability and safety analysis of equipment and safety-critical systems used in hydrogen-fuelled ships. The results of this analysis, including the identification of potential failure modes, are used to develop a framework for modelling risks in hydrogen-fuelled ships that will be the basis for the following tasks in the study.

Download Part 2 at <https://bit.ly/4IBFZyh>

Part 3 of this study includes **two deliverables**.



The first deliverable (D.3.1) presents a comprehensive Hazard Identification (HAZID) for generic hydrogen fuel systems, which addresses key safety risks and possible measures to prevent and mitigate these risks. The analysis focuses on generic fuel system configurations, covering the systems and spaces relevant to the fuel

systems, regardless of ship type. The scope includes the processes of bunkering, storage, supply, conditioning, and consumption. By systematically identifying hazards and potential safeguards, this report aims to provide valuable insights and recommendations for improving the safety of hydrogen technologies.

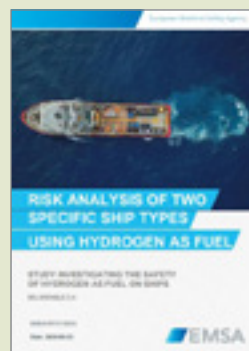
Download Part 3 at <https://bit.ly/4rCrUSo>



The second deliverable of Part 3 presents the findings from the risk analysis of two generic hydrogen fuel system designs. The report examines hazardous events associated with hydrogen leakage, analyses leak frequencies using reliability data, and assesses the potential safety implications. This report seeks to provide valuable insights and recommendations for enhancing the safety of hydrogen technologies. It

concludes that the likelihood of hydrogen leaks from piping systems and the loss of tank vacuum insulation cannot be ruled out. These findings contribute to the broader objective of delivering a Guidance Document for ships using hydrogen as fuel.

Download the second deliverable of Part 3 at <https://bit.ly/4uTRXrp>



Part 4 of this study presents the results of the risk analysis conducted on two specific ship types using hydrogen as fuel. The report examines hazardous events that could mechanically damage the hydrogen fuel system, lead to ignited hydrogen releases, or result in occupational accidents. It analyses frequencies and evaluates the potential safety implications. The findings will contribute to the broader goal

of delivering a Guidance document addressing ships using hydrogen as fuel.

Download Part 4 at <https://bit.ly/40XMWQR>



This final report consolidates the study's findings and recommendations for future regulatory developments. The findings provide insights into the safety hazards, system threats and risks associated with using hydrogen as a marine fuel.

Download the final part of the report at <https://bit.ly/3PhRrmz>



The real reason why enclosed space deaths keep happening



By **Capt. Arjun Singh Kalra**, Director at Synergetic Shipping Technologies Pvt Ltd

Enclosed space safety isn't a paperwork problem. It's a leadership problem. MSC.581(110) finally treats it that way.

Most enclosed space fatalities don't happen to the person who entered first. They happen to the person who rushed in to save them. One victim becomes two. Then three. Not because the crew didn't care, but because nobody stopped to test the atmosphere before the rescue attempt.

And here's what makes this pattern even harder to accept: in almost every one of these incidents, the permit was signed. The drill was logged. The SMS procedure existed on paper. The paperwork was perfect. The outcome was fatal.

This is the gap that IMO Resolution MSC.581(110) was written to close.

What changed - And why it matters now

In December 2025, the IMO's 34th Assembly formally endorsed MSC.581(110), revoking the older Resolution A.1050(27) that had been in place for years. The revision was developed through the Sub-Committee on Carriage of Cargoes and Containers (CCC 10) and adopted by MSC 110 in June 2025, specifically because enclosed space fatalities were not declining despite existing guidance.

The IMO acknowledged something the industry already knew on the ground: many enclosed space accidents stem not from a lack of procedures, but from a failure to systematically identify hazards, assess risks, and implement entry protocols that actually match what happens on board.

MSC.581(110) is not a minor update. It is a structural shift in how enclosed space safety is expected to be managed from a documentation exercise to an operational competency requirement.

The key changes ship operators (marine surveyors and other affected parties) need to know

Here's a breakdown of the most significant changes in the revised recommendations, and why each one matters operationally.

1. CO₂ monitoring is now explicitly required

Under the previous resolution, CO₂ was not formally specified as a mandatory measurement before entry. MSC.581(110) changes that. Carbon dioxide must now be measured before and during enclosed space entry - in addition to O₂, CO, and any other gases identified in the risk assessment.

The science behind this is well-established: CO₂ can accumulate in spaces carrying or adjacent to organic cargoes, and its relationship with oxygen depletion is not always straightforward. The revised recommendations make CO₂ testing a non-negotiable part of the atmospheric assessment, with a threshold of less than 0.5% (5,000 ppm) before entry is permitted.



2. The enclosed space register must be ship-specific

Previously, many companies used generic fleet-wide templates for their enclosed space registers. MSC.581(110) removes the prescriptive example that was in A.1050(27) and instead requires each company to develop its own ship-specific register.

This register must list every enclosed space on board, identify connected and adjacent spaces, document specific hazards for each space, and include risk mitigations - such as the time needed to achieve required air changes, gas testing methods, and Lock-Out/Tag-Out procedures. The register and its associated risk assessments must be maintained both on board and ashore and must be updated whenever conditions change (for example, after loading certain cargoes, or if a ballast tank is temporarily used for treated sewage or grey water).

3. Entry procedures are tighter

The revised recommendations strengthen several procedural requirements that were previously implied or left to company discretion. Single-person entry is now explicitly prohibited. EEBDs (Emergency Escape Breathing Devices) are clarified as being for escape only - they cannot be used as a basis for entering an enclosed space.

The competent person carrying out the pre-entry risk assessment must have both adequate theoretical knowledge and practical experience. This is not a box-ticking exercise - the resolution expects that these individuals can make informed judgements about the spaces they are assessing.

4. Emergency response plans must be drill-tested and reviewed

MSC.581(110) requires that the enclosed space emergency response plan be directly linked to the Enclosed Space Register and its risk assessments. More importantly, the resolution recommends that the emergency response plan be reviewed after every drill to assess its effectiveness and make improvements where needed.

This is a meaningful shift. It moves emergency preparedness from a static document into a living process - one that evolves as the ship, its cargo, and its crew change.

5. Shore-side responsibilities are expanded

The revised recommendations place greater emphasis on the role of shore personnel -including the shipping company's ISM responsibilities in ensuring enclosed space safety. The company must be actively involved in the development of the Enclosed Space Register, the risk assessment process, and the overall safety management framework for enclosed space entry.

Why SIRE 2.0 and RightShip make this urgent

Here's what many operators haven't fully grasped yet: the inspection landscape has shifted in a way that makes paper compliance insufficient.

SIRE 2.0 which is now the sole inspection framework for tanker operations under OCIMF no longer operates as a documentation review. Inspectors assess crew competency through direct observation and interview. They evaluate whether

crew members understand the rationale behind safety-critical tasks, not just whether they can locate the procedure in the SMS manual.

For enclosed space entry specifically, SIRE 2.0 inspectors review entry procedures and interview crew members including ratings to assess their genuine familiarity with the protocols. Inspectors assign competency ratings ranging from "Not as expected" to "Exceeds expectation," and any substandard rating must be supported by a Performance Influencing Factor (PIF) analysis.

RightShip's RISQ framework follows a similar trajectory, using behavioural data alongside technical compliance to assess vessel safety.

The convergence of MSC.581(110) with SIRE 2.0 and RightShip means that having an updated SMS on paper is no longer sufficient. Your crew must be able to demonstrate under questioning, under observation, in real-time that they understand why CO₂ is tested, why the register is ship-specific, why EEBDs aren't for entry, and what their exact role is in an emergency.

Where most fleets have gaps right now

Based on what I've seen across the industry, here are the areas where the majority of vessels are not yet aligned with MSC.581(110):

The Enclosed Space Register. Most vessels still have a generic fleet template. The resolution requires a ship-specific register with space-by-space hazard identification and risk mitigation. This is the single largest compliance gap I see across fleets right now.



CO₂ testing protocols. Many vessels test for O₂ and combustible gases, but do not routinely measure CO₂ before entry. MSC.581(110) makes this mandatory, and inspectors will ask about it.

Crew competency on the "why." Crews can often describe what the procedure says. Fewer can explain why each step exists. SIRE 2.0 inspectors are trained to probe for this deeper understanding particularly with junior officers and ratings.

Emergency response plan linkage. The emergency plan often exists as a separate document that doesn't reference the specific hazards identified in the Enclosed Space Register. MSC.581(110) expects these to be directly connected.

Post-drill review process. Many vessels conduct drills and log them. Fewer have a structured process for reviewing the drill outcome, identifying weaknesses, and updating the emergency response plan accordingly.

What you should do now
If your SMS and enclosed space procedures haven't been updated since A.1050(27), this is the starting point.

First, conduct a gap analysis against MSC.581(110). Review each of the nine major areas from the Enclosed Space Register to emergency response planning and assess your current state against what the resolution now expects.

While the list of spaces is not limited to a set number, the following nine categories represent major areas most typically included in the register and on ships:

- i) Cargo Spaces: Includes cargo holds (loaded or empty), cargo tanks (oil or chemical), and inter-barrier spaces.
- ii) Ballast Tanks: Includes water ballast tanks, peak tanks (fore and aft), and double bottom tanks.
- iii) Fuel and Luboil Tanks: Bunker tanks, fuel oil tanks, and lubricating oil tanks.
- iv) Pump Rooms and Compressor Rooms: Cargo pump-rooms, fuel pump rooms, and compressor rooms.
- v) Cofferdams and Void Spaces: Empty spaces between bulkheads or decks designed to prevent leakage or contamination.
- vi) Duct Keels and Pipe Tunnels: Tunnels and spaces used to run cables or pipes throughout the ship.
- vii) Machinery Spaces: Boiler furnaces, engine crankcases, and engine scavenge air receivers.
- viii) Lockers and Storage Rooms: Paint lockers, CO₂ rooms (fire suppression), battery lockers, and hazardous material storage.
- ix) Sewage and Water Tanks: Sewage tanks, grey water tanks, and potable water tanks.

Second, update your Enclosed Space Register to be ship-specific. This is not optional, and it cannot be a template exercise. Each space needs its own hazard profile, risk assessment, and mitigation plan.

Third, integrate CO₂ testing into your standard atmospheric assessment procedure. Ensure your gas detection equipment is calibrated for CO₂ and that crew understand the 0.5% threshold and why it matters.

Fourth, train the crew, especially junior officers and ratings, not just on what the procedure says, but on the reasoning behind each step. This is what SIRE 2.0 inspectors will assess.

Fifth, review your emergency response plan and link it directly to your Enclosed Space Register. Run a drill, review it critically, and update the plan based on what you learn.

And finally - A resource to help

To support operators working through this transition, Capt. Kalra has developed an MSC.581(110) Compliance Gap-Analysis Checklist that covers all nine inspection areas with HIGH, MEDIUM, and LOW priority ratings for SIRE 2.0, RightShip RISQ 3.2, and PSC readiness.

It's a practical tool, not a theoretical overview. Designed for ship operators, HSQE managers, and maritime safety officers who need to move from A.1050(27) to MSC.581(110) systematically.

This article was first shared on LinkedIn. It has been lightly edited and is republished here with our thanks.

You can download the checklist at <https://bit.ly/enclosed-space-safety>

For more information: <https://synergeticshippingsolutions.com>





Browse back issues at

<https://bit.ly/2WQTosu>

Ships should meet the Polar Code before entering the Canadian Arctic



By **Colonel Pierre Leblanc** (retired) - an experienced Arctic practitioner.

The United Nations International Maritime Organization (IMO) adopted the Polar Code in November 2014 to reduce loss of life at sea caused by inadequate preparedness for operations in polar regions, which are more isolated and challenging than lower-latitude waters. The Code entered into force on January 1, 2017 and initially applied to seagoing vessels of 500 gross tonnage (GT) and above, as well as certain vessel classes such as cruise ships. On January 1, 2026, the IMO expanded the categories of ships that must comply with the Code to include fishing vessels of 24 meters and above, pleasure yachts of 300 GT and above, and cargo vessels between 300 and 500 GT operating in polar waters.

