



AUSTRALASIAN INSTITUTE
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September 2026



- **Marine Surveyors Symposium in 2027**
- **Report on AIMS biennial conference**
- **Marine incident annual report**

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September 2026

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Front Cover: *Global Mercy*, the world's largest purpose-built civilian hospital ship. Tymor Marine recently completed a lightweight survey and inclining test aboard the vessel. (See page 48.)

Back Cover: Marine Rescue Queensland's *Gladstone Rescue 1* at Gladstone, Queensland.



From the Bridge (Page 5.)



CEO: AMSA stakeholder forum. (Page 7.)



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ADVERTISING AVAILABLE

Advertising is now available in *Shipshape*, the official journal of the Australasian Institute of Marine Surveyors (AIMS). For all the information about advertising in our quarterly magazine, contact AIMS CEO Eric Perez at gm@aimsurveyors.com.au or on +61 492 881 737.

The use and interpretation of standards

STANDARDS form the invisible backbone around which economies round the world survive, grow and prosper.

Industry and governments use standards for consistency in decision-making which affects the safety, health and well-being of everyone. From my perspective, standards sit at the heart of good marine surveying practice. They give us a common reference point for safety, quality, compliance and consistency. They also help surveyors explain and defend their decisions to vessel owners, insurers, regulators, builders and operators. But standards are only useful when they are properly understood and applied with sound professional judgement.

In the marine industry, standards – whether national, international or classification-society generated – control how vessels and equipment are built and operated. Age, design, construction method, maintenance history, operating area, modifications and intended-use all use standards. A standard provides the benchmark, but it rarely tells the whole story.

The challenge for the surveyor is to understand what the standard requires, why it exists, and how it should be interpreted in the circumstances of the vessel being assessed.

Marine surveyors use standards to inform and drive their decision-making processes. Most of our decisions will be supported by some form of standard. Class and DCV surveyors extensively use standards on a daily basis in the design, construction and through-life monitoring of a vessel.

One of the biggest issues a surveyor is confronted with is ambiguity. Standards often use terms such as “adequate”, “suitable”, “reasonable”, “where practicable” or “as appropriate”. Those words, while promoting a certain element of subjectivity, are necessary because surveying depends on judgement, not just measurement.

However, they can also lead to different interpretations. Two experienced surveyors may read the same clause and form different views about what is acceptable. That does not necessarily mean one is wrong and the other is right, but it does



highlight the importance of reasoning, evidence and clear reporting.

We, as surveying professionals, must maintain a significant amount of caution when using standards and not treat standards as a simple checklist. A checklist has its place but it cannot replace professional experience and judgement. A vessel may appear to meet a particular clause, yet still present concerns when viewed in context.

For example, the condition of a structure, the quality of repairs, the suitability of equipment or the way the vessel is operated may raise issues that are not captured by a narrow reading of the standard. Compliance should never be confused with guaranteed safety or fitness for purpose.

Another concern is currency and obsolescence. Marine technology, materials, propulsion systems, survey methods and regulatory expectations continue to change. A surveyor needs to know whether a standard is current, superseded, advisory, mandatory, or incorporated into legislation,

contract, class rules or regulatory guidance. Applying an outdated or misunderstood standard can create risk for the surveyor, the client and the vessel owner.

The situation becomes more complex when multiple requirements apply at the same time. A vessel may be subject to national law, international conventions, marine orders, classification society rules, manufacturer specifications, industry codes and contractual requirements. These documents may overlap, use different language or set different thresholds. In those situations, the surveyor must identify which requirement carries authority, how any conflict should be managed and whether a higher professional duty applies.

Selective use of standards is another problem I have seen in practice. In disputes, claims, audits or commercial negotiations, a single clause may be quoted to support a convenient position while definitions, notes, exclusions or related requirements are ignored. That is not proper interpretation. A standard must be read as a whole, with its purpose and context in mind.

Competence remains the foundation. Standards assume that the person using them has the technical

knowledge and practical experience to interpret them responsibly. Templates, software and AI tools may assist, but they cannot carry the accountability of the marine surveyor.

The surveyor must be able to explain the basis of the decision and show how the standard was applied.

For me, good practice means confirming the current version of the standard, understanding whether it is mandatory or advisory, documenting the interpretation, seeking specialist advice where required and continuing professional development. Professional bodies also have an important role in supporting consistent interpretation through guidance, training and peer discussion.

Ultimately, standards are powerful tools, but they are not substitutes for judgement. Used mechanically, they can create inconsistency and risk. Used thoughtfully, they support safer vessels, stronger compliance, better client confidence and a more professional marine surveying industry.

Eric McIlwain
Chair of the AIMS Board





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A busy 2026 keeps rolling on...

I THINK most members would agree that we are well and truly in the midst of a busy 2026. This year has been busy, productive and rewarding.

A warm welcome back, and sincere thanks, to all members who have renewed their membership for another year. As I continue to meet with members and learn more about the wide range of specialisations across our industry, I am continually impressed by the depth of experience, professionalism and knowledge within the AIMS community.

I also extend a warm welcome to all new members who have joined us over the past three months since our last newsletter. I am encouraged to see many new students and those completing their studies deciding to join AIMS.

I encourage all members, whether new or long-standing, to get involved in the areas of AIMS that interest you most. There are many ways to contribute: joining a working group or project, submitting an article for our newsletter or website, attending a networking event near you, taking part in the Sydney conference in October, or joining an online member discussion.

I am always looking for new opportunities to support members, strengthen engagement and provide added value through your membership.

We have also recently farewelled several long-standing members who have retired from active marine surveying practice at the end of the membership year.

On behalf of AIMS, I extend our sincere thanks for your many years of support, service and contribution to the Institute and to the broader marine surveying profession.

AMSA Stakeholder Forum

Eric McIlwain and I attended an Australian Maritime Safety Authority (AMSA) stakeholder forum in early August. The AMSA Board and Senior Executive team were on hand to hear from industry.

I would like to thank the AMSA Chair, Captain Jeanine Drummond, and the AMSA CEO, Kaylene Dale, and their team for providing us an opportunity to raise issues.



Kaylene provided an overview of AMSA's strategic direction and priorities, including:

- Deliver Government, Ministerial and Board expectations;
- incident response excellence through continuous improvement and partnerships;
- streamline service delivery to deliver public value;
- optimise risk-based regulatory approach to be proportionate and responsive to emerging risks;
- modernise regulatory design, and reduce regulatory burden and cost;
- digitisation offers important opportunities; and
- stronger stakeholder engagement is central to AMSA's approach.



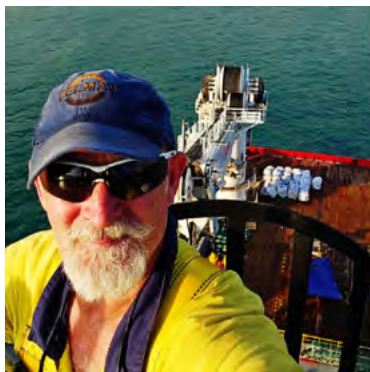
Industry workshops and webinars

AIMS continues to provide workshop and webinar content for members to engage with continuing professional development (CPD).



Workshop 8: Jeffrey Blum, Director, Maritime Education & Training Ltd – 1 June 2026

Topic: Part 1 – Laytime and Demurrage – the basics and how surveyors can contribute or hinder a vessel's time in port.



Workshop 9: Phillip Fox – Midwest Marine Surveyors Pty Ltd, AIMS Member – 22 June 2026, the workshop was postponed to 3 July 2026.

Topic: Drone and robotics in the marine industry



Workshop 10: Jeffrey Blum, Director, Maritime Education & Training Ltd – 29 June 2026

Topic: Part 2 – Laytime and Demurrage



Workshop 11: Kevin Moran, Managing Director, Tymor Marine Ltd – 30 June 2026

Topic: DRFT MRKS update

Biography: Kevin is a former seafarer with over 35 years of experience in the maritime industry. In 2012, he co-founded and now leads an expanding maritime technology business. His goal is to transform how ships measure, track and control vessel loading and stability by leveraging our disruptive technologies, including DRFT MRKS, DeadW8, and MOSIS. The technology focuses on reducing uncertainty associated with stability and loading, enhancing crew, vessel and port safety.



Workshops 12 and 13: Jeffrey Blum, Director, Maritime Education & Training Ltd – 13 and 20 July 2026

Topic: Parts 3 and 4 – Laytime and Demurrage



Workshop 14: Jeffrey Blum, Director, Maritime Education & Training Ltd – 3 August 2026

Topic: Voyage Estimating



Workshop 15: Jeffrey Blum, Director, Maritime Education & Training Ltd – 17 August 2026

Topic: Dispute Resolution Methods



Workshop 16: Ryan Norval, Principal Lawyer – Director, Solicitor & Notary Public (QLD), Pacific Maritime Lawyers – 24 August 2026

Topic: When Survey Reports Become Evidence: Marine Insurance Claims, Causation and Defect Recording

Biography: Ryan Norval is the Principal Solicitor and Notary Public at Pacific Maritime Lawyers, a specialist maritime, transport and commercial law practice based in Queensland and acting nationally and internationally.

Ryan advises and acts in marine insurance, vessel

damage, survey, ship repair, yacht and commercial vessel disputes, regulatory matters, contract drafting and cross-border maritime claims. His practice regularly involves disputes in which survey evidence, causation, defect identification, maintenance history, vessel condition and insurance coverage are central issues.

Ryan has practised in Australia for the past 12 years. Before relocating to Australia, he was admitted to the High Court of South Africa and practised from private advocates' chambers (barrister) in Cape Town.

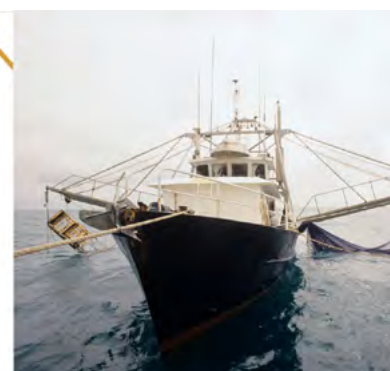
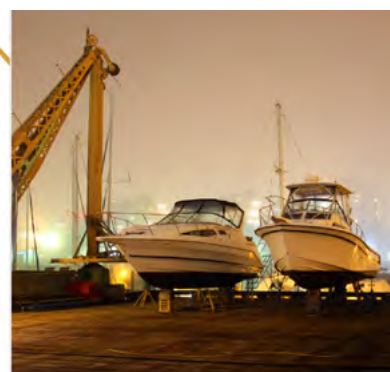
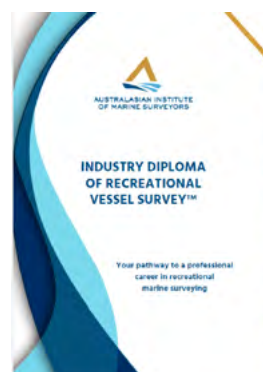
Ryan also spent more than a decade in offshore and maritime operations, including work on offshore support vessels, barges, anchor-handling tugs, towage, cargo operations and FPSO support.