The Polar Code sets standards for ship design and construction, crew qualifications, onboard safety equipment, operations, training, and environmental protection in polar waters. Although the initial version did not resolve all challenges of polar navigation, it represented a major step forward. It specifically calls for a high standard of design and performance for survival equipment, recognizing the unpredictable weather, isolation, and lack of infrastructure in both the Canadian Arctic and Antarctic, where search and rescue (SAR) assets may be several hours, if not days, away.

In 2023, the International Organization for Standardization (ISO) published ISO 24452:2023, "Ships and marine technology — Personal and group survival kit for use in polar water," which specifies minimum design and performance requirements for personal and group survival kits used under SOLAS and the Polar Code. The Code defines "maximum expected time of rescue" as the time

used for designing equipment and systems that provide survival support, and states that this period shall never be less than five days. In 2025, the United States Coast Guard confirmed the requirement that survival equipment for polar operations must support at least five days of survival.

Maritime traffic is increasing in the Canadian Arctic. Shrinking polar ice, attributed to global warming, is a major driver of rising marine activity, but other factors are also making the Northwest Passage more attractive: water restrictions affecting the Panama Canal, ongoing security issues in the Red Sea, tensions with Russia and its Northern Sea Route, and persistent ocean piracy in other key choke points. Combined with growing mining activity, these trends are leading to more traffic in Canada's Arctic waters, thereby increasing the risk to a fragile environment with a short vertical food chain on which many Inuit rely for subsistence, as well as elevating the potential for loss of life in a region with extreme weather and minimal infrastructure.

The greatest concern is not the traditional annual community resupply shipping companies, which are experienced operators that typically meet Polar Code requirements, but rather those with limited arctic experience, including adventurers and superyachts. Too many of these vessels arrive poorly prepared for a hostile operating environment. Increasing numbers of cruise ships are entering the waters of the Arctic Archipelago to experience the fabled Northwest Passage, and cruise ships running aground in Canada is no longer a theoretical scenario, as several groundings have already occurred in Nunavut.

The cruise ship Hanseatic ran aground in 1996 because the bridge team deviated from the prepared navigation plan and relied on a navigation buoy left from the previous season that had shifted. The MV Clipper Adventurer grounded near Kugluktuk in 2010 with its forward-looking sonar inoperable. The Akademik Ioffe, a retrofitted icebreaker operated as a cruise vessel, ran aground in 2018 about 78 nautical miles north-northwest of Kugaaruk, after the officer of the watch was multitasking, the helmsman was fully occupied steering, and no other crew were assigned to monitor the echo sounders and maintain lookout, with the echo sounder alarms turned off. Even among seasoned arctic operators, several fuel tankers have grounded in the Canadian Arctic, including the Mokami in August 2010, the MV Nanny in February 2012 and again in 2014, and the Kivalliq W in October 2022.

These events illustrate failures in navigation practice, equipment readiness, and bridge resource management that the Polar Code is intended to address; had those ships fully met the standards and practices now required by the Code, these accidents might have been avoided.

Serious maritime incidents - loss of propulsion, allisions, steering failures, groundings, and fires - occur worldwide on a daily basis, and a loss of steering or power in confined or coastal waters can rapidly lead to disaster. The destruction of the Francis Scott Key Bridge in Baltimore by the container ship MV Dali demonstrated how quickly events can escalate when a large ship loses controllability near critical infrastructure.

Another instructive example occurred off the coast of Norway when the cruise ship Viking Sky lost power in a storm. On March 18, 2019, Viking Sky issued a mayday call after experiencing engine problems in heavy seas off Norway's western coast, with 1,370 passengers and crew onboard. In very rough conditions, the vessel began drifting toward the coast, and the sea state was too severe to safely launch lifeboats. A large-scale helicopter evacuation was initiated, and in very challenging conditions, about 400 passengers were airlifted to safety before the crew managed to restart one engine and steer the ship away from danger. Dozens of people were injured, and several required hospitalization. Had the vessel grounded, waves could have repeatedly smashed the hull against the shore, potentially forcing passengers and crew to abandon ship into frigid waters without adequate protection. The Norwegian Safety Investigation Authority later criticized Viking Sky, noting that the vessel came within roughly one ship's length of grounding.

In the Canadian Arctic, SAR resources are often many hours or even days away. When the Clipper Adventurer grounded near Kugluktuk, it took 42 hours for a Canadian Coast Guard vessel to arrive on scene. Vessels responding to distress in the Arctic must typically proceed slowly because of ice-infested waters, harsh weather, and the fact that much of the Arctic Archipelago is only partially charted to modern standards.

Canadian Forces SAR aircraft are based in southern Canada, including Canadian Forces Bases Winnipeg, Trenton, and Halifax. Aircraft on SAR standby can usually take off within two hours, and flight times to the Northwest Passage range up to 8-10 hours (for the FLIR-equipped CC-295 Kingfisher). Survivors may still be in frigid water or on exposed ice for 10 hours or more before they are located. Without an appropriate level of thermal protection and survival equipment designed for at least five days, an operation that begins as search and rescue is likely to become search and recovery.

The Polar Code requires vessels operating in polar waters to obtain a Polar Ship Certificate confirming that the ship, its crew and their qualifications, and its life-saving appliances meet the Code's requirements. Polar certificates are issued by recognized organizations - classification societies such as the American Bureau of Shipping, Bureau Veritas, and Lloyd's Register - acting on behalf of flag administrations. These societies have a duty to exercise due diligence before issuing certificates. For vessels intending to enter the Northern Canada Vessel Traffic Services Zone (NORDREG), these certificates must be submitted to Canadian authorities months in advance.

Transport Canada has indicated that it will increase inspections of vessels operating in the Canadian Arctic, consistent with recommendations from the Transportation Safety Board of Canada that call for more detailed inspections of passenger vessels entering Arctic waters. This enhanced oversight will encourage shipowners to ensure proper vessel design, that critical safety equipment such as forward-looking sonar is installed and operational, that crews are appropriately trained and certified, and that survival equipment can keep people alive for at least the minimum five-day rescue window.

Improved compliance with the Polar Code will reduce the likelihood of serious accidents and major environmental spills in a fragile arctic ecosystem with a short vertical food chain. The Code has now been in force for more than eight years. With its scope expanded to new categories of vessels that may be less familiar with polar hazards, it is time to strengthen awareness and increased enforcement in the Canadian Arctic.



The Fatigue Blind Spot

Why maritime's most pervasive safety risk remains largely invisible, and what five years of Port State Control data reveals when you know where to look.

By Dr. Cecilia Hegamin-Younger



Dr Hegamin-Younger holds a PhD in Measurement and Statistics, LLM in Maritime Law, MPH, and MLS. This analysis is drawn from five years of Port State Control (PSC) inspection records across the Paris, Tokyo, and Caribbean MoUs and the IMO Global Integrated Shipping Information System (GISIS) casualty database. Practitioner commentary was additionally contributed by Andrej Sokolov, Chief Engineer and SMS Auditor, with more than 30 years of sea service including loss-prevention work on petrochemical tankers.

Of the 1,022 maritime casualties involving IMO-numbered vessels recorded between 2021 and 2025 across three major Port State Control regions, exactly 14 cited fatigue as a contributing cause. That is 1.4 percent. The International Transport Workers' Federation estimates that fatigue contributes to 25 percent of all marine casualties.

Somewhere between those two numbers lies the true scale of a problem the industry has known about for decades, regulated through paper records, and consistently failed to measure. The gap is not a statistical footnote. It is the central crisis of maritime safety measurement, and it has consequences for every operator, port authority, insurer, and regulator with a stake in what happens when a fatigued officer of the watch encounters a developing situation at 0340 hours.

The industry does not have a fatigue problem it cannot solve. It has a fatigue problem it cannot see. Those are very different challenges and they require very different responses.

What the regulations actually measure

The international framework governing seafarer fatigue rests on three principal instruments: STCW Chapter VIII, MLC 2006 Regulation 2.3, and SOLAS Chapter V Regulation 14. Together, they represent the most comprehensive set of watchkeeping and rest-hour requirements ever adopted by the maritime industry. They share a fundamental limitation: none of them measures fatigue. They measure compliance with scheduled rest hours.

A seafarer who has spent required rest hours unable to sleep due to noise, vessel motion, or circadian disruption - and who resumes

a watch in a state of genuine physiological impairment - is, in regulatory terms, not fatigued. The regulation has been satisfied. The risk has not been addressed. The proxy has become the measure, and an industry that optimises for rest-hour records rather than crew alertness has systematically mis-specified the problem it is trying to solve.

The record that does not reflect reality

The 2024 ITF Seafarers' Trust and World Maritime University report "Quantifying an Inconvenient Truth" puts numbers to what operational experience has long suggested. Port State Control inspectors reported compliance rates above 90 percent. The seafarers on those same vessels estimated true compliance at between 11.7 and 16.1 percent. These tools are not measuring the same thing.

Almost half of seafarers in recent surveys reported working weeks of 85 hours or more. One in four



reported having fallen asleep while on watch. Andrej Sokolov, a Chief Engineer with more than 30 years of sea service, including three and a half years in financial loss-prevention programmes on petrochemical tankers and certification as an SMS Auditor, describes the result with precision: a system in which hundreds of thousands of officials across the inspection, flag state, and operator ecosystem perform, in good faith, the responsible administration of a compliance record that bears a diminishing relationship to operational reality. “Can you imagine how many people are involved in this process?” Sokolov writes. “It is not their fault.”

What five years of data actually reveals

A five-year analysis of PSC inspection records and maritime casualty data across the Paris, Tokyo, and Caribbean MoUs offers a different lens - one that looks not at what the records say, but at what the records predict. The study examined 1,022

casualties involving IMO-numbered vessels recorded between 2021 and 2025, cross-referencing fatigue-related deficiency citations against casualty outcomes using logistic regression adjusted for deficiency count, detention status, ship type, and region.

The most striking result comes from a single deficiency category. Vessels cited for a defective or absent Bridge Navigational Watch Alarm System (BNWAS) showed an odds ratio of 0.26 (95% CI: 0.08–0.81) for watchkeeping casualty within the subsequent twelve months — a statistically significant protective association. No other fatigue-related deficiency category produced a significant result.

This is not evidence that BNWAS defects are safe. It is evidence that PSC inspection and citation functions as a protective intervention - that the act of identifying and recording a deficiency triggers a chain of regulatory attention and operator response that temporarily suppresses casualty rates, regardless of whether the underlying fatigue conditions have been structurally resolved.

The data also reveal a separate finding about the fleet as a whole. The odds ratio for any vessel having a BNWAS deficiency cited at inspection is 3.88 (95% CI: 1.23–12.20) - nearly four times the baseline odds. These are the vessels that most need the protective effect that inspection provides. They are also the vessels least likely to receive it consistently.

PSC inspection works - but only by triggering heightened attention, not by resolving the underlying fatigue condition. The protection is real. It is also temporary and unevenly distributed across the global fleet.

An enforcement equity problem

The protective effect of citation is the most important, and most uncomfortable, finding in the dataset. It means that PSC enforcement, where it occurs, works. It also means that vessels which are never inspected or inspected without sufficient depth to generate fatigue-related citations, do not receive this protection.

The regional data make this inequality visible. Paris and Tokyo MoUs cited fatigue-related

deficiencies at 6.1 and 7.1 per thousand inspections respectively. The Caribbean MoU cited at 2.8 per thousand, less than half the Paris rate. A low citation rate in a resource-constrained region is not evidence of compliance. It is evidence that the protective effect of inspection is not reaching the vessels that need it most. That is not a compliance finding. It is an enforcement equity finding.

The most telling number in the dataset may be the smallest: PSC officers issued just 44 STCW Chapter VIII citations across three regions and five years - fewer than nine per year across more than 226,000 inspections. STCW Chapter VIII is the convention most directly governing watchkeeper fitness for duty. MLC 2006 Regulation 2.3, covering much of the same ground through rest-hours records, generated 1,414 citations over the same period. That 32:1 ratio does not reflect a difference in underlying violation prevalence. It reflects the practical reality that MLC citations require only a document review, while STCW fitness-for-duty citations require observable evidence and officer judgment.

The legal and insurance vacuum

Without an objective fatigue measurement tool, the word "fatigue" in any dispute - insurance, regulatory, or legal - means whatever the most persuasive argument says it means. Sokolov, drawing on his loss-prevention experience, states it plainly: "Fatigue has become a convenient term to cover negligence, incompetence, violation of discipline, all that we call the human factor. Fatigue can be applied in favour of any side of a corporate dispute depending on whose lawyer is more experienced."

If fatigue contributes to 25 percent of casualties but appears in 1.4 percent of cause factor records, a material share of claims currently attributed to navigational error or equipment failure may have fatigue as an unrecorded contributing factor. The risk differentiation

opportunity exists in the PSC database today. The analytical framework to exploit it is the missing piece.

The question the data cannot yet answer

What this analysis cannot yet show is the true casualty burden attributable to fatigue - because the measurement infrastructure to establish that attribution does not yet exist at scale. The tools exist in occupational health research and are beginning to be piloted in maritime contexts. What has been missing is a validated framework that connects those measurements to the regulatory and operational structures that port authorities, operators, and insurers can act on.

That question is answerable. The data foundation is in place. What remains is the industry's willingness to ask what the current regulatory architecture was not designed to answer, not are the records compliant but is the officer on watch fit to stand it.

Fix the inspection gap. Extend the protective reach of PSC scrutiny to the vessels and regions currently outside it. Then build the measurement infrastructure that makes the underlying fatigue condition visible enough to address, not just suppress.

Further information is available from the following organisations referenced in this article.

Paris MoU



Website: <https://parismou.org/>

Tokyo MoU



Website: <https://www.tokyo-mou.org/>

Caribbean MoU



Website: <https://www.caribbeanmou.org/>

This article was first published on The Maritime Executive's website and is reprinted here with our thanks.

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New hull cleaning standard ready to ensure cleaner shipping



Irene Øvstebø Tvedten, Senior Adviser at Bellona who led the work on the new ISO standard

A new ISO standard was published earlier this year to help port authorities, shipowners and operators navigate rules on how ships should be cleaned in an environmentally sound way. Hull cleaning is gaining traction among shipowners, while countries are increasingly introducing regulations, but many ports still lack practical guidance on how to manage it.



"Biofouling on ships' hulls can spread invasive aquatic species and damage ecosystems. It also increases drag, reducing a vessel's efficiency and leading to higher fuel consumption and increased greenhouse gas emissions," says Irene Øvstebø Tvedten, Senior Adviser at Bellona. Tvedten is the project manager for the Clean Hull Initiative

(CHI) and has led the work on the new ISO-standard known as ISO 6319, titled "Conducting and documenting in-water cleaning of biofouling on ships".

One of the key solutions for managing biofouling on ships' hull cleaning can help prevent the spread of invasive aquatic species and

reduce greenhouse gas emissions. ISO 6319 supports these practices by ensuring that hull cleaning is carried out responsibly and does not release organisms or chemicals into the environment.

"The standard has finally been published, and I'm delighted to share that it is now available for global stakeholders in shipping and ports," says Tvedten.

ISO 6319 aims to help ports and regulators request documentation from service providers intending to clean ship hulls, making it easier to assess whether the technology used provides adequate environmental protection.

One of the contributors to ISO 6319 was Port Environment Expert at Port of Antwerp-Bruges, Luc Van Espen. He explains that at the Port of Antwerp-Bruges, hull cleaning is permitted as part of the port's commitment to sustainable shipping.

"An internationally accepted and applied standard creates a level playing field among seaports worldwide, strongly limiting the transfer of invasive alien species from one port to another," says Van Espen.

Globally, approval procedures vary widely among ports and authori-

ties, creating challenges for ship-owners. Wallenius Wilhelmsen, a leading global RoRo operator, was among the shipowners contributing to ISO 6319 and is working to lower fleet emissions through enhanced hull maintenance.

"When applications follow the same structure and technical specifications, ports and authorities can process them more efficiently. For us as a shipping company, this means fewer operational disruptions and greater predictability," says Senior Manager Kim-Helge Brynjulfsen at Wallenius Wilhelmsen.

Another contributor to ISO 6319 was Jotun, a global leader in marine coatings to tackle biofouling, which also offers a proactive hull-cleaning robot and compatible coatings.

"At Jotun, we find that many ports and authorities lack detailed knowledge about hull cleaning and are often unnecessarily sceptical of cleaning ships. ISO 6319 can help ports assess permits on a case-by-case basis, depending on whether the hull cleaning technology sufficiently protects the environment. There are significant quality differences between hull cleaning systems," says Petter Korslund, Regulatory Affairs Manager at Jotun, one of the many contributors to the new standard.

"ISO 6319 helps guide approval authorities as to what the actual risks of cleaning are and how to manage and mitigate those risks to the greatest extent possible while promoting the environmentally-sound cleaning of ships," says Mark Riggio, one of the contributors to ISO 6319, and technical director at BEMA, an organisation consisting of several hull-cleaning service providers.

"In the group developing this standard, competitors have put commercial interests aside and collaborated to set the terms for hull cleaning. I'm truly impressed by their efforts," says Tvedten.

Originally, the standard was initiated by the Clean Hull Initiative, which consists of a range of stakeholders with a shared interest in proactive hull cleaning - meaning sufficiently frequent cleaning to maintain a thin layer of biofouling on the hull. The group produced the original draft four years ago, under the leadership of Bellona.

"Ports and regulators play a key role in enabling or prohibiting hull cleaning. ISO 6319 will help them make informed decisions," Tvedten concludes.

For more information, visit www.iso.org/standard/85997.html

About Bellona

The Bellona Environmental Foundation is an international science-based non-profit organization headquartered in Norway. Founded in 1986 as an action and protest group, Bellona has evolved into a recognized technology- and solution-oriented organization with offices in Oslo, Brussels, Berlin, and Vilnius. Today, more than 70 engineers, ecologists, physicists, chemists, economists, political scientists, and journalists work at Bellona.

Purpose

The foundation strives to identify and implement sustainable solutions to the world's most pressing environmental issues. Its main goals are to combat the climate crisis, environmental degradation, pollution-induced hazards to human health, and the ecological consequences of economic development strategies.

How

Bellona's work is rooted in a firm belief that it is possible to address environmental challenges in a constructive and progressive manner, and that industry and business can adapt to new challenges provided they have the right long-term and predictable framework conditions.

Thus, Bellona aims to be a bridge between industry and decision-makers, working closely with the former to help them respond to environmental challenges within their fields and proposing policy measures that accelerate the deployment of new technology with minimal impact on the environment. Bellona is accredited and has observer status in the UNEP Governing Council, UNFCCC, and IMO.

Post-fire ship hull structure and material assessment



Fire incidents on ships rank among the most frequent accidents, and in recent years, fire incidents have specially increased among container and ro-ro cargo/passenger ships. DNV has supported many cases of post-fire structural and material assessments, and this news aims to share our insights from this work.

Need to know

Fire exposure can degrade steel strength and toughness, increasing the risk of brittle behaviour or loss of strength.

An accurate post-fire assessment requires hardness testing (ASTM A370) and, when needed, destructive testing, to determine whether steel grade downgrading or structural repairs are necessary.

What we have observed

DNV has supported ship managers, salvage companies, flag states, shipyards and port authorities by providing expertise and in-depth knowledge on the post-fire structural and material assessment of ships. The incidents have ranged from isolated small-scale fires in cargo holds to major fires damaging the complete ship.

The fire incidents have identified the need for prompt decision-making in situations where time pressure is high and the crew, cargo and environment are at stake. The situations have involved discussions on whether the ship can continue trading, on the extent of steel renewal and repair methods, on a critical reserve strength assessment while the vessel has been on route, and on fire developing rapidly, fuelled by the cargo.

Damage risks from prolonged exposure

Prolonged exposure to high temperatures may result in soft annealing, leading to a reduction in mechanical properties, in particular tensile strength where the steel becomes softer.

Another effect is the material hardening, a risk that may occur under uncontrolled quenching during firefighting with seawater or CO₂. This could primarily affect the material's ductility by reducing its fracture toughness and therefore increasing the risk of brittle behaviour.

In addition to adverse effects in material mechanical properties, prolonged exposure to thermal loads could result in steel distortions/deformations. The longer the period of heat exposure and heat intensity, the higher the risk that the material properties affecting strength and toughness have been affected. Typically, fire exposure over four to five hours would increase the risk of material and strength deterioration. When post-fire examination reveals permanent waving deformations, this is an indication of long exposure to heat, and material degradation is very probable. If temperatures have not risen over 250–300°C, there is low risk that material would be affected. The extent and magnitude of these deformations would dictate largely the need for repairs.

Steel hardening due to cooling under firefighting

Steel exposed to high temperatures and cooled down rapidly and uncontrollably, due to firefighting water or CO₂ release, increases the risk of hardening and of brittle behaviour, especially if occurred in repeated cycles. This is of particular importance in higher grade steels, which may exhibit lower than original post-fire toughness properties.

A conservative approach in emergency situations would be to degrade the material strength by one grade, for example from AH36 (high strength) to NS (normal strength).

Hardness testing

For post-fire strength and repair plan evaluations, as a minimum, hardness testing of the affected steel according to ASTM A370 is required. Both heat- and non-heat-affected materials should be measured to establish a level of confidence in the measurements. When deemed necessary, destructive testing of samples shall be done under the guidance of DNV (tensile and bend tests as a minimum and location sampling).

Structural repairs

Structural repairs may be dictated by the permanent deformations of the steel plates/stiffeners due to long exposure to thermal load, irrespective of the residual material properties.

Coating condition

A general rule is that if the original coating has no visible signs of damage on the steel surface (e.g. burns, blisters), there is a high probability that the steel has not been adversely affected by the heat input from the fire.

On-going and post-fire support from DNV

In emergency situations, DNV (via DNV ERS™) provides a quick assessment of the residual strength and stability, allowing ship managers and other stakeholders to take crucial decisions on whether to evacuate or initiate firefighting operations to salvage the ship.

As part of the post-fire support, DNV has developed a guideline (to be requested via DNV DATE) that can be used to quickly assess the reserve strength and extent of repairs needed if the steel strength has been affected adversely. This information is important for ship managers to help them prepare for repairs and make crucial decisions on when and where to schedule these repairs.

The use of drones for post-fire damage surveys by DNV certified service suppliers enables fast access to the affected structure, eliminating the need to secure space for human entry. This significantly reduces time for damage evaluation and speeds up the development of repair plans, eventually leading to efficient planning and reduced off-hire time.



Safety helmets: When standards fail stevedores, crews and marine surveyors

By
Capt Glenn Mathias



On 2nd May 2019, a twistlock fitted to one of the bottom corner fittings of a container fell out of the fitting while the container was being restowed aboard the container vessel MOL Bravo, in the port of Manzanillo, Mexico. The twistlock landed on the second officer who was on deck, struck his safety helmet and caused fatal injuries.

The investigation report by the Marine Department of Hong Kong noted the following:

- The second officer failed to follow the company safety procedures to stay away from the hazardous zone underneath the container while it was being restowed by a gantry crane.
- Although the second officer should not have been standing under a container being loaded onto the vessel, the safety helmet was required to protect him from the falling twistlock. The helmet did not provide adequate protection for this hazard. For those unfamiliar, a twistlock is a steel device inserted into the bottom corner fittings of containers, designed to lock containers in a vertical stack.

This article is not concerned with the competence of vessel officers examining twistlocks or of pin men who attach twistlocks to the bottom corner fittings of containers. Their work involves recognising defective twistlocks and corner fittings.

Once detected, pin men are expected to reject defective twistlocks and ensure containers with defective corner fittings are not loaded onto the vessel.

The urgent need for safety helmets

Instead, this article deals with the urgent need for safety helmets used by crew and stevedores (and marine surveyors too for that matter) involved in container vessel operations to be fit for purpose. This requires safety helmets to be redesigned so they can protect the wearer from the energy and force of a falling twistlock - hereinafter referred to as a redesigned safety helmet.