Ryan worked as a barge master, was certified as an Offshore Installation Manager (OIM), and held various STCW and advanced ballast control certifications obtained through training in France, the United Kingdom, Denmark and South Africa.

Ryan also owned a Cape Town-based ship repair business undertaking vessel accommodation works. This combined legal, operational, technical and repair background gives him a practical understanding of vessel operations, marine risk, survey evidence, causation and the evidentiary issues that commonly arise in marine insurance and maritime claims.

AIMS Diplomas

Ready to take the next step in your maritime career?





Marine surveying is a profession built on technical expertise, practical experience, sound judgement and professional integrity and demand for skilled surveyors continues across the recreational, domestic commercial vessel and commercial marine sectors.

At the Australasian Institute of Marine Surveyors, our industry-focused diploma programs are designed for people who already bring maritime experience and want to formalise, broaden or advance their professional capability.

Students can choose pathways including:

- Industry Diploma of Recreational Vessel Survey™

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International Diploma of Marine Surveying (Working Boats)™

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Advanced Diploma of Commercial Marine Surveying™

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If you are ready to turn your maritime experience into a recognised professional pathway, now is the time to take the next step. Contact the AIMS today to discuss the diploma that best matches your background, career goals and sector of interest.

Newsletter contributions

Thank you to the members that contributed to this edition of the newsletter and, for members who do contribute, your article can be used as evidence of continuing professional development.

I encourage members to contribute to the newsletter. If you would like to know more, please contact the office.

Your Institute

Please contact me on +61 2 6232 6555 or send me an email with feedback, and ideas at gm@aimsurveyors.com.au.

Dr Eric Perez
Chief Executive Officer

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AIMS International Marine Surveyor Symposium 2027: call for research papers and case studies



IN July next year, we will be holding the inaugural Australasian Institute of Marine Surveyors (AIMS) International Marine Surveyor Symposium and are now calling for research papers and case studies.

The AIMS is proud to be partnering with the Pharos Institute for Strategic Leadership to deliver this important event.

The AIMS is inviting submissions for this International Marine Surveyor Symposium 2027, to be held from 19 to 22 July. The symposium is an online event.

This is an opportunity to showcase innovative thinking, practical experience, emerging trends, and real-world insights with an audience committed to excellence and the future of the profession.

We welcome submissions that explore technical developments, industry challenges, innovation, leadership, best practice, lessons learned, and issues shaping the sector now and into the future.

Sponsorship

We acknowledge our valued symposium sponsors, Fabian Pasquini and Matt Kuc and the team at Austbrokers Countrywide and John Petiquin,

Managing Director at Alliance Marine Surveyors. Their generous support is helping bring this important professional forum to life, and reflects a strong commitment to knowledge sharing, professional development, collaboration and the continued advancement of the marine surveying sector.

Sponsorship opportunities are also available for organisations that would like to be part of this inaugural event, demonstrate their support for the marine surveying profession, and connect with an engaged audience of industry professionals, practitioners, researchers and leaders.

Key links

Call for Papers and Case Studies: https://aimsurveyors.com.au/wp-content/uploads/2026/07/Call-for-Papers-and-Case-Studies_v2.pdf

Submission Form: <https://form.jotform.com/261469200221042>

Submission Format: https://aimsurveyors.com.au/wp-content/uploads/2026/06/Format_v2.pdf

Symposium Program: https://aimsurveyors.com.au/wp-content/uploads/2026/07/Symposium-Program_v3.pdf

Sponsorship: <https://aimsurveyors.com.au/wp-content/uploads/2026/06/Sponsorship.pdf>

Symposium Policy Statement: <https://aimsurveyors.com.au/wp-content/uploads/2026/06/Policy-Statement.pdf>

Keynote speakers



Matt Kuc B.Com (Man, Fin), Director, Austbrokers Countrywide

Biography: As an experienced Financial Lines, Technology and Distribution Manager with over

15 years' industry experience, and a shareholder of the business, Matt forms a key pillar in devising and driving company strategy at Austbrokers Countrywide Insurance Brokers. His session focuses on professional indemnity claims.

Bringing together a deep understanding of translating complex professional risks into insurance solutions, as well as a personal interest in translating emerging AI and automation technology into business practice, Matt is able to wear a number of hats adding value across a wide number of areas with clients and the broader insurance industry.

Dr Eric Perez, Chief Executive Officer, Australasian Institute of Marine Surveyors

Biography: Eric is the Chief Executive Officer of AIMS. He graduated with a Bachelor of Behavioural Science and Bachelor of Commerce from Griffith University. Eric decided to extend his education by obtaining a Master of Business by Research at the University of the Sunshine Coast, exploring strategy and strategic planning within Australian commercial fisher micro-businesses.

He successfully completed a research thesis and was awarded a Doctoral qualification from the University of Southern Queensland, exploring strategic thinking and foresight capabilities among Australian agriculture leaders.

Mike Schwarz, Chief Executive Officer, International Institute of Marine Surveying

Biography: Mike joined IIMS as CEO in January 2014. Although from neither a technical nor a marine background originally, Mike brought a wealth of key business management skills gained from senior director-level roles in UK media, publishing and membership organisations. He is a keen exponent of the internet, the digital space, social media, and increasingly AI.

His fresh set of eyes meant he has been able to identify new opportunities and shape the Institute for the digital age, making it fit for purpose for the next generation of marine surveyors. Mike chaired the MCA's Certifying Authority Professional Standards Working Group for five years and has become increasingly passionate about driving up marine surveying standards internationally. He is also a founding member of the Maritime Professional Council of the UK. In recent years, Mike has written and spoken extensively about the challenges of lithium-ion battery technology in an attempt to educate and inform surveyors and the wider maritime industry.

Dr Wade Azmy, Managing Partner, Pharos Institute

Biography: Dr Wade Azmy, Adjunct Professor, CEO and strategic leadership consultant, and a highly accomplished general management professional known for building profitable organisations in competitive markets worldwide. With experience in marketing, sales and business development, Dr Azmy has excelled in countries and regions such as Australia, Japan, China, the USA and the Middle East, building and managing teams across diverse cultures.

In addition to his executive career, Dr Azmy is a respected management consultant, strategy development mentor, and executive coach on strategic leadership. Possessing a profound understanding of market dynamics and organisational leadership, Dr Azmy provides valuable insights for strategic decision-making, conceptualises plans and successfully implements transformative projects.

Research papers



Dr G. Reza Emad

Biography: Dr G. Reza Emad is a Senior Lecturer and Director of the Centre for Research in Cognitive Human Element and Maritime Innovations (C-HELM) at the Australian Maritime College, University of Tasmania. His research program focuses on three pillars: digitalisation and autonomous shipping; decarbonisation and alternative fuel; and diversity and workforce development.

During his career, he has been the lead investigator on many nationally and internationally-funded research projects and has published extensively in these areas.

The projects in his research centre are currently focusing on the implementation of Industry 4.0 technologies, such as AI in the maritime domain and its impending changes and challenges that directly or indirectly involve the human factor, and competency development of future maritime workforce.

Abstract: *From Onboard to Onshore: How AI and Digital Twin Technologies Are Redefining the Marine Surveyor's Role*

As remote operation, autonomous shipping, and cyber-physical systems mature, the marine surveyor's role is shifting from intermittent onboard inspection toward continuous, AI-informed virtual monitoring of maritime assets. This paper examines how artificial intelligence, IoT, and digital twin technologies are set to reshape surveyor practice, decision-making, and evidentiary standards over the next decade. Drawing on the Quasi-Community framework and current human factors research into seafarer and surveyor competency development, the paper identifies the emerging skill sets – data analysis, cyber security and remote-sensing literacy – that surveyors will need to remain relevant as digital twins become the primary interface between surveyor and vessel.

The discussion weighs the opportunities this shift presents, including predictive, condition-based survey planning, richer audit trails, and reduced travel and cost, against its challenges, including liability questions when AI-flagged anomalies are missed or misread, gaps in training infrastructure, and the risk of workforce deskilling. The paper concludes with a set of recommendations for AIMS members and maritime training bodies on preparing the surveying workforce for this transition.

Capt Louis Koutelas, Director and Senior Marine Surveyor, Hunter Marine Surveyors and AIMS Member

Biography: Capt Louis Koutelas has spent his working life in, on and around ships. He has also written several software solutions, including CargoMax, to add value to the draft surveying and trimming process. As a self-confessed visual learner, he understands the importance of training people in a way that makes sense to them.

His team at HMS have been conducting draft surveys and trimming for over 25 years and are industry leaders in the field. Louis has incorporated visual learning techniques in training and in the CargoMax user experience to make it easier to use.

Abstract: *Water density and glass hydrometers - how can accuracy be improved?*

Australia exports approximately 1.5 billion tonnes of bulk cargo each year, making accurate tonnage-determination methods essential for commercial purposes. Draft surveying is the primary method for quantifying the tonnage loaded onto and discharged from vessels. It uses Archimedes' principle, which states that "the weight of water displaced by a floating object is equal to the weight of that object". A critical component of every draft survey is therefore the precise measurement of the water density in which the vessel is floating. Even small errors in density measurement can translate

into significant discrepancies in calculated tonnages on bulk carriers.

Zeal glass hydrometers, first manufactured in 1888, became widely adopted in maritime operations by the 1930s and have remained the standard instrument for water-density measurement in draft surveying for nearly a century. Despite advances in other areas of marine measurement technology, the hydrometer has changed very little. So, is there a better way? This research paper examines the following topics: (1) calibration and certification; (2) density stratification; (3) density variation with draft; (4) density variations with temperature; (5) water-sampling equipment; and (6) alternative technologies.