Such a safety helmet would provide protection even in cases where human error occurs.

The second officer's safety helmet could not protect him against the

falling twistlock because it was not designed to withstand the impact energy and force involved.

Safety standard of the safety helmet

The safety helmet was manufactured to European Standard EN 397, which is designed to protect the wearer from falling objects. In accordance with the standard, the chinstrap releases at 150 to 250 newtons of impact force, and the helmet absorbs 50–80 joules of energy.

In the accident, the twistlock weighed approximately 5.2 kg and fell from a height of 9.5 metres. The estimated impact energy and force on the second officer could have reached 500 joules and 5,000 newtons respectively. This demonstrates that the falling twistlock produced forces far beyond the helmet's protection range.

Because the helmet was designed to EN 397, it was not fit for this particular hazard. The report did not make recommendations regarding awareness of the limitations of EN 397 helmets or the development of helmets specifically designed for container vessel operations.



"Awareness of these risks and consideration of improved equipment would support the safety of those working on container vessel decks and terminals."

While the report did not make these recommendations, safety measures are generally expected to include informing personnel about the limitations of standard helmets and encouraging the adoption of purpose-designed helmets. This involves multiple stakeholders, including container vessel owners and crew; stevedoring companies and their employees; safety regulators; maritime unions; insurers; and other entities involved in container vessel operations.

The continued use of helmets that do not match the risks on container decks exposes personnel to potential injuries. Employers have ongoing obligations under work health and safety legislation to assess hazards and implement risk control measures. For example, Section 27 of the Work Health and Safety Act 2011 (NSW) places duties on officers of a business or undertaking to ensure safety obligations are met. Similar federal provisions apply.

It is well recognised that stevedoring companies and shipowners often have differing objectives. However, the absence of any industry-wide move toward purpose designed head protection for twistlock hazards highlights a shared gap in addressing safety risks.

Safety alerts and further examples

One such example is a safety alert issued by the International Container Handling Co ordinating Association (ICHCA) on 7 May 2025, whose

membership includes stevedoring companies and shipowners.

In 2023, a team leader at a member terminal was struck by a falling twistlock. It is likely that the head protection he was wearing saved his life. However, the trauma was severe, as can be seen in the images in this safety alert. The injured worker agreed to the images being shared to help raise awareness of this risk. The investigation concluded the twistlock dislodged from a five-high fitting, striking the vessel team leader. The twistlock became dislodged because the twistlock locator pin failed while loading into a blind cell on deck.

Although the report does not mention whether the stevedore was in a safe location on deck when struck, it must be noted that few locations on a vessel's deck - stacked with containers and while loading containers - provide adequate protection from a twistlock ricocheting off containers during its fall.

The injured stevedore deserves credit for agreeing to the images of his injuries being shared, as a means of raising awareness of helmets being unfit for purpose and the need for redesigned helmets. A redesigned safety helmet may include materials such as Kevlar. Its cost would be secondary to the obligations of stevedoring companies and shipowners to eliminate risks to the safety of their personnel. A redesigned helmet would also enable

these entities to give meaning to mottos such as, "Come home safe, that's all I ask" and "Make sure you get home safe to your family."

Despite twistlocks being responsible for causing an officer's death and a stevedore's serious injuries, shipowners and stevedoring companies have not yet moved to demand redesigned helmets. Officers of stevedoring companies and shipowners, responsible for the safety of their personnel, ought to consider their obligations under work health and safety legislation in Australia. Section 27 of the Work Health and Safety Act 2011 (NSW) enables an officer to be found guilty of an offence under the Act, whether or not the employer has been convicted or found guilty of an offence relating to that duty. Corresponding federal legislation is in similar terms.

It is well recognised that stevedoring companies and shipowners rarely see eye to eye. Their goals are often diametrically opposed. However, the lack of any industry-wide move toward purpose-designed head protection for twistlock hazards highlights a shared gap in protecting personnel on container vessel decks.

A final thought

The continued reliance on helmets that do not match the energy of falling twistlocks demonstrates the need for ongoing discussion and development in industry safety standards. Awareness of these risks and consideration of improved equipment would support the safety of those working on container vessel decks and terminals.



Liquid Cargo Shortages

By the Britannia P&I Club Loss Prevention Team

Tanker cargo shortage claims can be expensive, and they represent a major type of claim the Britannia P&I Club faces. Cargo shortages can also lead to customs fines in certain jurisdictions.

The bill of lading (B/L) issued at loading contains the reference figure for the quantity of cargo shipped. Confirming the accuracy of this figure, along with any intermediate changes to cargo disposition is an essential part of defending cargo shortage claims.

In the Club's experience, a cargo shortage may be an actual physical loss of cargo or, in many cases, a 'paper' shortage where a difference in cargo figures manifests as an apparent loss of cargo.

Regardless of the cause of shortage, the ship is likely to be suspected and should be prepared to prove that the shortage was not because of any error or lack of care by the ship's crew.

Calculation errors

Calculation errors can occur at any stage when carrying a tanker cargo.

Such discrepancies can have many causes. Most common are errors such as applying erroneous trim and list corrections, mistakes in applying petroleum correction tables, errors in cargo temperature measurement, and failure to correctly account for bottom line content. Often supplied by the loading port after completion of cargo operations will also make a substantial difference

to the final figures. Less common situations include tank volume data being no longer valid due to structural modifications, but these still must be considered and addressed when they occur. The ship's crew must be provided with the most accurate tools and data to allow the best possible onboard measurement.

Additionally, inaccuracies can arise during cargo measurements taken while the ship is at an open berth and experiencing swell conditions, which affects the reliability of the readings. These inaccuracies, caused by the movement of the liquid surface inside the tank, often lead to measurement errors during cargo operations, particularly in ship-to-ship transfers and at single buoy moorings.

Shore measurement errors such as incorrect storage tank calibration, use of wrong line displacement quantity, or flow meter calibration errors can also contribute to differences between the ship's figures and those on the B/L.

The ship's cargo officer can minimise these issues through careful and independent, verified against those made by the cargo surveyor. Regularly comparing figures received or delivered with shore personnel could also provide early indication of a problem with shore distribution.

It is recommended that an experienced officer is physically present during tank gauging, to jointly agree on the readings with other cargo interests.



The officer on cargo watch should also cross-check their readings with fixed shipboard gauges throughout cargo operations to identify any issues quickly.

Proper consideration should be given to On Board Quantity (OBQ) at the port of loading, free water, line content, and any ullage port height corrections required as per the ullage table.

It is important to gauge and calculate the cargo on board at every change in cargo quantity, whether due to loading, discharging, or transferring of cargo. Such gauging and calculations should also include the gauging of non-nominated tanks. Equipment such as Ullage, Temperature, Interface (UTI) tapes should be properly calibrated in accordance with the manufacturer's recommended intervals and compared with a standard temperature gauge before use. Where possible the same UTI should be used throughout the entire cargo cycle, to minimise the effect of any equipment error.

Masters should issue a Letter of Protest (LOP) for cargo measurements taken under open berth and swell conditions.

Discrepancy between a ship's figure and B/L figure at load port

Each company will have its own procedures for when a difference is found between ship and shore figures, and this must take precedence. A master must not sign a B/L that they know to be incorrect, although the nature of bulk oil measurement, makes perfect comparison impossible. It is therefore normal to accept a difference within an agreed allowance.

A commonly quoted allowance for signing the B/L is a difference of +/- 0.3%. In the case of oil tankers, the difference between the ship's figure and the B/L figure should be less than 0.3% after applying the Vessel Experience Factor (VEF). *(i on the following page).*

The master is advised not to sign the B/L if the difference exceeds 0.3% until the source of the discrepancy can be found. In such cases, the master should require re-gauging of the tanks, and they must inform the shipowner/manager and the charterer. The Club is also available to offer advice and recommend the attendance of suitably qualified surveyors as necessary.

For differences less than 0.3%, the master may sign the B/L under protest issuing a LOP after advising the charterer and the owner/manager. However, ship interests should be aware that some jurisdictions do not recognise any allowance.

Transit losses

Cargo tanks can lose cargo due to venting to manage tank pressure during the voyage. The atmosphere of the ship's cargo tank must be controlled in accordance with the Volatile Organic Compound (VOC) Management Plan on oil tankers. For product and chemical tankers, it is important to ensure that the Pressure-Vacuum (P/V) valves are in good condition and tested to operate at their designed pressure.

Charterers sometimes instruct vessels to arrive at the discharge port with less than 5% Hydrogen Sulphide (H₂S) content in the vapour space of cargo tanks due to terminal restrictions. Purging to comply with this request can result in transit loss of cargo. The master should verify that the terminal requirement applies to discharging tankers as well. The ship should maintain a log of purging, and the master should issue an LOP, holding the ship, owner, and manager harmless for any loss of cargo due to complying with the charterer's instruction.

Free water found at discharge port

Free water found in petroleum cargoes at the discharge port, especially when no water was found at the load port, could lead to cargo shortage claims from cargo interests. Masters should issue an LOP for any amount of water found at the load port, even traces, as this suspended water in the cargo will eventually settle. Masters should issue a standard LOP for insufficient settling time prior to measuring the cargo to protect the ship against any free water claim at the discharge port. Ship staff should sample free water to establish its source later. They should also take samples of seawater at the port as well as ballast water in the tanks. Analysing all these samples should help determine or prove if the source of the water is shore or ship origin.

Cargo remaining on board (ROB)

Several factors can contribute to the ROB quantity after the discharge of cargo. One common reason for excessive ROB is insufficient heating of the cargo or a loss of temperature due to heat exchange with cold ballast in adjacent tanks. Additionally, defects in cargo pumping equipment and arrangements can significantly hinder efficient discharge, leading to high ROB. The presence of sediments in the cargo can also accumulate and prevent full discharge. Furthermore, an inadequate trim for efficient stripping or inability to conduct Crude Oil Washing (COW), can also contribute to ROB.

Ship staff should properly follow each cargo care regime from loading until final stripping to minimise ROB. They should maintain the cargo temperature according to the charterer's heating instructions. Some cargoes, like molasses, require a gradual increase in heating during the voyage. For cargoes prone to sediment, they should check sediment accumulation daily during the voyage, and they should perform recirculation of the cargo as required, with a log of recirculation maintained.

The crew should use the stripping arrangements (ii below) of the cargo pumping system effectively at the stripping stage to avoid any cargo ROB. Optimum trim is necessary for the stripping of cargo tanks, and the ship should be guided by its COW manual or Procedures and Arrangements Manual as applicable. To determine the suitability of crude oil for COW operation, ship staff should consult their COW manual. The " guide published by the Energy Institute, can serve as a good guideline for determining the COW cycle required for crude oils. If the terminal has limits on the allowable trim or doesn't permit/restricts COW, master's should issue an LOP. Good cargo planning may be required to avoid cargo cooling due to heat exchange with cold ballast in adjacent tanks. In the case of vegetable oils and molasses, good squeezing is required.

A dry tank certificate should be issued after the final discharge. If carried out, squeezing should be clearly stated in the dry tank certificate.

Over discharge

When cargo is partially discharged to different terminals or to different vessels in ship-to-ship operations, over-discharge and subsequent incorrect calculation could result in cargo being short discharged in an intermediate port or in the final port. The officer in charge of cargo operations should calculate a stopping ullage, considering cargo in the bottom line and discharge line. They should slow down and closely monitor using UTI tapes when cargo level gets close to stopping ullage.

Defective pipelines or cargo equipment

Defective pipelines or cargo valves can result in un pumpable ROB in the cargo tank. This may be due to the drawing in of cargo vapour, resulting in a loss of suction and preventing efficient discharge. Similarly, it can allow backflow of cargo into tanks previously considered empty.

The time allowed for stripping is often strict, and inefficiencies such as clogged pump suction strainers may result in stripping being suspended before all cargo remnants could be removed.