Dr Eric Perez, Dr Wade Azmy and Nick Parkyn, Nick Parkyn Marine Surveying / MarineML

Nick Parkyn

Biography: Nick has an extensive background in both the marine and information technology (IT) disciplines. His work in the marine industry includes marine surveying, yacht and small craft design, and marine software development. Through his company, MarineML, he is evangelising and applying artificial intelligence (AI) and machine learning (ML) concepts and techniques to the marine surveying discipline. Nick has studied computer science, yacht and small craft marine surveying, and yacht design. He holds several patents, has presented papers at numerous international marine and IT conferences, and has written numerous articles published in marine and IT journals and magazines.

Artificial intelligence (AI) and machine learning areas of particular interest include: (1) current and future application of AI and ML to marine surveying; (2) AI fluency for marine surveyors; (3) ethical use of AI in marine surveying; and (4) the role of AI and ML in succession planning and realisation in marine surveying. He is a member of the International Institute of Marine Surveyors (IIMS) and Society of Naval Architects and Marine Engineers (SNAME).

Abstract: *Continuing Professional Development, Technology and Artificial Intelligence: Challenges and Opportunities from a Marine Surveying Industry Perspective*

The marine surveying profession faces unprecedented transformation driven by rapid technological advancement and evolving competency requirements. This literature review synthesises current peer-reviewed research on continuous professional development (CPD) frameworks for marine surveyors and the integration of artificial intelligence (AI) and advanced technologies in marine surveying operations. Significant gaps

persist in standardised CPD requirements across the broader marine surveying profession.

Concurrently, AI-driven technologies – including autonomous underwater vehicles (AUVs), remotely operated vehicles (ROVs), machine learning algorithms, and computer vision systems – are revolutionising inspection methodologies, achieving up to 30 per cent cost reductions and 92 per cent prediction accuracy in specific applications. However, the integration of these technologies necessitates fundamental shifts in surveyor competencies, training paradigms, and professional development frameworks.

This review identifies critical challenges, including the need for harmonised CPD standards, technology-specific training programs, and adaptive competency frameworks that address both traditional surveying skills and emerging digital capabilities. The findings underscore the imperative for maritime education institutions, professional bodies, and industry stakeholders to collaboratively develop integrated approaches that ensure marine surveyors possess both foundational competencies and advanced technological proficiencies required for the evolving maritime landscape.

CASE STUDIES



Phillip Fox, Midwest Marine Surveyors Pty Ltd, AIMS Member and Dr Eric Perez

Biography: Phillip is an AMSA-accredited marine surveyor and Director of Midwest Marine Surveyors Pty Ltd, as well as the Chief Remote Pilot at Specialised Drone Services, based in Geraldton, Western Australia. He holds a Certified Commercial Marine Surveyor membership with the Australasian Institute of Marine Surveyors and is a member of the Australian Certified UAV Operators, underscoring his commitment to professional excellence in the maritime and aviation industries. He holds a CASA RePL and ReOC for drones up to 25 kg, delivering professional drone services to a wide range of industries throughout Western Australia, including mining, oil and gas, agriculture, environmental monitoring, power and telecommunications infrastructure, as well as private clients.

He has over a decade of working history in the offshore oil and gas industry, including experience on AHTS vessels engaged in pre-lay anchors and rig moves, experience on PSVs carrying various DGs and NLS and dive / ROV operations, is skilled in dynamic positioning (unlimited), the energy industry, GMDSS, maritime operations and international shipping, and is a strong maritime professional with a Bachelor of Applied Science (B.A.Sc.) focused in nautical science from the Australian Maritime College.

Abstract: *Aerial Drones in Marine Surveying and Inspections: Opportunities and Challenges*

Aerial drones are emerging as an important enabling technology in marine surveying and inspection, offering safer, faster and more evidence-rich access to vessels, offshore structures, port infrastructure, tanks, cargo holds, hulls, superstructures and other difficult or hazardous locations. Traditional methods – such as scaffolding, ladders, rope access, rafting, work-over-water and confined-space entry – remain necessary but they can expose personnel to significant hazards, increase downtime, and add cost and complexity to survey planning.

This case study examines how drones can support remote visual inspection, high-definition imagery, thermal imaging, LiDAR, three-dimensional mapping and emerging ultrasonic thickness applications to improve inspection coverage, repeatability, auditability and decision-making.

It also considers operational, legal and governance challenges, including battery endurance, saltwater exposure, wind, GPS-denied environments, data management, operator competence, aviation compliance, privacy, maritime security, insurance, liability, class society requirements and regulator acceptance.

Drawing on these issues, the case study proposes best-practice considerations covering survey objectives, approvals, competent operators, site-specific risk assessment, emergency controls, equipment selection, data quality, privacy protection, verification of critical findings and transparent reporting.

It concludes that drones do not replace marine surveyor judgement but can strengthen professional outcomes when integrated into a documented, lawful and risk-based methodology.

Graeme Normington, Principal Marine Surveyor, Queensland Ship Surveyors Pty Ltd, AIMS Member

Biography: Graeme is an experienced and highly-qualified principal marine surveyor with over 20 years of expertise in conducting surveys for both

commercial and defence vessels. As the Managing Director of Queensland Ship Surveyors Pty Ltd, he oversees a wide range of marine survey services and hold accreditation as an AMSA Marine Surveyor.

His primary focus is on the Guardian Class Patrol Boats (GCPB) for the Australian Defence Force, the Serco DMS fleet of vessels based in the port of Cairns, Queensland and a range of commercial AMSA DCV vessels. His knowledge spans particular stability approval, construction surveys, machinery inspections, safety equipment surveys, and compliance with Australian National Standards for Commercial Vessels (NSCV) and Lloyd's Register (LR) LSSC Rules.

Abstract: *Hull Moisture Surveys of Timber and Fibreglass Boats – A Practical Case Study for Marine Surveyors*

This presentation will provide a practical overview of hull moisture surveys and their role in assessing the condition of timber and fibreglass vessels. It will examine the science of moisture migration, common boat construction methods, and the operating principles and limitations of moisture meter technologies.

The presentation will demonstrate how moisture survey results should be interpreted alongside visual inspection, percussion sounding, vessel construction details and other non-destructive inspection techniques. It will also discuss factors that can influence moisture meter readings, including laminate thickness, metallic components, salinity, temperature, coatings and previous repairs.

Using practical case studies, attendees will see how moisture surveys can assist in identifying hidden defects, assessing structural condition, planning repairs and avoiding misdiagnosis. Particular emphasis will be placed on the importance of professional judgement and the limitations of relying solely on moisture meter readings.

The objective is to provide marine surveyors with a practical framework for conducting and interpreting hull moisture surveys, improving the consistency, accuracy and reliability of condition assessments across both timber and fibreglass vessels.

Mark Smith, Owner, SET Maritime & Electrical, AIMS Member

Biography: SET Maritime & Electrical is headed up by Mark Smith. Mark is a highly-regarded AMSA-accredited marine surveyor, marine engineer and electrical contractor, offering a unique skill set to companies and owners / operators in the marine industry. With over 40 years' experience working in numerous areas of the oil and gas industry, Mark

has developed an extensive knowledge base and expertise in vessel operation and management.

Based in Brisbane, Mark is an AMSA-accredited marine surveyor, a member of the Australasian Institute of Marine Surveyors, a Chartered Marine Engineer and Fellow of the Institute of Marine Engineering, Science and Technology (IMarEST). Mark has won two awards for his revolutionary shore connection device – ESHORE – the 2022 Australian Business Awards: Product Innovation and the SafeWork and Return to Work Awards 2022 for best identified solution to an electrical issue.

Abstract: *Lithium battery technology: Development of guidance for low-risk battery electric installations*

This paper examines the development of practical guidance for low-risk lithium-ion electrical energy storage (EES) installations on domestic commercial vessels (DCVs), with emphasis on lithium iron phosphate (LFP) systems. As hybrid and electric propulsion become more common, surveyors, operators and regulators require a consistent framework for assessing battery safety, system integration and operational risk.

The paper applies ALARP principles and the hierarchy of controls to key hazards, including thermal runaway, battery chemistry, BMS functionality, single-point failures, alarm monitoring, off-gas detection, ventilation, fire suppression and emergency response. It identifies limitations in current marine electrical requirements and draws on AS/NZS 3004.2, AS/NZS 5139, DNV guidance, AMSA safety material and OEM requirements to define practical expectations for low-risk installations.

The paper proposes a risk-based acceptance pathway supported by system-level BMS communication, meaningful alarms, early fault detection, fire-risk controls, documentation, commissioning evidence and safety management system integration. The outcome is a practical set of lessons and recommendations to help marine surveyors distinguish routine low-risk installations from systems requiring engineering review.

Please contact me on +61 2 6232 6555 or send me an email with feedback, and ideas at gm@aimsurveyors.com.au.

Dr Eric Perez
Chief Executive Officer

AIMS' biennial conference report

THE AIMS' biennial conference report has been shared and it's worth coming back to the key themes of the event.

1. Professional Standards, Trust and Assurance

Maintaining confidence in the marine surveying profession depends on a visible commitment to high standards, sound governance and ethical conduct. Across the conference, there was a strong emphasis on the importance of quality assurance, role clarity, accountability and procedural consistency in building trust with regulators, industry stakeholders and the wider community.

As the profession continues to evolve, the ability to demonstrate credibility through robust frameworks, transparent practice and dependable professional judgement will remain fundamental to its reputation and long-term relevance.

The sessions highlighted the importance of robust accreditation frameworks, clear scopes of work, defensible reporting, professional indemnity awareness, audit and assurance processes, ethical conduct, and consistency in marine surveyor practice.

2. Safety, Risk and Prevention

Safety remains a defining priority for the marine surveying profession, with conference discussions repeatedly highlighting the value of early risk identification, practical foresight and preventative action.

Marine surveyors operate at the intersection of compliance, operations and public interest, making their role essential in reducing harm, improving decision-making and protecting



vessels, cargo, people and infrastructure.

This theme reinforces that effective surveying is not only about technical assessment but also about anticipating risks, applying sound judgement and contributing to a safer maritime environment overall.

The sessions reinforced prevention as a core safety strategy, with emphasis on early risk identification, enclosed and hazardous space controls, port and supply chain resilience, hidden damage assessment, evidence-based assurance, and professional judgement in Port State Control.

3. Capability, Training and Future Workforce

The future strength of marine surveying will depend on how effectively the profession attracts, develops and supports the next generation of practitioners. A recurring message throughout the conference was the importance of practical training, continuing professional development, mentoring and accessible learning pathways that reflect the changing demands of the industry.