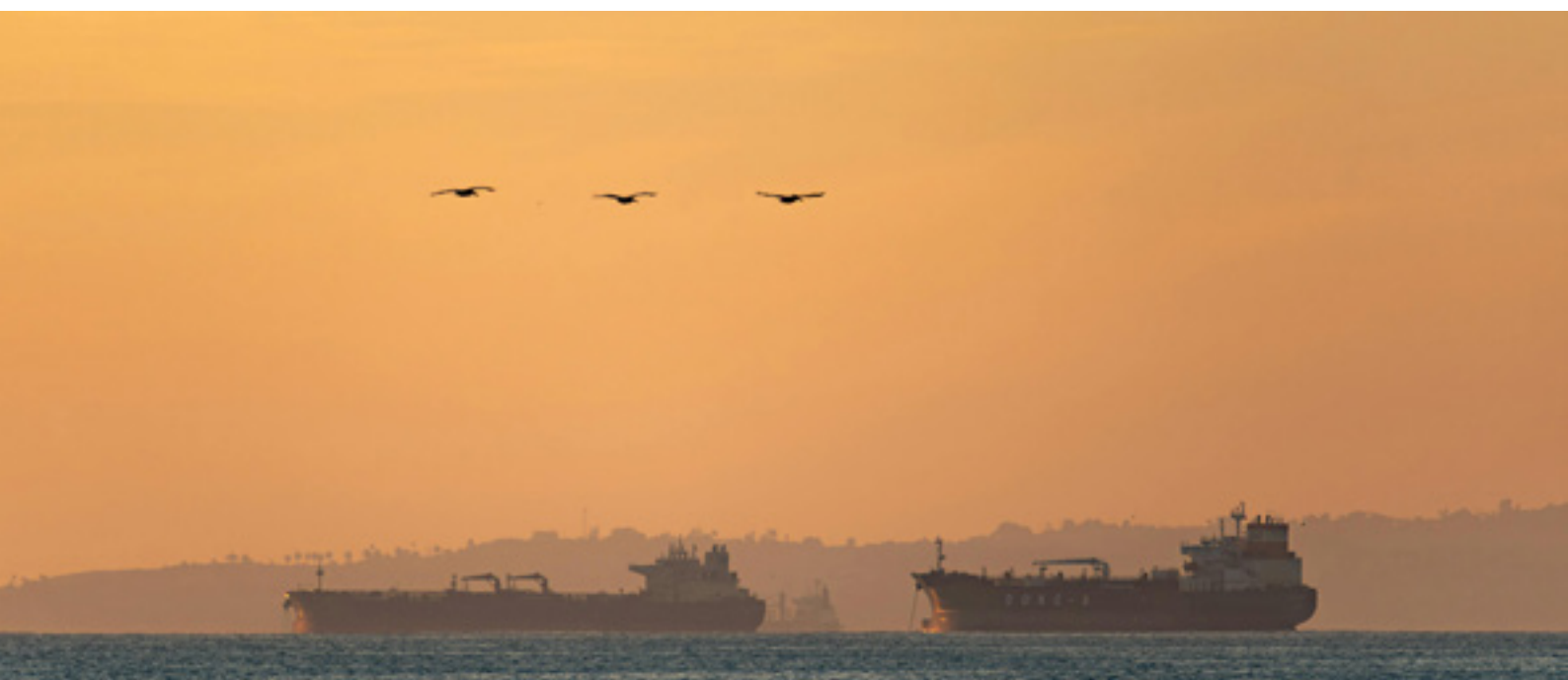
The crew operating the cargo system must have accurate and functioning pressure gauges for cargo pumps and eductors, otherwise they will be unable to properly optimise and monitor the discharging operations.

For the reasons above, the ship's crew must conduct the necessary tests, checks and maintenance as required by the company's PMS/SMS requirements.

To effectively minimise tanker cargo shortage claims, steps such as enhancing ship staff's knowledge of bulk liquid cargo characteristics and proper cargo care practices are essential. Concurrently, accurate cargo calculations and thorough documentation are vital to prevent "paper" shortages. Furthermore, maintaining cargo handling equipment and systems in excellent operational condition is paramount for the efficient discharge of cargo. Finally, the Club and our local correspondents stand ready to proactively assist masters in handling potential claims situations, providing vital support.

i. VEF is the historic average of qualifying ship-shore figure differences at the load port, expressed as a percentage.

ii. Automatic unloading system (AUS) and cargo eductors of the cargo oil pump (COP), or local stripping of submerged pumps such as Framo pumps.





Breaking down the barriers to HVO adoption



By **Kim Hollamby**

Hydrotreated Vegetable Oil (HVO) has been identified in research as the single most impactful way of reducing leisure marine industry emissions today, but what is preventing widespread adoption in the superyacht sector, known as a leader of new technologies? Here we bring you a summary of some of the points made from “The Next Step for HVO: Breaking Down the Barriers to Adoption” panel discussion at The Superyacht Forum, held late last year at Rai, Amsterdam.



Session chair, Hanna Dabrowska, (pictured left), Technical Director of the Water Revolution Foundation, laid out a stark picture of why the superyacht sector needs to address its internal combustion engine generated emissions. According to research, 1,500 hours of superyacht operation on diesel fuel leads

to 1,205,380kg of CO₂ generation – equivalent to the annual emissions of 903 cars. Fortunately, there is a very practical answer to greatly reducing that environmental impact.

Hydrotreated Vegetable Oil – commonly known as HVO – offers up to 90% reduction of well-to-wake emissions

compared to fossil diesel. The CO₂ produced during HVO combustion is biogenic in origin and reabsorbed in the carbon cycle, unlike diesel that adds ‘new’ CO₂ to the atmosphere, contributing to global warming.

HVO’s misunderstood broader benefits

The logic of adoption seems obvious for anyone intent on improving their impact on the planet, but other significant benefits are often missed.

HVO burns cleaner and doesn’t have that typically offensive smell of diesel when stored or burnt; so, the experience of owners and their guests is better, the crew have less hull cleaning to do, and engines typically stay healthier. HVO is better in long-term storage. It’s got a much lower propensity to water compared to gasoil and

water molecules remained emulsified in the solution. That makes it highly unlikely to contract microbial growth. It also has a higher flashpoint and a much lower clogging point, a major reliability benefit in colder climates.

Almost all modern diesels and many older ones can use this fuel, subject to manufacturer approval. HVO is a drop-in fuel, so it can be mixed with gasoil in varied ratios. It is typically 5-7% lighter per unit volume but still produces around the same power as gasoil thanks to its higher cetane number.

HVO is also compatible with SCR (Selective Catalytic Reduction) systems and typically requires less urea injection. Given urea is supplied in container form to superyachts, that will also lead to a reduction in cost, labour and packaging waste.

So why isn't the superyacht industry running on HVO yet?

Barriers to HVO adoption – price

The most obvious concern about HVO is price at the pump. However, the percentage increase in overall operating costs is virtually indiscernible for a typical superyacht charter as HVO advocate, Jean Marime Berthet, captain of the 44m Sanlorenzo Lammouche, explained: "Since 2022 we have paid around 18% more for HVO compared to gasoil. Our last bunker in July 2025 cost €1.39/ltr for gasoil versus €1.59/ltr for HVO (a 14% uplift). The premium is not so much of a problem.

"On a one-week charter we consume approximately 9000ltr of fuel – so using HVO raises costs by €800. It's quite easy to sell it. Clients are given a choice and 90% of them opt for HVO. It also helps that our owner family is very sensitive about reducing environmental footprint – their younger generation particularly so."

Chris Warde Head of Peninsula Yacht Services adds:

"Is HVO too expensive for yachts? Categorically not. Why? Because it's a question of value, not price. When you reframe the question to look at all the downsides of diesel it contributes to black smoke, leaves an oily film on the water and produces a horrible smell at startup – the customer experience isn't great. HVO solves a lot of those problems. It has a 30% reduction in black smoke thanks to a higher cetane index, providing a more efficient burn in the combustion chamber and less carbon deposits. That creates a better customer experience. The premium that you pay for the product in the first place is not as big as the value that you get because of using the fuel."

Barriers to HVO adoption – availability

As things stand today, there are still relatively few dockside installations stocking HVO in Europe, but road tanker delivery is helping to fill the gaps. Usually, the delivery trucks are also HVO fuelled.

Berthet and Lammouche have been early pioneers of HVO adoption and their experience of finding places to fuel up has not been as difficult as you might imagine: "When we started to take HVO in Autumn 2022, the initial idea was to prove that it was working operationally and that we could find HVO wherever we were going to cruise. That first season we made one HVO bunker in Spain, two in France, and one in Italy. That proved that it was available and possible.

"There's still a scarcity of fuelling stations with HVO available, but the situation appears to be improving. It's still difficult to find it in Croatia, central and eastern Mediterranean and on some of the islands, but I believe it's going to evolve very quickly. For three seasons now we have been running 70%-80% of the time with HVO."

Warde explained why some markets are better served than others: "Whether we like it or not, yachting is not a big enough industry to create a shift in oil production, but production is not the issue. There will be enough HVO produced for yachting's needs until this fuel is replaced by something newer and greater. Right now, we could transition every single yacht onto HVO and there would be enough fuel.

In terms of availability though, you have got to look at shore side markets. HVO is being adopted heavily for power generation and transportation in Europe, which is why Lammouche has been able to bunker HVO in continental Europe. Most major road hauliers in that region have transitioned to HVO and a lot of the remote power generation has gone that way as well, so the distribution is there. When you go to islands, such as the Balearics, Malta and Corsica, then you have a smaller shore side demand for the product and storage capacity is much less. There's no HVO in Africa or the Caribbean due to zero shore side demand. America is a big producer of HVO, but it is very difficult to get it onto yachts because the delivery infrastructure isn't there – there is no appetite with many road hauliers still using petrol-powered trucks."

Creating greater availability is closely linked to demand. If more superyachts request HVO, then suppliers will see the business opportunity. HVO is a drop-in fuel – you can blend it in any percentage with diesel. So even if you are a



dual season yacht going from the Mediterranean out to the Caribbean, there is nothing stopping you burning conventional diesel when you are out in the Caribbean. Or any variable percentage of HVO and diesel. And then when you come back to Europe you can switch back.

Barriers to HVO adoption – other causes

The panel touched on the reluctance of many superyacht captains to have HVO onboard. They incorrectly perceive it's very difficult to swap from gasoil to HVO. In the absence of a clear instruction from owners, charterers or management companies they will often stay with known choices. They often don't understand the benefits of smell elimination, improved engine health and the reduction in hull cleaning. Cost is placed as top priority. The need for better education was identified throughout the session as an essential means of overcoming resistance to change.

Historically there was high technical uncertainty about the compliance of engines using HVO. At a molecular level, there is no difference between conventional diesel and HVO. Now it is known as a good fuel to use – both in terms of emissions and engine health due to the lower level of particulates. Engines are now routinely tested for compliance with HVO and are approved upfront for use with the fuel – manufacturers even often run their test beds using HVO.

There were several comments also about the labelling, marketing and perception of the product. 'HVO' simply does not carry the same sustainability cache of something like a Tesla electric car. One contributor from the floor confirmed they had stopped marketing HVO as a sustainable fuel and changed the language to it being a premium fuel – another had a similar story but preferred to call it a 'smart' fuel.

Avoiding greenwashing

There are concerns with HVO about validating its authenticity. There is ongoing concern regarding fraudulent declaration of feedstocks and use of non-waste feedstocks to boost profits. Not all HVO feedstock is compliant with the ISCC (International Sustainability & Carbon Certification) framework. So, the system will always need to be interrogated to ensure that everyone is operating compliantly.

Dabrowska suggests such concerns are not a reason for avoiding adoption of HVO, however. "Regulation and

compliance are issues in every type of fuel production. Similar concerns have been raised about sulphur content in gasoil. Whatever material or substance you are working with you will see greater demand and regulation for certificates of origin in the future. A passport of raw materials is important."

Berthet confirms he receives documentation every time he bunkers Lammouche with HVO: "We get an ISCC (International Sustainability & Carbon Certification) certificate which states quantity, feedstock origin and the CO₂ reduction we are achieving."

Drivers for change

It is anticipated that regulation will ultimately play a part in driving more widespread adoption of HVO across the superyacht sector. There was a suggestion that perhaps IACS class societies might get involved by imposing an obligatory notation of HVO compliance, given that most engines are compliant already. Everyone is also increasingly wary of the court of public opinion and more minded now than ever before to move towards easily adopted authentic solutions for impact improvement.

The superyacht industry is keenly aware that its interests are often best served by staying one step ahead of legislative, regulatory and socially driven changes. Panel and audience participants commented several times on the impetus for acting earlier on HVO adoption from second and third generations of superyacht-owning families. They are often highly motivated by initiatives that reduce the environmental impacts of their activities. HVO is an easy concept to explain and provided it can be obtained, an extremely fast measure to adopt.

The panel

The Superyacht Forum's 2025 *The Next Step for HVO: Breaking Down the Barriers to Adoption* panel comprised:

Chris Warde, Head of Peninsula Yacht Services

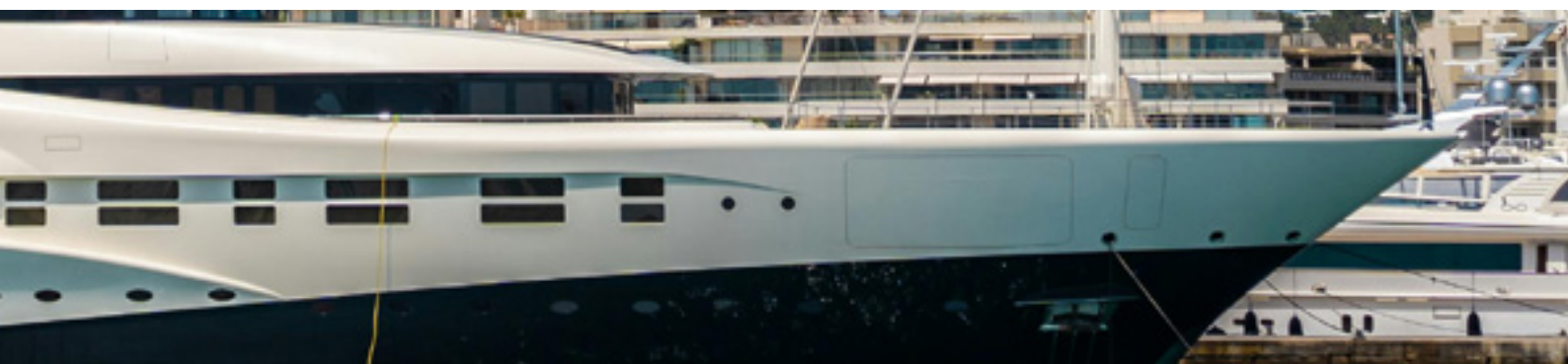
Julien Thiel, CEO of Deasyl

Jean Marime Berthet of charter yacht Lammouche

Nicola Pomi, Vice President Yacht & Superyacht Division, Volvo Penta

Tobias Kohl, Vice President Application Engineering Marine for Rolls Royce Solutions

Hanna Dabrowska, Technical Director of the Water Revolution Foundation



The Australian Superyacht Conference Report



The Australian Superyacht Conference, hosted by Superyacht Australia and held in Sydney for the first time, debuted to a full and enthralled conference room on Tuesday 24 February 2026.

The Conference welcomed a sold-out capacity of 100 delegates from Australia and around the world, including attendees from the Cook Islands, Fiji, Greece, Germany, Hong Kong, Indonesia, South Korea, the Netherlands, New Zealand, Singapore, Spain, Turkey and the United Kingdom.



Superyacht Australia President Chris Blackwell and CEO David Good. Image credit Salty Dingo 2026

Purposely aligned with the newly introduced Sydney Charter Show and presented ahead of SailGP in Sydney, the Conference created an opportunity for captains, operators, shipyards and service providers to join together to collaborate and gain insights on the critical issues and opportunities shaping the future of Australia's superyacht industry, many of whom had participated in the two-day Sydney Charter Show.

Held at Revy, Doltone House at Jones Bay Wharf in a heritage-rich naval building, the Conference commenced with Welcome Drinks on Monday 23 February, followed by a full-day program on Tuesday and concluding with networking drinks to strengthen the connections formed throughout the event.

Opening the first Conference in Sydney, Superyacht Australia Chair and Echo Yachts Sales & Marketing Manager Chris Blackwell reflected on the strong momentum generated across the sector, highlighting the success of the inaugural Sydney Charter Show and Australia's growing capability as a globally competitive destination for superyacht build, refit, charter and cruising. He emphasised the importance of strategic collaboration, continued investment in infrastructure and workforce development, and a unified national approach to ensuring Australia strengthens its position within an increasingly competitive international superyacht market.

The Conference commenced with a collaborative presentation on the State of the International Superyacht Industry from Captain Brendan O'Shannassy, author and superyacht captain, alongside David Good, CEO of Superyacht Australia. David used data from BOATPro's Global Order Book to highlight key international trends, demonstrating the significant financial capacity and market opportunity available to support growth in Australia's superyacht sector.

Captain Brendan O'Shannassy followed, captivating delegates with his three decades of maritime experience spanning naval service, commercial command and the global superyacht sector, including his days aboard an Echo Yachts vessel in Monaco. He highlighted Australia's strengths as a superyacht building and cruising destination and commended industry professionals for their efforts in bringing clients to the region.

Captain Brendan and David then collaborated on a discussion that addressed the underrepresentation of Australians within the international superyacht market, highlighting the significant career pathways and training opportunities this gap presents for



Captain Brendan O'Shannassy. Image credit Salty Dingo

growth within Australia's domestic industry. Their combined presentation set an optimistic tone for the day, illustrating what the industry can strive for in building Australia's position on the global stage.

Tom Slingsby, CEO and Driver of the Bonds Flying Roos then joined Laura Esteve, Chief Business Development Officer at BWA Yachting and Director of the SailGP Adrenaline Yachts Program, for the featured session, SailGP – Speed, Spectacle and Strategy.

Tom took to the stage amid his busy SailGP schedule, providing an invaluable opportunity for Conference delegates to hear firsthand his insights on elite sailing performance, teamwork, leadership and managing nerves, perspectives that resonated strongly with the superyacht sector audience and speakers alike.

Laura then outlined Adrenaline Yachts Programs innovative approach to charter, emphasising how the company delivers front-row, immersive experiences that make guests feel like part of the team rather than spectators. From tech-driven tours and behind-the-scenes base visits with favourite teams, to meeting athletes and feeling the energy of the race firsthand, the program is designed to give captains the tools to create exceptional experiences for owners and their guests. Laura also highlighted how a curated social calendar fosters ongoing engagement, welcoming clients into the broader Adrenaline Yachts family.

Mike Sager, Co-Founder of Ankor Software followed, presenting The Next Wave of Superyacht Charter – Emerging Destinations, Evolving Vessels & the New Generation of Charter Guests. He explored the rapidly changing landscape of superyacht charter, highlighting how lead sources are shifting, amongst the industry's need for instant responses to secure bookings. He drew comparisons with other luxury travel sectors, including aviation and high-end land travel and the importance of adopting new technologies, to keep pace with evolving client expectations, including the next generation of clients increasingly seeks unique ecological and experiential superyacht journeys.

Eleanor Keukura Roi, Director of Business Development and Marketing at Maritime Cook Islands (MCI), presented Flag State Registration: The Maritime Cook Islands Difference. Eleanor explained how a robust flag registry provides the essential regulatory framework and operational certainty needed for superyachts to navigate complex jurisdictions like Australia, highlighting that



Mike Sager. Image credit Salty Dingo

opportunities like this are essential for staying at the forefront of the superyacht community.

A panel discussion followed on Foreign-flagged Charter in Australia: Unlocking Access, Opportunity and Growth unpacking the complexities of operating within Australia's regulatory framework and addressing the intricacies of superyacht taxation, importation requirements and charter legislation from chartering, logistical and financial perspectives. Panellists included Jeff Pfaff, Managing Director of Tax Navigate; Kane Bygrave, Director of Aurora Global Logistics; and Cameron Bray, Director and Chief Superyacht Guy at Foreign Flagged Yachting and The Superyacht People.

In a forward focused session, Stephen Joyce, Superyacht Australia's Project Manager for the Brisbane 2032 Marine Project, offered an overview of the enormous economic opportunities the Olympic Games present across Australia and the South Pacific region. Projections from the AEC Group Superyacht Economic Impact Study indicate that the anticipated influx of vessels for the event are projected to generate \$1.8 billion in business output, including \$232 million in maintenance activity, \$1.2 billion in induced tourism, \$64 million in charter spend and more than 7,500 direct and indirect full-time jobs. Marking one of the most significant marine-tourism opportunities in the region's history.

Zac Bailey, Principal of Indo-Pacific Solutions, addressed Navigating the 2026 Compliance Horizon: Offshore Structures, Tax Residency and the Operational Advantage of Being Ready. He briefed delegates on the convergence of beneficial ownership, tax residency and port state obligations facing both offshore vessel owners and their Australian service providers ahead of Tranche 2 AML/CTF reforms in July 2026. With civil penalties of up to \$28 million now attaching directly to Australian counterparties, Zac's central argument was clear: structures that align before the deadline don't merely achieve compliance, they gain operational advantage.

The final session of the day was delivered by Melissa White, Director South Pacific at The International SeaKeepers Society. Melissa provided an update on regional conservation initiatives and partnerships advancing marine science, stewardship and research access across the Pacific. SeaKeepers served as the official charity partner for both the Conference and the Sydney Charter Show, reflecting the industry's commitment to sustainable practices and ocean conservation.

Superyacht

surge: The rise of the new lifestyle-driven boater



*By Dean Smith, D-Marine,
Chief Commercial Officer*

Twenty years ago, boating was a world defined by heritage, hands-on skill, and a slow climb through vessel sizes. Owners began with smaller craft and worked their way upward; they had to learn the intricacies of engines, electronics, and maintenance along the journey. Marinas were reliable, practical, functional hubs, designed for seasoned mariners who wanted a safe berth and little else. Today, that world looks almost unrecognisable.

Dean Smith has watched this transformation from one of the best vantage points in the industry. As Chief Commercial Officer at D-Marine, he oversees 26 premium marinas across nine countries, welcoming more than 50,000 customers annually.

"Boating used to be about progression through experience," says Smith. "Today, it's about immediate access to a lifestyle."

THE SUPERYACHT SHORTCUT

In the last five years, an unprecedented wave of newcomers has reshaped the sector. First-time buyers now make up 31 per cent of all new boat purchases and 37 per cent of pre-owned transactions, fuelling a 35 per cent rise in first-time ownership overall. But it isn't just the volume of new entrants that's significant; it's how differently they behave.

"We're seeing owners step straight into 40, 50 or even 70-metre yachts as their first acquisition," Smith explains. "They're not buying into boating as a technical pursuit—they're investing in a fully formed lifestyle."

The average superyacht owner has dropped from around 65 to under 55 in just one decade. For this cohort, entry at the superyacht level isn't about tradition or seamanship. It's about acquiring a turnkey asset that functions simultaneously as vacation home, entertainment venue, and personal brand statement.

This shift is visible across D-Marine's network, which provides more than 14,000 berths, including over 1,000 dedicated to superyachts. Demand for larger berths has been one of the fastest-growing segments within the portfolio - a trend Smith expects to continue as the global superyacht fleet expands.

CUSTOMER EXPECTATIONS ARE EVOLVING

This generational shift is forcing a fundamental redefinition of what a marina represents.

"The marina is no longer just infrastructure," says Smith. "It's an integral part of the ownership experience."

Across D-Marin's Mediterranean and Gulf locations, demand for hospitality-led environments has grown measurably; curated events, premium retail, concierge-level service, and thoughtfully designed social spaces. D-Marin guests consistently report that it isn't just the quality of the facilities that keeps them returning; it's the level of care and hospitality that surrounds them from the moment they arrive.

Modern owners now expect the atmosphere and service standards of a five-star resort delivered dockside: concierge assistance, premium dining, wellness facilities, and community-oriented social environments. These are no longer differentiators. They are the baseline.