With workforce pressures,

succession planning challenges and the need for specialised skills becoming more visible, there is a clear strategic imperative to invest in people, strengthen capability and ensure that professional knowledge is passed on in a structured and sustainable way.

The sessions focused on workforce sustainability, succession planning, practical training pathways, continuing professional development, micro-credentials, learner-centred education, professional qualifications, mentoring and the need to develop future-ready capability.

4. Technology, Innovation and Professional Judgement

Digital transformation is reshaping the operating environment for marine surveyors, bringing new tools, faster processes and emerging opportunities to improve accuracy, efficiency and insight.

At the same time, the conference highlighted that technology, including automation and artificial intelligence, must be applied thoughtfully and responsibly.

The strategic challenge is not simply adopting new systems but also ensuring they enhance, rather than diminish, professional judgement, independence and critical thinking. The future of the profession will rely on balancing technological capability with human expertise and ethical decision-making.

The sessions addressed digital transformation, artificial intelligence, automation, software-enabled surveying, data interpretation, international standards, technical tools and the need to ensure technology supports, rather than replaces,

independent professional judgement.

5. Partnerships, Collaboration and Collective Influence

The conference underscored the value of strong partnerships in advancing shared priorities across the maritime sector.

Collaboration between professional bodies, regulators, insurers, training providers and allied industry organisations was presented as essential to strengthening standards, improving trust, building capability and addressing complex challenges that no single organisation can solve alone.

Strategic partnerships also expand the influence of the profession, create opportunities for joint advocacy and help position marine surveying as an active contributor to broader industry development and reform.

These sessions showed that collaboration with regulators, industry bodies, insurers, training providers, ports and allied maritime organisations strengthens trust, advocacy, capability building, regulatory reform and the overall visibility of the marine surveying profession.

6. Adaptation, Growth and Strategic Positioning

Marine surveying is operating in a period of significant change, shaped by evolving regulation, market complexity, geopolitical disruption and advances in vessel design and technology.

In this environment, strategic success will depend on the profession's ability to adapt, while remaining clear about its purpose and value.

The conference pointed to the need for stronger member engagement, wider regional reach, more visible leadership and a proactive approach to shaping the future of the profession.

Growth will come not only from responding to change but also from positioning marine surveying as an essential, future-focused discipline within the maritime sector.

These sessions positioned marine surveying as a profession operating in a changing maritime environment shaped by regulatory reform, regional expansion, market disruption, new vessel technologies, onshore wind, supply chain change and the need for stronger strategic leadership.

7. Conclusion

The conference themes demonstrate that driving change in the marine surveying profession depends on purposeful collaboration within the profession, across industry sectors and beyond national borders.

The sessions collectively reinforced that progress will come through shared standards, stronger partnerships, cross-border knowledge exchange, coordinated training pathways and a willingness to work with regulators, educators, industry bodies and allied maritime organisations to shape a safer, more capable and future-ready profession.

As we move forward, the challenge for industry, industry partners and stakeholders is clear: to turn these conference insights into action by strengthening collaboration, sharing knowledge across borders, supporting professional standards, and working collectively to drive meaningful change for the future of the marine surveying profession.

You can access a copy of the conference report [here](#)

Dr Eric Perez
Chief Executive Officer



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Marine survey reports – some common mistakes

SO, you've had a fun day on the job crawling around a boat, meeting new people, having interesting conversations and learning things ... now it's time to strap in for the difficult part, writing the report! Marine surveyors are generally time-poor, and report writing is time consuming, so it is easy to rush through this critical process.

Your report is important for several reasons: it is where you will present your findings and recommendations and, in doing so, meet your contractual obligations; it is an opportunity to promote your brand, both through the quality of your report and presentation of company messaging; and it is a means of protecting your liability.

While there are various ways of presenting your information, from narrative to checklists, depending on the level of detail required, there are certain elements that must be included in all reports.

A survey report should be clear and concise and written using active language. It is a highly structured document with an introductory section that will be very similar for all survey types and include such things as a title page, scope of work, disclaimers, vessel particulars and attending parties.

The middle section of the report may vary somewhat, depending on the type of survey being conducted, but will generally contain your survey findings including any defects.

The concluding section will summarise these defects, state your recommendations, followed by a concluding statement. Despite its structured format, the report should flow in a logical fashion that makes sense to the reader, leaving them with a clear

understanding of what you have found and what is expected of them.

It is not an opportunity to make decisions on behalf of the buyer, speculate about what the vessel might be capable of, comment on the effectiveness of the design or present the vessel's history and so on. Particularly when conducting a condition survey, you should be just assessing the vessel as is, on the day you inspect it, and presenting a factual and unbiased summation of the results.

Common mistakes surveyors make

Scope

The first conversation you have with a prospective client will be to determine what it is they want you to do, whether you are capable of doing it, and what will not be included as part of your survey. This information will then become your scope of works and must be clearly stated at the start of your report.

The following extract from ITIC demonstrates the importance of being clear:

“International Transport Intermediaries Club (ITIC) has warned that the wording of instructions can potentially widen the scope of liability for marine service providers, citing the recent case of a marine surveyor sued for €1.56m for alleged poor onboard stowage of a cargo.

“The marine surveyor in Germany was engaged by charterers to attend the loading of a cargo and to report on any damage caused by the stevedores. The emailed instructions from the charterer contained the following provisions: “We hereby order the following: supervision of the loading / preloading survey; reporting of eventual

damages to the coating or the material – and time of damage; reporting of negligence while handling the material and loading; detailed documentation, with photos, of the loading operations; no continuous supervision will be necessary, only during the important moments (commencement of loading operations – change of shift – securing of the cargo).

“Loading and lashing of the cargo was completed and the vessel sailed. Three days later there was a loud noise from the cargo hold and the ship developed a 30-degree list. The master reduced the list by ballasting and diverted to a port of refuge. The cargo was discharged, sorted on the quay, reloaded, lashed and secured. About 600 tonnes of damaged cargo was left behind. Over ten days later, the ship resumed its voyage.

“The owners alleged that the cargo had shifted due to poor stowage, and ultimately obtained an arbitration award against the charterers for €1.56m. The charterers subsequently held the surveyor and the stevedores who had loaded the cargo jointly liable for this amount.

“Lawyers appointed by ITIC represented the surveyor at court, where the claim was subsequently rejected on the basis that the stevedores were responsible for the loading and stowage, and that the surveyor's instructions were limited to reporting on stevedoring damage caused during loading.

“ITIC director Charlotte Kirk says, ‘The potential difficulty with this defence was that the charterer's email instructions could have been interpreted as conferring a wider obligation. In the circumstances, it was agreed that the surveyor would make a contribution of approximately

ten per cent to the settlement of the claim.

“ ‘While this contribution was relatively modest in percentage terms, the claim is an example of how the wording of instructions can potentially widen the scope of a surveyor’s liabilities. If the brief is understood to be restricted to a specific task, it is important to make sure that this is clearly recorded’.”

Source: Editorial Team at SAFETY4SEA

<https://safety4sea.com/court-rejects-e1-56m-claim-against-marine-surveyor-accused-of-poor-stowage/>

Disclaimers / terms and conditions

Terms and conditions of service provide the general rules relating to your overall business dealings such as payment of invoices, intellectual property rights, dispute resolution, overall liability, obligations and responsibilities, Force Majeure, time bars, jurisdiction of law and indemnity.

They should be presented to a client before accepting the assignment to ensure that the client is fully aware of theirs and your liability. AIMS members will have access to a Standard Terms of Engagement Agreement form that can be used for this purpose.

Disclaimers are specific to each job and detail what was and what was not included in the inspection items, this should flow from your agreed scope. These will vary for each job and should be presented at the start of each report, after the scope, so that the client is fully aware of their content and reads the report in context.

Again, examples of standard T&Cs and disclaimers can be found in the members’ resources of the AIMS website. These should be reviewed before applying to ensure they meet each situation.

Disclaimers are often applied generically to all survey reports and sometimes don’t reflect the actual service provided. For instance, a surveyor might state in the disclaimers that the engine or rigging wasn’t inspected then go on to provide comment on these items, or vice versa. Disclaimers are too often not comprehensive enough and restricted to a few lines.

Although applying rigorous and comprehensive disclaimers won’t prevent legal action being taken against you, they can serve to limit your liability.

Recommendations

This is probably the section that most clients will skip straight to, and should succinctly summarise all of the defects noted in the body of the report along with associated recommendations and time frames for rectification. The latter should be based on the level of risk they propose – serious structural faults, for instance, should be addressed before the vessel re-enters the water, whereas minor defects may be monitored over time for deterioration.

A common problem is to see defects identified in the main body of the report that aren’t noted in this section, or items being listed in the Recommendations that aren’t identified through the report. Clarity and consistency are important outcomes for the client. Remember that you will be held accountable for the accuracy of your reports

Grammar, spelling, formatting

Nothing detracts from the overall professionalism of a report that you have worked hard on faster than poor grammar and spelling! Combined with poor formatting, the client will be questioning your credibility, regardless of how technically detailed and accurate your findings. It is easy to perform a grammar / spell check on your

device and well worth the extra 10 minutes of time.

Common formatting problems include leaving large gaps at the top of a page, poorly placed and poor quality photos of inconsistent size that aren’t labelled, not providing enough space between sections of information and not highlighting and numbering section headings.

An index at the start will help to provide context and assist with referencing but must be accompanied by appropriate Header / Footers showing page numbers.

Always double-check your reports before releasing, to ensure that they are:

- ☐ accurate;
- ☐ consistent;
- ☐ clear and concise;
- ☐ professionally formatted;
- ☐ in line with the scope;
- ☐ grammar/spell check is completed; and
- ☐ contain all essential elements.

For those wishing to upgrade their report writing skills, the AIMS study unit IDS01 – “Prepare and Present Professional Marine Survey Reports” can be completed as a stand-alone unit.

You can apply directly online using the Student Enrolment form on the AIMS website or call or email me at training@aimsurveyors.com.au for more information.

AIMS Student handbook

[Industry Diploma of Recreational Vessel Survey™](#)

[International Diploma of Marine Surveying \(Working Boats\)™](#)

[Advanced Diploma of Commercial Marine Surveying™](#)

Sue Brown
Professional Development
and Training Coordinator

Cargo hatch covers set a challenge

THE following was posted by Kalyan Das on LinkedIn in April and July 2026.

Cargo hatch

What is this cargo hatch cleat trying to tell us?

Take a look at the cleat in the picture:

- ❑ the rod: noticeably bent and heavily corroded;
- ❑ the steel washes: warped and distorted under extreme load; and
- ❑ the rubber washer: crushed and covered in stress cracks.

This isn't just "wear and tear." It's a symptom of a fundamental misunderstanding.

There is a common belief that if a hatch isn't weathertight, you need to tighten the cleats.

But is that how hatch covers are designed to work?

Compression is pre-set: the watertight seal is achieved by a specific amount of rubber compression against the compression bar.

The landing pads: the final position of the hatch cover is controlled by the height of the landing pads. Once the hatch cover touches the landing pads, the hatch is as low as it's going to go.

The cleat's real job: cleats are **not** there "squash" the rubber. Their function is to secure the cover and prevent relative movement between the hatch and the ship's hull during a voyage.

The cost of over-tightening

When we treat cleats like giant clamps to force a seal, we aren't fixing a leak – we are creating a failure.

Over-tightening induces

excessive stress on the cleat assembly, often leading to the damage.

Localised high-stress points on the hatch panel itself, which can lead to permanent structural deformation.

If a hatch is leaking, the solution is rarely a bigger wrench. It's usually about the health of the rubber packing, the condition of the compression bars or the height of the landing pads.

We must truly understand how a component is engineered to function before we attempt to maintain it.

Rust pack versus precision engineering: the physics of hatch cover misalignment

I was walking the deck of a bulk carrier recently with the Chief Officer, inspecting the cargo hatch covers.

The conversation started where most do: "We hose-tested them at the last port. They're 100 per cent watertight."

But, as we looked closer at the inner and outer lips of the rubber sealing channels, a different story emerged.

The mild steel of the lips was exhibiting a classic "rust pack" expansion. (Rusted steel can swell to several times its original thickness.) In this case, the flaking was physically pushing the rubber seal away from its original position.

Looking at the rubber, you could clearly see the permanent set (compression of the rubber) had moved from the centre of the rubber to the side.

The engineering reality: why "static" thinking is dangerous

We have to stop treating hatch covers like simple "lids". They are complex mechanical assemblies with millimetres of tolerance managed by bearing pads, locator and supporters. A hose test is just a static snapshot at the pier. It doesn't account for the dynamic racking and flexing of a hull in a seaway. If the sealing geometry is already fighting a misaligned "set" due to channel corrosion, that seal will struggle the moment the ship starts to work in heavy weather.

The bottom line: if we ignore "swollen" steel because the test passed today, we aren't maintaining a ship – we're just scheduling a more expensive



mechanical failure for tomorrow. When the alignment goes, the bearing pads take the brunt and a “watertight” seal becomes a dynamic failure very quickly.

Hatch cover cross seam lips are corroded

“My hatch cover cross seam lips are corroded but does it really matter? I’ve got rubber seals underneath to protect against water entry!”

I heard this recently and, while the statement wasn’t technically wrong, it surely calls for a closer look at the hatch cover cross seam design.

Let’s visualise how this system is actually supposed to work. Think of your hatch cover cross-seam as a multi-layered defence



system designed to keep your cargo dry.

Layer 1: the metal lip (the first warrior) – this is your primary defence. Its job is to deflect

the vast majority of water that crashes onto the hatch cover (say, during heavy weather).

Layer 2: the drain channel – any water that sneaks past that first lip is funneled into a drain channel located above your rubber seals.

Layer 3: the rubber seal (the final line) – ideally, these seals should prevent any water from passing through. However, as the ship rolls and pitches in heavy seas, the hatch covers experience slight movement. This can break the seal’s contact, allowing water to pass. Furthermore, with aging and the harsh marine environment, the rubber deteriorates over time, creating a high chance of water ingress.

Layer 4: the lower drain channel – because of these risks, there is a secondary drain channel positioned below the rubber seals to finally drain off any water that manages to make it past the seals.

The solution: stop seeing the lips as insignificant. They are your first shield! You need to maintain them to ensure your seals aren’t doing the job of the entire defence system alone.



Kalyan Das
ISM-ISPS & Service Supplier
Auditor, Marine Surveyor,
MLC Inspector at RINA and
AIMS member

Marine Incident Annual Report 2025

THE Australian Maritime Safety Authority's (AMSA) incident report provides some sobering data well worth sharing.

The full report can be found here: <https://www.amsa.gov.au/sites/default/files/2026-06/marine-incident-annual-report-2025.pdf>

Trends in reporting

In 2025, AMSA received a total of 4,174 marine incident reports from foreign-flagged vessels (FFVs), regulated Australian vessels (RAVs) and domestic commercial vessels (DCVs), along with 452 marine safety concerns.

The reduction in reported marine incidents in 2025 is primarily attributable to a change in classification introduced on 1 January 2025, under which defect reports for RAVs and FFVs are no longer captured within the marine incident reporting process.

A substantial number of reports that would have been previously recorded as marine incidents were excluded in 2025, including approximately 1,272 reported defect reports.

Figure 1 shows the total marine incidents reported by FFVs, RAVs and DCVs operating within, or preparing to enter, Australia's maritime jurisdiction between 2021 and 2025.

Domestic commercial vessels: marine incident trends

In 2025, AMSA received a total of 1,229 marine incident reports involving DCVs.

This represents a 4 per cent increase from 2024 (1,186 reports) and an overall 28 per cent increase since 2021, when



Figure 1: All reported marine incidents, FFVs, RAVs and DCVs, by year (2021-2025)

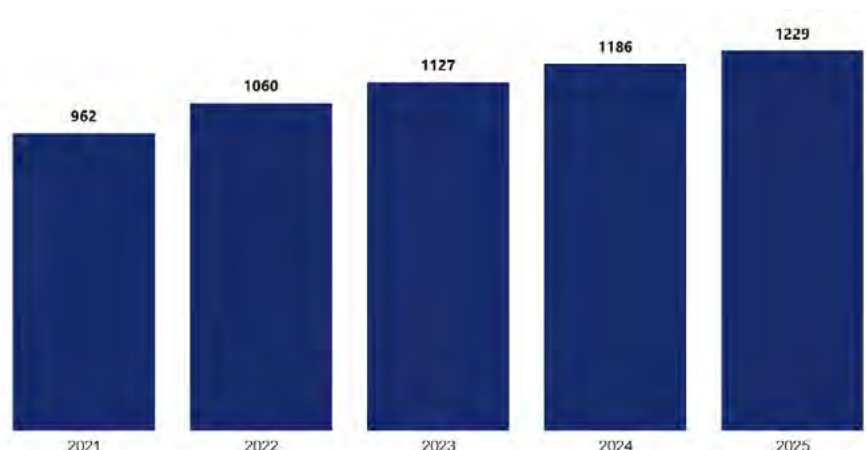


Figure 2: DCV marine incidents by year (2021 - 2025)

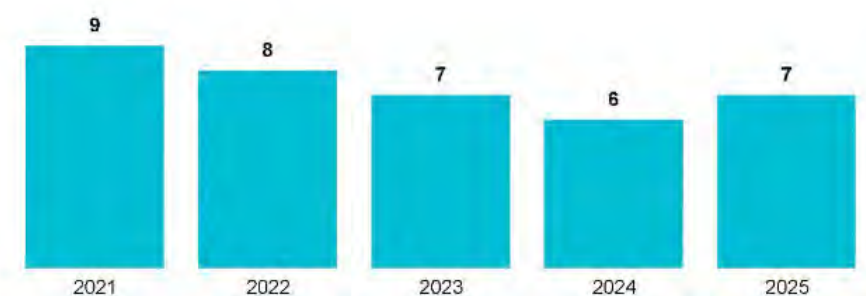


Figure 2A: Very serious DCV marine incidents (2021 - 2025)

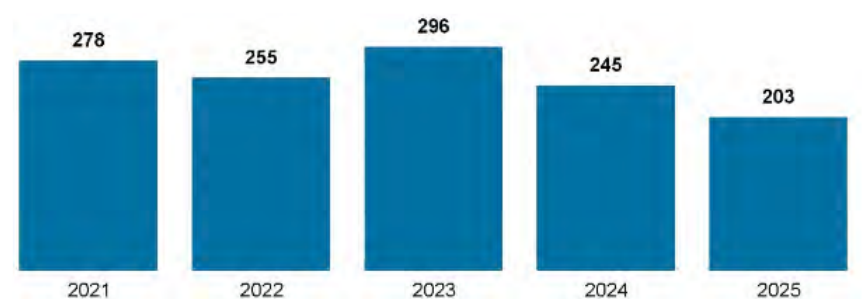


Figure 2B: Serious DCV marine incidents (2021 - 2025)

962 DCV marine incidents were reported.

In 2025 (see Figure 2):
□ very serious¹ marine incidents

increased slightly, from six in 2024 to seven in 2025 (Figure 2A);

□ serious marine incidents decreased by 17 per cent (42

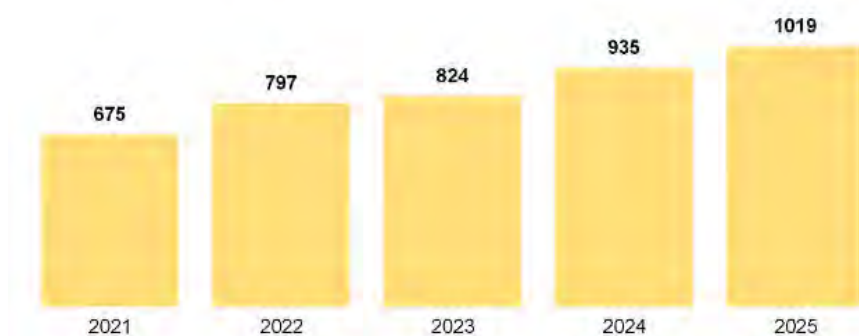


Figure 2C: Less serious DCV marine incidents (2021 - 2025)

reports) compared with 2024 (Figure 2B); and

- ❑ less serious marine incidents increased by 9 per cent, or 84 additional reports, compared with 2024 (Figure 2C).
- ❑ When considering marine incident reports by vessel class, Figures 3 and 4 indicate notable differences in reporting patterns across the DCV fleet.

Figure 3 shows the proportion of marine incidents reported and vessels by class for 2025².

Passenger vessels continue to show a good reporting culture compared with the other vessel classes. Although they comprise a

relatively small proportion of the DCV fleet (9 per cent), passenger vessels accounted for almost half (46 per cent) of all reported DCV marine incidents in 2025.