A NEW MODEL OF MARINA

Digital fluency has become equally non-negotiable. Today's ownership demographic manages everything through their phones, and they expect their marina to meet them there. D-Marin's app allows customers to manage berth bookings and renewals, coordinate services, and access complimentary smart sensors for real-time vessel monitoring. The continued growth in adoption across the portfolio reflects a customer base that measures quality not just by facilities, but by how effortlessly everything works.

"Ten years ago, certain administrative delays were accepted as part of marina life," Smith notes. "Today, they're a reason to move elsewhere. Speed and simplicity matter."

Environmental responsibility is accelerating alongside digital demand. Nearly one-third of new superyacht builds now include hybrid or electric propulsion systems, a clear signal that the next generation of owners expects luxury and sustainability to coexist, and that marinas must be equipped to support both.

ADAPT OR GET LEFT BEHIND

With the global yacht market valued at more than \$10 billion and expanding rapidly as new wealth enters the sector, the pressure on marina operators to evolve has never been greater. Since 2023, D-Marin has added ten new marinas and entered new markets including Spain, Malta, and Albania, growth driven not just by geography, but by the conviction that consistent, premium standards can and should be delivered across an entire network.

"Growth isn't simply about adding locations," Smith says. "It's about building an interconnected network that delivers consistent standards, whether an owner is in the Adriatic, the Balearics, or the Eastern Mediterranean, that consistency is what builds trust - and trust is what builds loyalty."

The marinas that will define the next decade are those willing to embrace a fundamentally new model, one that integrates luxury hospitality, digital innovation, sustainability, and the heavy-duty infrastructure demanded by the world's largest yachts. Those that treat these shifts as optional upgrades risk losing a customer base that has already raised the bar.

Because today's boater and superyacht owners aren't just looking for a berth - they're looking for an experience worthy of the life they've chosen.



Malcolm Campbell, 19 August, aboard Bluebird K4.
Photo credit: WikiMedia Commons

Back in Time

The Fastest Boats in the World (Pt. III)

The End of the Monohull & The Rise of Hydroplanes

By **Richard Crowder**



Further reading:

The Fastest Boats in the World Pt. I - The Beginning by Richard Crowder can be read at <https://bit.ly/4ILDABi>.

The Fastest Boats in the World Pt. II - The Race to 100 Mph by Richard Crowder can be read at <https://bit.ly/4cV9tos>.

We left Part 2 with the back and forth water speed record achievements between Miss England III in the UK and Gar Wood in Miss America X in the United States. After the retirement of both boats in 1932, it became obvious that the era for monohull boats as the fastest in the world was coming to an end. But, there were still some hangers on.

At this same time, Canadian Harry Greening was making his mark in powerboating. As an executive at the family's Greening Wire Company in Hamilton, Ontario, he spent his summers on Lake Muskoka and Lake Rosseau in Ontario's coveted Muskoka region – a known hotbed for boaters. In 1904, at 24 years old, and five years before Ole Evinrude put his first outboard motor on the market, Greening built a small motor to power his canoe. In the years that followed, he steadily increased the size of the motor. (*Author's note* Harry Greening also happens to be a distant relative of mine on my mother's side whose maiden name was also Greening).

With his passion for speed firmly entrenched, Greening built a series of four progressively faster boats he named Gadfly. He then commissioned his first Rainbow race boat from Herbert Ditchburn

in 1919 to be built in Ditchburn's Gravenhurst, Ontario shop. This was the first of seven Rainbow racing boats in Greening's decade-long quest for international racing and endurance records.

Rainbow I twice won the Fischer Trophy in the Gold Cup races in Detroit in 1920 and 1921. The John Hacker designed Rainbow III, with a lightweight 400-hp Packard-Liberty aircraft engine, claimed to be the first planing hull with an external propeller and rudder. It was well ahead in the 1923 Gold Cup cumulative points races before it was forced to retire with mechanical issues.

In 1924, the 27-foot (8 m) Rainbow IV won the Gold Cup by a huge margin but featured a lapstrake hull bottom akin to dozens of small steps. It was originally accepted by race officials, but they later disqualified it following its race win. In 1925, Rainbow IV went on to set the 24-hour world distance record of 1218 miles, thus breaking the former world record set by Rainbow III. Greening, representing Canada, won the Duke of York Trophy race in England with Rainbow V and contested the Gold Cup again in 1928 with Rainbow VII winning the Lipton Trophy and beating Gar Wood. He retired from boat racing in 1929. He died in 1960 at age 80.

Following in Greening's footsteps, and starting in the 1930s when Miss England III and Miss America X were still battling it out for speed supremacy, Canadian Harold Wilson also entered the scene. His passion for boats came honestly. His father Ernie was president of Greavette Boats in Gravenhurst, Ontario – one of Canada's premier boat manufacturers in Canada's upscale Muskoka Lakes cottage district. Harold's wife Lorna was also one of the first female mechanics. Together, they embraced the world of high-performance boats.



Harold & Lorna Wilson. Photo credit: haroldandlornamovie.com



Rainbow III. Photo credit: Hideaways Magazine

Before World War II, the Wilsons competed in American dominated Gold Cup races with the Hacker-designed Miss Canada II. Later they switched to the Van Patten-designed Miss Canada III, each powered by single Miller V-12 supercharged engines. They also represented Canada in European races. In 1939, Miss Canada III won the President's Cup, the first Canadian boat to win a major Gold Cup Class trophy and the best Canadian Gold Cup contender since Harry Greening in Rainbow IV in 1924.

Despite the advances in 3-point hydroplane design, in 1949, the Wilsons launched their new 33-foot (10 m) mahogany hydroplane Miss Canada IV, featuring three stepped lifting surfaces and powered by a supercharged Rolls-Royce Griffon V-12 aircraft engine producing 3,000 horsepower. This huge piston engine displaced over 2000 cubic inches – equal to 37 litres.

Later that year, Wilson claimed a North American speed record of 139 mph (224 km/h) on

the Trent River near Picton, Ontario, east of Toronto. This was Canada's first-ever water speed record, surpassing Gar Wood. But alas, Miss Canada IV never won the coveted Gold Cup or Harmsworth Cup for which it was designed. In 1951, the Wilsons sold it to Gordon Thompson of Sarnia, Ontario to become his original Miss Supertest.

And now we go back to England. In 1906 at age 21, Sir Malcolm Campbell won the first of his three consecutive London to Land's End motorcycle races. Then he began racing cars in 1910. In 1924, he broke the land speed record for the first time at 146 mph (235 km/h) in a specially built 350-hp Sunbeam race car. He broke nine land speed records between 1924 and 1935, five of which were at Daytona Beach, Florida. The 1927 record was 175 mph (282 km/h) and his final land speed record set at the Bonneville Salt Flats in Utah in 1935 was 301 mph (485 km/h), the first person to drive an automobile over 300 mph. Next, he turned his attention to boats.

Miss Canada IV. Photo credit: Ottawa Rewind



Campbell reached out to Fred Cooper of Saunders Roe, the naval architect who had designed the Miss England series, to design and build the small and lightweight Blue Bird series of hydroplanes. After a few years and several attempts with early models, Blue Bird K3, a 23-foot (7 m) monohull hydroplane powered by a single Rolls Royce supercharged V-12 aero engine taken from Miss England III and producing 2,000 horsepower, set two new records in 1937. Campbell led the boat to top speeds of 126 mph (203 km/h), then 130 mph (209 km/h), and finally in 1938 to 131 mph (211 km/h), all surpassing Gar Wood's record.

Not satisfied with this incremental increase in speed, Campbell learned of the revolutionary three point hydroplane design being advanced in America. In response, he had Blue Bird K4 built in 1939, a new 23-foot (7m) three-point hydroplane design that re-used the single Rolls Royce engine out of K3. With Blue Bird K4, Campbell set a new world speed record of 142 mph (229 km/h) in late

summer 1939. The record held for 11 years. Sir Malcolm Campbell died of heart failure in 1948 just as jet engine technology was about to enter the world of water speed records.

Back in America, in 1946, Guy Lombardo, the bandleader of the famous Royal Canadians, won the Gold Cup in his three-point hydroplane Tempo VI powered by a 1,300-hp Allison V-12 aircraft engine. Born in London, Ontario, Lombardo and his band gained fame with the first nationwide New Year's Eve live radio broadcast in 1929 and lasted through 1976 with his rendition of Auld Lang Syne closing every show.

In 1946, Lombardo set a world water speed record for Gold Cup Class boats at 113 mph (182 km/h). He won a total of 15 Gold Cup Unlimited or Class victories between 1946 and 1953. In 1955, the brand new 29-foot (9 m) Staudacher-designed Tempo VII was almost unbeatable in Unlimited Class Gold Cup racing. In 1959, in conjunction with the Aluminum Company of America (Alcoa), he made

an attempt at the world speed record with his pickle fork-style, radio-controlled, jet-powered aluminum constructed Tempo Alcoa.

While not completing the required two-way run, the boat surpassed 250 mph (402 km/hr)

on Saginaw Bay, Michigan before it broke apart from a structural defect and was destroyed. In 1963, on a movie shoot, Lombardo took a spectator named Bernie Little for a ride in his four-seater pleasure three-point hydroplane. Little loved it, bought it on the spot, and it became the first Miss Budweiser.

The last of world speed records using the piston engine was set by the Seattle, Washington-built three-point hydroplane, Slo-Mo-Shun. After some initial development and testing work on earlier models, Slo-Mo-Shun IV, designed and piloted by Ted Jones and built of mahogany plywood, set multiple water speed records. At 28 feet (8.5 m) long and over 11 feet (3.4 m) wide, it was powered by an 1,800-hp Allison piston aircraft engine swinging a two-blade propeller at up to 10,800 RPM.

In 1950, it ran 160 mph (259 km/h) on Lake Washington in Seattle. It was designed so that the top of the propeller was out of the water at speed, thus reducing drag. This was perhaps one of the first "surface running props" that would revolutionize propeller design and increase water speeds in the years ahead. Jones drove it to the APBA Gold Cup win in Detroit in 1950, plus the Harmsworth Cup, making it the first boat since Gar Wood in 1920 to win both those races. In 1952, Slo-Mo-Shun IV set a new world water speed record of 178-mph (287 km/h).



Guy Lombardo aboard Tempo VI. Photo credit: Hydroplane History



Slo-Mo-Shun. Photo credit: Museum of History & Industry, Seattle & HistoryLink.org

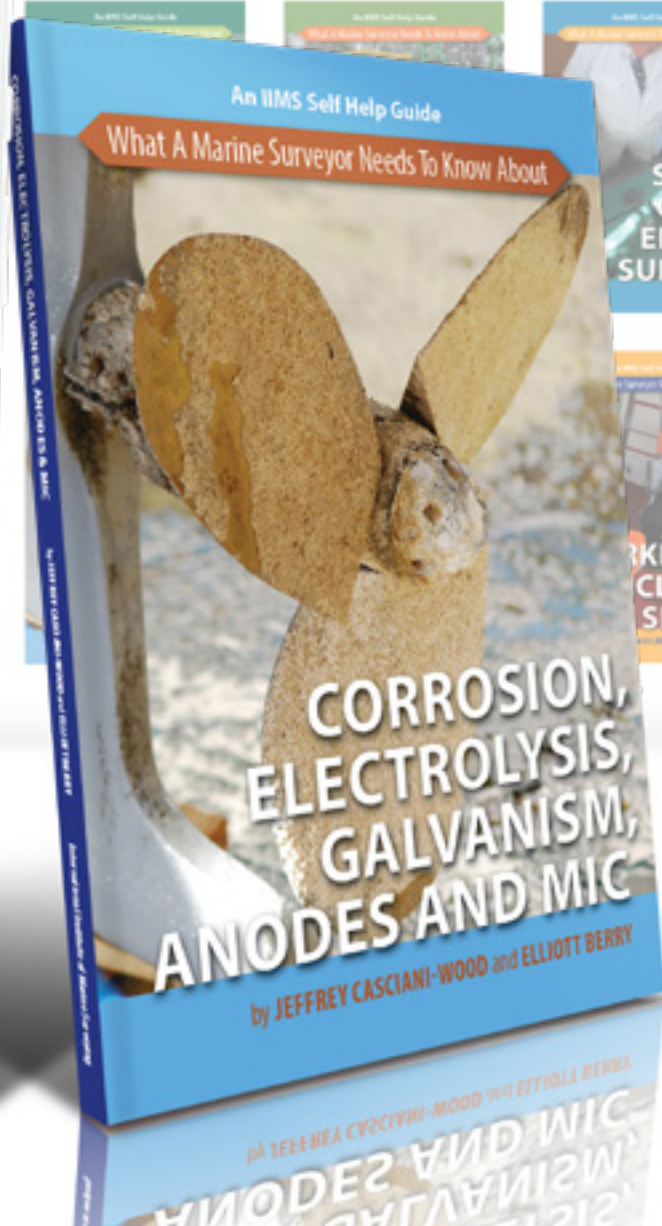
About the author, Richard Crowder

Richard has over 40 years' experience in Canada's pleasure boat industry. He was a major boat retailer and co-owner of two marinas. He is a past President of the Ontario Marina Operators Association, past director of Allied Boating Association of Canada, a co-founder of the Marine Technology Recreation Program at Georgian College, and a part-time teacher in that program. He is author of the best-selling book, "Handbook of Boating Essentials," and was co-organizer of dozens of poker runs for high performance boats in both Canada and Eastern United States. He has travelled across North America testing and writing about boats, the people, and the industry. Richard is one of Canada's most prolific boat writers with over 500 published boat tests, reviews, and articles.