Non-passenger vessels, which make up 52 per cent of the DCV fleet, reported 40 per cent of all marine incidents in 2025. This represents a slight increase compared with 2024, where non-passenger vessels accounted for 38 per cent of reported marine incidents.

Fishing vessels, which comprise 25 per cent of the DCV fleet, accounted for 11 per cent of all marine incidents reported

in 2025. This represents a slight increase from 2024, with 10 per cent of reported marine incidents.

Hire and drive vessels, comprising 14 per cent of the DCV fleet, reported 3 per cent of marine incidents in 2025. This represents a decrease from 2024, when hire and drive vessels accounted for 5 per cent of reported marine incidents.

Figure 4 highlights differences in the proportion of marine incident reporting by vessel length when compared with their representation in the overall fleet. Vessels under 7.5 metres comprise the majority of the fleet (60 per cent) but account for a relatively small proportion of reported marine incidents (10 per cent).

Vessels between 7.5 and 12 metres account for 22 per cent of reported marine incidents, which is broadly consistent with their fleet representation (18 per cent).

Vessels between 12 and 24 metres account for 34 per cent



Fishing vessels comprise 25 per cent of the DCV fleet but accounted for only 11 per cent of all marine incidents reported in 2025.

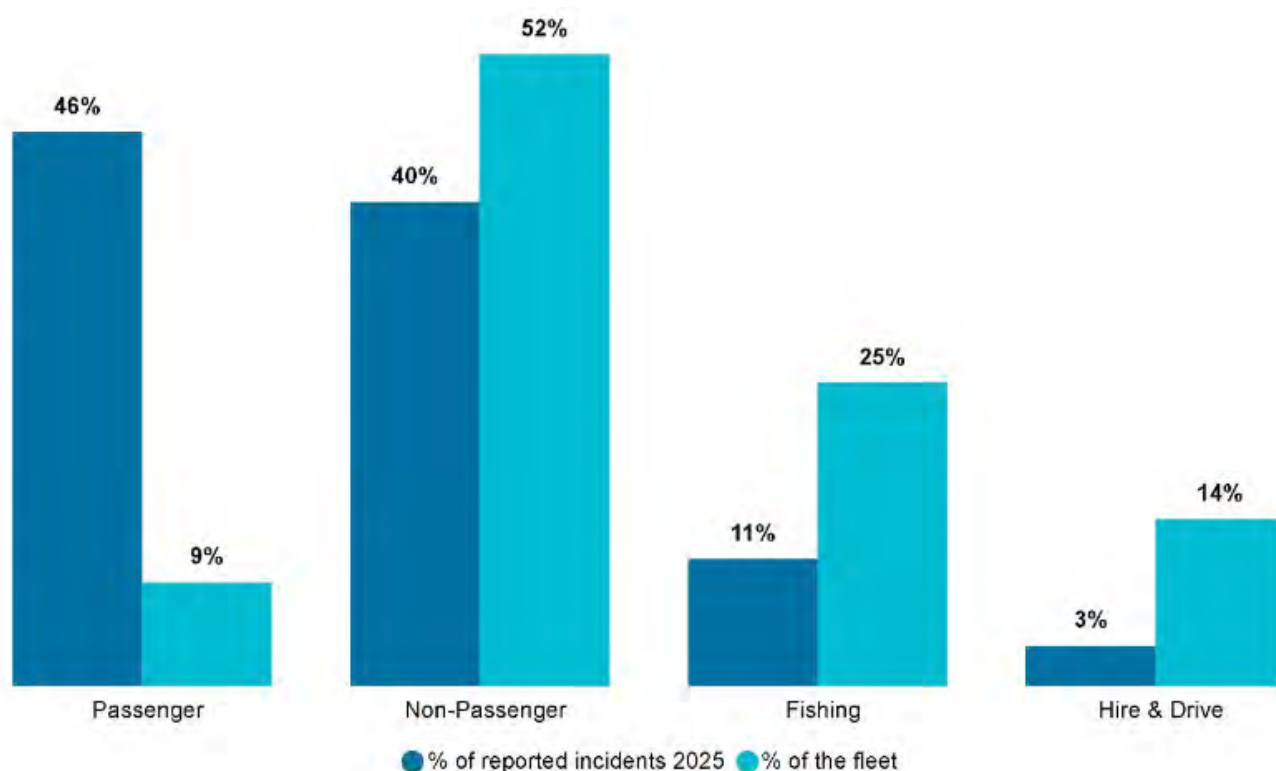


Figure 3: Proportion of marine incidents reported and vessels by class⁵ (2025)

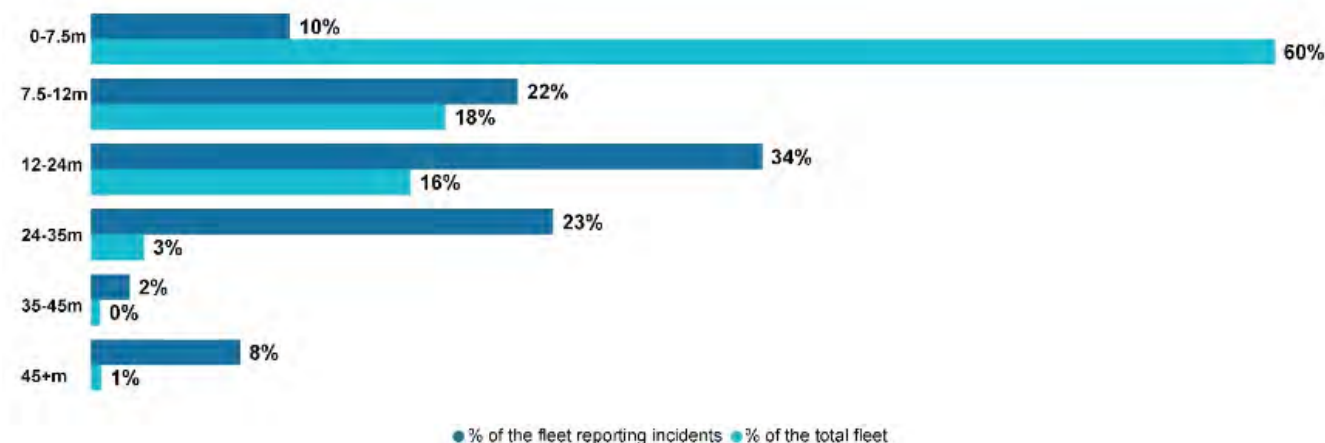


Figure 4: Proportion of marine incidents reported and vessels by length (2025)

of reported marine incidents but represent 16 per cent of the overall fleet. The 24 to 35-metre vessel category represents 23 per cent of reported marine incidents, while making up just 3 per cent of the fleet. Vessels over 35 metres, which comprise approximately 1 per cent of the fleet, account for 10 per cent of reported marine incidents.

References

1. Very serious marine incidents include loss of vessel, loss of life

(fatalities) due to the operation of the vessel and serious pollution. Serious marine incidents include serious injuries (operational), fire, explosion, critical equipment failure, severe structural damage, loss of stability and breakdown necessitating towage or shore assistance. Less serious marine incidents include minor injuries, illness, minor vessel contact and near misses.

2. NSCV Part B contains the system for categorisation of vessels.

Class 1: Passenger vessels means a vessel that carries or is certified to carry more than 12 passengers.

Class 2: Non-passenger vessels may carry up to 12 passengers and are not either fishing or hire and drive vessels.

Class 3: Fishing vessels are used for fishing operations.

Class 4: Hire and Drive vessels are let for hire, reward or any other consideration.



AUSTRALIAN MARINE SURVEYS



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- ✓ **Stability Calculations for Seaworthiness and safe loading operations**
- ✓ **Cargo Gauging and Securing Surveys**
- ✓ **Bunker Sampling and Quantity Surveys**
- ✓ **ISM / ISO-Internal Audits**
- ✓ **Flag state inspections**
- ✓ **Expert Witness to local courts**
- ✓ **Vessels On/Off Hire Condition Surveys**
- ✓ **General Marine Surveys**
- ✓ **Port Captaincy/Supercargo Services**
- ✓ **Bulk liquid / Cargo Contamination**
- ✓ **Collision Damage**
- ✓ **Superintendency: Cargo & Marine**
- ✓ **Personal Injury Inspections**
- ✓ **General Marine Consultancy**
- ✓ **Claims Investigations**
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- ✓ **Fixed & Floating Object Damage**
- ✓ **Technical Inspections**
- ✓ **Inspection of goods - Quality and Quantity**
- ✓ **Marine Engineering Consultancy**
- ✓ **Ro-Ro Cargoes / Vehicle Inspections**
- ✓ **Sampling and Testing**



AUSTRALIAN MARINE SURVEYS

How digitalisation is redefining maritime due diligence

From Paper Trails to Predictive Compliance.



FOR most of shipping's history, compliance has been a backward-looking exercise. A logbook entry-record shows what has already happened. An audit checks what was already done. A vetting inspection samples a single day in a vessel's life and extrapolates a verdict from it.

Due diligence, in this model, is really an act of reconstruction: assembling paper and PDF evidence after the fact to prove that the right things were probably done.

That model is now being rebuilt from the inside out.

Across the industry, digitalisation is shifting maritime compliance from something companies prove retrospectively to something they can monitor, evidence and correct in real time.

The distinction matters commercially as much as operationally: a fleet that can only demonstrate compliance after an incident or inspection carries risk it cannot price, while a fleet that can show continuous, evidenced compliance turns due diligence into a competitive asset.

The limits of the paper-based model

Traditional compliance infrastructure, from physical

logbooks to static SMS manuals to spreadsheet-based tracking, was never designed to talk to itself. Environmental record-keeping, SMS checklists, port requirements, work and rest hour records and vetting preparation all tend to live in separate silos, each maintained by different people, on different schedules, with no shared thread connecting them.

When a PSC inspection or a SIRE 2.0 / RISQ audit arrives, someone has to manually stitch these fragments into a coherent due-diligence file, usually under time pressure, and usually after the relevant window for correcting a gap has already closed.

The cost of this is not only the man-hours it consumes ashore and onboard. It is the risk exposure that sits quietly in the gap between "something was probably fine" and "we can prove exactly what was done, when, and why". Regulators, class societies, charterers and insurers are increasingly unwilling to accept the former.

From evidence layer to control layer

The more useful digitalisation shift is not simply moving the same paper processes onto a screen. It is changing where compliance

activity sits in the timeline. Instead of compliance evidence being gathered after an event to justify it, connected digital systems can plan the compliant event before it happens: flagging in advance what a given port call, cargo operation or voyage segment will require, prompting the right action at the right time, and capturing the evidence as a natural by-product of the work rather than as a separate administrative task.

This is the difference between an "evidence layer", a record of what happened, and a "control layer," a live system that helps ensure the right thing happens in the first place and then evidences it automatically. Real-time GPS and route monitoring, automated environmental compliance alerts as a vessel approaches regulated waters, and pre-filled SMS forms populated directly from logbook data are all examples of this shift already operating across thousands of vessels today.

What this looks like in practice: MORSE

Prevention at Sea's MORSE platform is one clear illustration of where this is heading.

Originally built as a digital logbook solution, MORSE has grown into a broader digital compliance and due diligence

platform: ISO 21745-certified, class-approved by CCS, LR, KR and ClassNK, and compliant with MEPC.312(74).

It now interconnects digital logbooks, SMS and HSQE records, environmental compliance tracking, port insights, work and rest hour management, voyage compliance, TMSA / DryBMS and SIRE 2.0 / RightShip vetting preparation, and an AI-assisted seafarer support module, all within a single system that runs both online and offline.

The commercial case for connecting these modules rather than running them separately is substantial:

\$95K to \$170K Savings per vessel / year for vetting intensive fleets
15% to 35% Reduction in admin and compliance costs
\$10M+ Combined annual savings across a 100-vessel fleet

At fleet scale, the effect compounds. Corporate-level efficiency gains represent close to a third of the total impact modelled, a reminder that a genuinely integrated compliance platform is a management tool, not only a shipboard one.

Perhaps the most important shift, though, is one of visibility. Where compliance has historically been reported to management in retrospective snapshots, such as the monthly report or the post-audit summary, an interconnected digital platform gives shore-based teams a live view across the fleet, with deviations surfaced as they occur rather than discovered weeks later.

That live view also changes how office-based teams spend their time and travel budget. Historically, checking up on a compliance concern often

meant sending someone from the office to the vessel in person, an attendance that carries real cost, not only for that vessel but for every other vessel those same staff are responsible for while they are away.

With MORSE giving the office a continuously updated picture of every ship's status, many of those checks can now be confirmed from ashore, without a trip.

That means less unplanned travel expense for the company overall, and the office's limited attention stays available to the rest of the managed fleet rather than being tied up on a single vessel visit.

Digitalisation doesn't replace humans

Digitalisation doesn't replace the human element – it has to account for it.

A due diligence system built purely on sensors and digital records still has a blind spot: the people operating the ship. This is why the more advanced compliance conversations in the industry now sit alongside, not apart from, human performance assessment.

Structured, evidence-based evaluation of seafarer competency, including VR-based behavioural competency assessment now recognised within SIRE 2.0, extends due diligence beyond “was the equipment and documentation compliant?” to “was the crew genuinely equipped to perform under real operating conditions?”

A due diligence package that can evidence both the technical and human dimensions of readiness is considerably harder to challenge than one that covers only the paperwork.

Where this leaves compliance teams

None of this makes the underlying regulatory

frameworks, SIRE 2.0, TMSA, DryBMS, RISQ, MARPOL, MLC any less demanding. If anything, they are converging and tightening, and collaborations between class societies and specialist compliance providers on frameworks like DryBMS reflect an industry that expects gap analysis and benchmarking to be an ongoing discipline, not a periodic exercise.

What digitalisation changes is the operating model underneath those frameworks: moving compliance work from something reconstructed under pressure to something continuously managed and moving due diligence from a file assembled to survive an inspection to a live, defensible record that exists whether or not anyone asks to see it.

For an industry where a single missed detail can carry outsized commercial and reputational consequences, that shift, from retrospective proof to continuous, evidenced control, is arguably the most consequential change in maritime compliance in a generation.

Note: Prevention at Sea (PAS) is a maritime compliance and technology consultancy headquartered in Cyprus, with an office in Greece, supporting shipping companies across vetting and SMS consultancy, the MORSE digital compliance platform, and VR-based behavioural competency assessment (ImmerSEAv/BCAV).

This article was first published on LinkedIn on 10 July 2026. (Article link: <https://www.linkedin.com/pulse/how-digitalisation-redefining-maritime-due-diligence-georgiou-6hegf/>)

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Prevention at Sea



Artificial intelligence for small business: managing cyber security risks

THE implications for members of the use of artificial intelligence (AI) is becoming more important, not less. The Australian Government has provided some guidance for small business.

Introduction

Small-business owners often seek ways to stay ahead of the competition and drive growth. One technology making a big impact is AI. More small businesses are using AI through applications, websites and enterprise systems hosted in the public cloud, like OpenAI's ChatGPT, Google Gemini, Anthropic's Claude and Microsoft Copilot. AI adoption is growing fast in Australia. Based on data from the Department of Industry, Science & Resources (DISR), this is rising every year.

Cloud-based AI gives affordable access to advanced tools without the heavy investment. They help automate tasks, provide insights and improve customer experience.

As AI becomes part of small business operations, understanding the related cyber security risks is essential. Small

businesses must take proactive steps to protect data, customer privacy and business systems. Having strong cyber security practices is crucial to reducing risks in an evolving and complex emerging technology space.

This guidance – authored by the Australian Signals Directorate's Australian Cyber Security Centre (ASD's ACSC) in collaboration with the New Zealand National Cyber Security Centre (NCSC-NZ) and the Council of Small Business Organisations Australia (COSBOA) – explains the key cyber security risks of small business adopting cloud-based AI technologies and how to mitigate them.

While traditional threats – such as phishing, ransomware and insider threats – are still relevant, this guide focuses on important cyber security risks related to AI.

For more resources to help improve the overall cyber security posture of your small business, visit ASD's ACSC's [Small business hub](#).

The Council of Small Business

Organisations Australia (COSBOA) offer resources to help small businesses improve their cyber security posture and build essential cyber skills. To learn more, visit COSBOA's [Cyber Wardens](#) program.

Other resources for business are available at the NCSC NZ's [Own Your Online](#) site for small businesses and organisations.

Key cyber security risks in AI systems

Before adopting AI tools, small businesses should understand the related risks and ways to mitigate them to protect your business. These risks include:

- ❑ data leaks and privacy breaches;
- ❑ reliability and manipulation of AI outputs; and
- ❑ supply chain vulnerabilities.

Data leaks and privacy breaches

While AI tools can improve efficiency and decision-making, they may need access to sensitive data – such as customer, staff and financial records – to respond



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back to questions or deliver an outcome.

This can introduce significant privacy and security risks if not properly managed. For example, uploading customer or staff details into generative AI platforms without proper anonymisation can expose sensitive or private information.

Some artificial intelligence providers may use customer-submitted data to train or refine their models. This can depend on the configuration settings or the type of subscription. As a result, information entered into these platforms could potentially be re-used or disclosed in unexpected contexts later.

Small businesses should carefully review the configuration settings, terms and conditions, and privacy policies of any AI platform they engage with to understand how their data may be collected, stored, and used.

Due to limited resources and technical expertise, small businesses may lack strong data security and governance frameworks.

This makes them vulnerable to:

- ❑ accidental data leaks through cloud-based AI tools;
- ❑ unauthorised access to sensitive customer information; and
- ❑ potential misuse of customer data by third-party AI providers.

In early 2025, a contractor working for an Australian organisation uploaded personal information – including names, contact details and health records – of people involved with a government program into an AI system. This led to a serious data spill and is considered a notifiable data breach.

Managing risks to reduce the

risk of AI-related data leaks and privacy breaches:

- ❑ review internal data management, protection and governance practices, identify and secure sensitive and proprietary information;
- ❑ review the data handling (including access and use) and privacy policies of AI vendors to ensure compliance with business requirements and relevant local data security and privacy laws;
- ❑ establish an internal AI use policy or process, and clearly define what data can't be uploaded into AI platforms and systems;
- ❑ train and remind staff on responsible use of AI, especially surrounding sensitive and proprietary information; and
- ❑ remove, anonymise or change personal details when using an AI application so it can't be used to identify or link to an individual.

Traditional cyber security practices – such as enforcing role-based access controls and using encryption (for example, AES-256) for data storage and transmission – can also strengthen overall data protection measures.

Reliability and manipulation of AI outputs

AI systems can be tricked by malicious cyber actors through prompt injection, which are malicious inputs disguised as legitimate requests designed to confuse or mislead the AI into giving sensitive, wrong or unsafe answers.

AI systems can also make up information, called “hallucinations”, where the response sounds correct but isn't true. These risks can compromise small business decision-making, customer interactions and operational integrity. Whether caused by hackers or inadvertently, due to technological limitations in the

AI system, unreliable outputs pose significant cyber security and business risks.

In 2025, a lawyer used AI to prepare a court document but it generated false legal cases that the lawyer didn't verify before submitting to the court. After the court discovered this, the lawyer was barred from operating and owning a law practice.

Managing risks – to reduce the risk of unreliable or manipulated AI outputs:

- ❑ train and remind staff to verify AI outputs for inaccurate answers, biased language, unethical or irrelevant responses;
- ❑ have a human involved in the decision-making process especially in high-stakes or sensitive operations;
- ❑ use trusted and regularly updated AI models from vendors that prioritise security;
- ❑ monitor the behaviour of AI systems for any unusual patterns or anomalies; and
- ❑ review any AI-integrated processes regularly (either in real time for critical tasks or during scheduled checks).

Supply chain vulnerabilities

Small businesses may use AI Software as a Service (SaaS) applications, such as online chatbots or customer relationship management systems. These SaaS applications typically rely on third-party providers to manage the underlying infrastructure, AI models, data handling and operations.

This creates a supply chain dependency risk for small businesses. It means any vulnerabilities in the third-party provider's systems, infrastructure, data sources or AI models can indirectly affect the business.

In April 2024, an education business discovered a data breach affecting tens of thousands of

☐	I understand the benefits and risks of integrating AI into my business.
☐	I know what business information can be safely shared with the AI tool.
☐	I have verified what data the AI tool collects and where it is stored.
☐	I know who owns the data: my business or the AI vendor.
☐	I have confirmed whether my business' data will be used to train AI models.
☐	I know where and how to fact-check the AI system's outputs.
☐	I have provided AI security-related training and advice to my staff members. (e.g., Cyber Wardens Level Two – Safe AI for Small Business , Cyber Wardens 'Level Three – Cyber Fit for the Supply Chain')
☐	I have verified that the AI vendor is committed to security, for example by using a recognised cyber security compliance framework (e.g., ISO 27001 for Information Security Management Systems, NIST AI Risk Management Framework).
☐	I know the process for handling a cyber security incident related to the AI application or tool.