This article forms part of a series and was first published on the BoatBlurb website - <https://www.boatblurb.com/> and is reprinted here with our thanks and gratitude.

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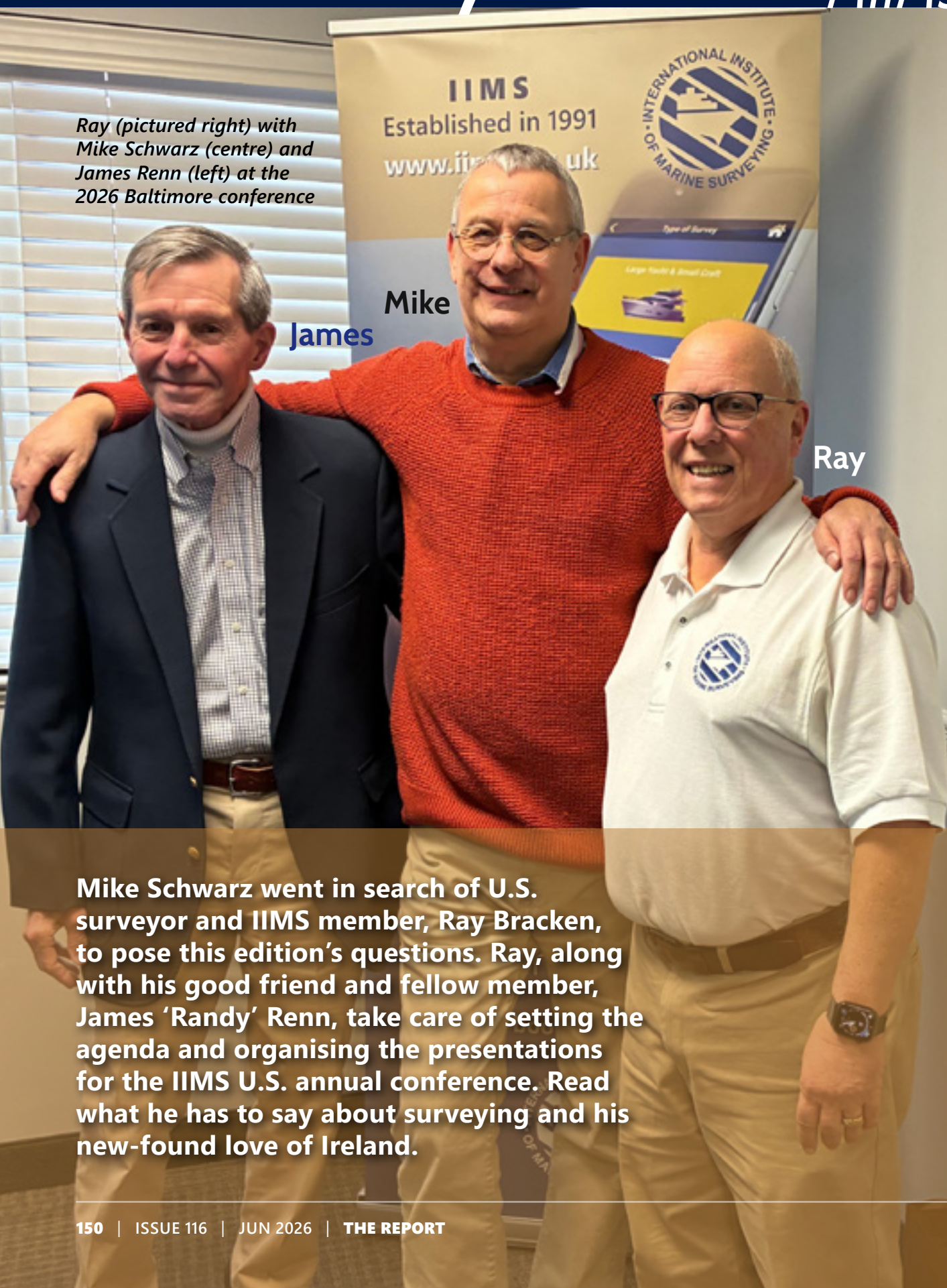
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A day in the life of...

Ray Bracken MIIMS

Ray (pictured right) with Mike Schwarz (centre) and James Renn (left) at the 2026 Baltimore conference



James

Mike

Ray

Mike Schwarz went in search of U.S. surveyor and IIMS member, Ray Bracken, to pose this edition's questions. Ray, along with his good friend and fellow member, James 'Randy' Renn, take care of setting the agenda and organising the presentations for the IIMS U.S. annual conference. Read what he has to say about surveying and his new-found love of Ireland.

Q1. So many marine surveyors seem to fall into the profession, often later in life, deliberately as a second career choice. Was that true for you and how did you end up becoming a marine surveyor?

Yes, I originally owned a Yacht Brokerage after several other careers. My partner at the time always said I had an ability to speak to and relate to pretty much anybody. I was good mechanically. It was also said that I was a people person vs some of the old grey beards that could be pretty gruff. I was able to relate to people at most any level.

Q2. What was your route into the industry - in other words what did you do before in your earlier career?

After high school I entered a manufacturing career as a Machinist/ Tool & Die Maker. I attended college in the evenings and attained a Mechanical Engineering and Fire Protection Engineering Degree. My career transitioned into design and development of digital controls, which introduced me to the Computer Networking age. I went back and completed a degree in Computer Science which opened up the door for me to become a Network Manager for a major sports stadium venue in the States. I was recruited after that by the Secretary of the Army to head up a pilot program in Philadelphia as a Network Manager. A friend, who became my business partner, offered me the opportunity to become a partner with an established Yacht Brokerage in Baltimore, Maryland, which became my entry into the wonderful world of boats which I always had an interest in.

Q3. How do you acquire new skills and knowledge to keep you current in what is becoming an ever fast paced, evolving small craft sector?

This is a continuous journey as you have to know what is already floating as well as the new technologies that are emerging. I spend about two hours every day reading journals and articles to see what I may be running in to when surveying a new or retrofitted vessel. Attending as many conferences and meetings as possible. Speaking to groups and learning from them as well.

Q4. In your opinion, what are the key challenges facing marine surveyors over the next 5 years?

Age is one of the biggest challenges I see. As the workforce is ageing, it is difficult for a person starting out to manage a startup business with minimal income as they are building clientele. Medical coverage is a must, but the cost can be a pretty large monthly expense. Here in the States, statistics show that many of the younger folks are seeking professional careers vs "blue collar" hands on careers. The statistics I am hearing say for every two folks entering the "blue collar" fields, five are leaving, retiring or passing. This is a very hands on occupation, you can't do a survey without being there and touching things.

Q5. What is your favourite and most used item in your toolbox?

As we all have many tools that we carry, it is difficult to pick just one. My go to tool for all jobs is my camera. I take lots of pictures that I review when I am home doing the report. Many times, I pick out items that I missed but the photo didn't. My second is my computer. My wife teases me that I am in love with my computer. I am a nerd at heart and research a lot of items and read a lot of journals and articles.

Q6. We often talk about where the next generation of marine surveyors will come from given the many career options open to today's generation. How important is mentoring and what form should it take?

Mentoring is our next blood. We need to pass along our knowledge. As I said, this career isn't something you get out of a book, at least totally. You need to see, touch and analyse using all your senses, so having a next generation alongside you is the best way to share your "war stories, both good and bad". I have several surveyors I work with on a weekly basis, so when I see or read an article in a publication, I often share that with them so that the information can be utilized. They do the same for me. It really helps those coming into the field.

Q7. What are the key pieces of advice you would pass on to a new entrant into the surveying profession that have stood you in good stead over the years?

Be a sponge!
Listen, learn ask questions and be curious. Share their ideas. I learn from anyone around me every day, even if it is just one titbit.





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- 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

Q8. In the fast moving boating sector, what is the key role of the surveying membership organisations to assist you in your work?

Memberships are a network of information and expertise. There are many fields or directions that a surveyor can take. Having organizations that have many members and data for research and ability to ask questions can make a difference in your learning and ability to speak accurately and confidently. I utilize ours, "IIMS", almost every day as we have the best courses and podcasts which I listen to on my way to or from a job as most of the time is just windshield time anyway. I am also a member of at least six other organizations for their knowledge and to a degree, this adds to your credibility.

Q9. What is the scariest or riskiest encounter you have ever faced on survey?

The scariest or riskiest encounter I have encountered (so far). There were two of them. The first was almost falling overboard on a boat on the hard. The deck was slippery and I almost went over the side with no grab rails on an express cruiser. The second was a carbon monoxide leak in the engine room while underway. I now use a 4 gas meter whenever I go onboard, even on the hard due

to fumes from gasoline or other volatiles. As a firefighter, I learned the value of knowing what I am being exposed to even if I can't see or smell it. It's not just me; it is the clients and others around me as well.

Q10. What was the last book you read and why did it grip your attention?

Wes Allen's books are my relaxing style. Spy fiction. I have an interest in how things were done and they are a good, easy to read series.

Q11. When you put your toolbox away at the end of a working day, how do you like to unwind and relax?

My family is my anchor. I am very blessed that we all are very close. We have three children, nine grandchildren and a brand new great grandson. Nothing comes ahead of them. We travel together a lot. The families like to explore historical sites. Our youngest son should have been a travel agent. He and my wife are always coming up with places to visit and National Parks we plan to see. My wife has a poster on our refrigerator that has all of the National Parks in the US on it. As we visit each one, she scratches off that park. It's a lot of fun and challenging to see how to visit as many as we can.

Q12. I know you and your family traced your ancestral roots back to Ireland when you visited last year. What are your lasting memories of that trip?

The beautiful scenery and the friendly people we spoke with. My personal favourite place was Jack Meade's Pub. It was the best part just enjoying the culture and libations. We visited Guinness and Jameson, which was required. Imagine that.

The best part for me was that we had all our adult children including my oldest granddaughter and her husband along. It was our 50th anniversary, (wow) and we planned it for a year so all of us could go together. Everyone had such a good time just riding around the "tourist" sites, visiting the castles and just the gorgeous countryside.

Naturally we did the Blarney Castle and I managed to capture a pretty cool photo walking up to it. The colours of the towns were just great. My sons and I did some exploring at night looking for local hangouts. In Dublin we found a little hole in the wall pub. They were watching the game and had two folks playing music which was just what we were looking for rather than the setup tourist locations. Oh, and we remembered how to get back as well, lol. My granddaughter's husband, we nicknamed him "Mapquest" as every time we went out and got turned around, he pulled out his phone quicker than anyone else, and had directions, so that became his new name.





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