AI cyber security checklist for small businesses.

Artificial Intelligence (AI)	Computer systems that perform tasks requiring human-like intelligence, such as decision-making and language understanding.	Chatbots, predictive analytics tools.
Generative AI	AI that creates new content (text, images, audio) based on learned patterns from existing data.	AI systems generating marketing copy.
Cloud-based AI	AI services hosted on remote servers, accessible via the internet.	OpenAI's ChatGPT, Google Gemini, Anthropic's Claude
Data Leak	Unauthorised exposure of sensitive information due to poor handling or security gaps.	Uploading customer data into an AI tool without anonymisation.
Privacy Breach	Violation of data protection laws or policies where personal information is accessed or disclosed without consent.	Sharing health records via an unsecured AI platform.
Prompt Injection	Malicious instructions embedded in user inputs to manipulate AI into producing harmful outputs.	A hacker tricks an AI chatbot into revealing confidential data.
Hallucination (AI)	AI generates plausible but factually incorrect or fabricated information.	AI inventing fake legal cases in a court document.
Supply Chain Vulnerability	Risks from reliance on third-party vendors for AI services; their weaknesses can affect your business.	SaaS chatbot vendor suffers a data breach.
SaaS (Software as a Service)	Software delivered online by a provider, often subscription based.	OpenAI's ChatGPT, Google Gemini, Anthropic's Claude
Role-Based Access Control (RBAC)	Restricts system access based on user roles to protect sensitive data.	Only managers can access financial AI reports.
AES-256 Encryption	A strong encryption standard for securing data during storage and transmission.	Encrypting customer data before uploading to AI tools.
Human-in-the-Loop	Human oversight in AI decision-making, especially for high-risk tasks.	A lawyer reviews AI-generated legal advice before submission.
ISO 27001	International standard for managing information security.	AI vendor certified under ISO 27001.
NIST AI Risk Management Framework	A framework for managing AI-related risks developed by NIST.	Vendor compliance with NIST AI risk guidelines.

Glossary of technical terms

students, parents, guardians and staff. A hacker exploited a vulnerability to access their system. A security patch was available but wasn't installed.

The exposed system contained highly sensitive information. It included fee records, childhood education and care details, children's status, welfare requests and medical certificates.

Managing risks – to reduce the risk of supply chain vulnerability:

- ❑ evaluate the AI vendor's reputation and commitment to security, including its use of third-party tools or services;
- ❑ review the AI vendor's terms and conditions related to data ownership, protection, usage and storage; and
- ❑ understand the AI vendor's cyber security incident

notification process and incident response mechanisms.

Implementation example – secure deployment of AI chatbots

Businesses are increasingly deploying customer-facing AI chatbots to enhance service delivery and streamline support operations.

While traditional IT security controls remain essential, small businesses should also implement chatbot-specific safeguards to protect user data and ensure responsible use.

Limit data collection – collect only what is essential for the chatbot's function (e.g., service-related queries).

Use human-in-the-loop oversight for high-risk use cases.

In scenarios involving legal,

medical or financial advice, ensure a qualified person reviews chatbot responses before taking any action.

For vendor due-diligence, select chatbot platforms that:

- ❑ are reputable, trustworthy and committed to security;
- ❑ have transparent data handling and protection policies; and
- ❑ comply with relevant privacy regulations.

Business contracts should include clear clauses on data protection, breach notification procedures, and service uptime guarantees.

For more information and links please visit: <https://www.cyber.gov.au/business-government/secure-design/artificial-intelligence/artificial-intelligence-for-small-business>



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Guide for shipping lithium-ion cells and batteries

THE Cargo Incident Notification System (CINS) has published a new guide focusing on transporting lithium-ion cells and batteries in containers. The following provides a focus on cargo issues taken from the guidelines.

1. Lithium-ion cells and batteries, and risks

Lithium-ion cells are the primary elements of a battery and can exist in various forms.

Lithium-ion cells and batteries are commonly used in portable electronics and electric vehicles. Their defining characteristic is the ability to accumulate, store and release electrical energy through the movement of lithium ions between a positive and a negative electrode.

Lithium-ion cells and batteries must be handled with care, as they pose several risks if damaged, improperly charged or exposed to extreme conditions. Proper safety features and handling protocols are critical to mitigating these risks.

2. Hazardous properties

Lithium-ion cells and batteries are classed as dangerous goods because of several hazardous properties listed below. Strict adherence to safety standards during handling and transport are required.

- **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.

3. Key risks during transport

The following factors increase the risks involved in the carriage of lithium-ion cells and batteries.

- **Packing not consigned in compliance with the International Maritime Dangerous Goods (IMDG Code).**
- **Packing into containers other than in accordance with the Code of Practice for Packing of Cargo Transport Units (CTU Code).**
- **High temperature inside container(s) during transport.**
- **Cell or battery not in compliance with UN 38.3.**

4. UN Regulations¹

Lithium-ion cells and batteries in IMDG / Dangerous Goods Regulations can be declared as below. (See table)

It is important to note that cell or battery shipments can be exempted from the IMDG Code² requirements if they comply with the provisions set out in special provision “SP188”³

There is a different watt-hour rate between lithium-ion cells and lithium-ion batteries, if the exemptions in SP188 are applicable.

Component batteries of a BESS shipped as UN 3480 (for example those not already assembled into the final application) are covered by this guidance.

5. References

1. The United Nations Recommendations on the Transport of Dangerous Goods (the “Model Regulations”, colloquially known as the “Orange Book”) set out the necessary provisions that allow uniform development of national and international regulations to facilitate safe transport by all modes. For the transport of dangerous goods in packages by sea, the Model Regulations are incorporated into the International Maritime Dangerous Goods (IMDG) Code.

2. This document uses as reference Amendment 42-24 of the IMDG Code, which entered transitional effect from 1 January 2025, meaning that stakeholders may start using the revised provisions, and will be mandatorily in force from 1 January 2026 to 31 December 2027.

3. For reference, the full text of SP188 is included in Appendix A.

For a full copy of the guidelines please visit the CINS website: <https://www.cinsnet.com/guidelines-for-the-shipping-of-lithium-ion-cells-and-batteries/>

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Cargo Incident Notification System

Proper Shipping Name	Hazard Class	UN Number
LITHIUM ION BATTERIES (including Lithium Ion Polymer Batteries)	8	3480
LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including Lithium Ion Polymer Batteries contained in equipment)	9	3481

Is the polarity-testing device fitted to your boat or RV electrically safe?

Introduction

ON the surface, the devices available on the market will all check that the polarity of the conductors is correct; however, these devices check different wiring configurations to achieve the polarity.

First, let’s start with the basics and explain exactly what “electrical safety” means. To help define this phrase, we’ll look at an example that the Queensland Government has legislated: “Electrically safe means, for electrical equipment or an electrical installation, that all persons and property are free from electrical risk from the equipment or installation.”

This wording is similar for all Australian jurisdictions concerning electrical safety, in that there should be no risk of electrocution or fire to persons or property. These legislative Acts reference Standards for guidance to ensure electrical safety.

For Polarity-Testing Device, this guidance is detailed within AS/NZS 3004.2 – Electrical installations; Part 2: Boat installations; Clause 3.5.3.2 Protection against reversal of polarity and states: “... a means shall be provided for checking

the incoming supply’s polarity (active to neutral).

“Such means shall include –

1. an interlocking device with visual indication such that the shore supply cannot be connected if the polarity is incorrect; or
2. an automatic correction device with a visual indication matching the shore supply’s polarity to the boat’s.”

Yes, your first reaction is correct: it is vague in how a polarity-checking device will be achieved. Additionally, the equipment is to be tested to ensure compliance with relevant standards.

So, you cannot look at a clause in isolation and rely solely on this one point; you need to reference other relevant Standards. In this case, AS/NZS 3000 – Wiring Rules and AS/NZS 3017 – Electrical installations – Verification guidelines will provide additional guidance.

Let’s now identify the guidelines for test procedure methods of testing polarity (AS/NZS 3017) and detail the test procedure of polarity for a single pole switch using a voltage indicator with a power supply available.

There are three main points to be taken from this.

1. Connect one test lead to a known earth.

Note: Earthing continuity will have been established, and the MEN connection is intact.
2. Make contact with other test leads to the active neutral terminal (one at a time).
3. Disconnect both test leads.

This indicates that the polarity testing device has no permanent wired connection between the active and earth or the neutral and earth.

The other safety considerations that also need to be referenced for electrical safety are AS/NZS 3000:

- a circuit comprises live conductors only (clause 1.4.29) and has a difference of potential from the neutral or earthed conductor (clause 1.4.5);
- MEN (Multiple Earth Neutral), also known as a PEN (Protective Earth Neutral): there SHALL be a single conductor to combine the neutral and protective earth functions (clause 1.4.99);
- an earthing conductor, other than a main earthing conductor;

OUTCOME REQUIRED	STANDARD-CLAUSE
1. Polarity testing is to be a momentary test.	3017-3.3.3
2. There is no connection between the neutral and earth conductors other than that at the MEN.	3000-1.4.99
3. There is no connecting circuit between the active and earth conductors.	3000-1.4.5&29
4. The earthing conductor is not to carry current, other than in a fault situation.	3000-1.4.100
5. An interlocking device to prevent connection.	3004.2-3.5.3.2
6. The device must be fail-safe.	Legislation-ACT

Table 1.

OUTCOMES REQUIRED	STANDARD	MEETS
Polarity testing is to be a momentary test.		
1. The device is not testing and continually monitors the circuit polarity through a circuit connection between active/earth and neutral/earth. There is no connection between the neutral and earth conductors other than that at the MEN.	3017-3.3.3	NO
2. The device creates a second PEN connection to show the incorrect polarity. There is no connecting circuit between the active and earth conductors.	3000-1.4.99	NO
3. The device creates a circuit between the active and earth conductors to show that power is available. The earthing conductor is not to carry current, other than in a fault situation.	3000-1.4.5&29	NO
4. The device's indicator lights circuit arrangement, which is connected to the earth, allows current to be carried. Also, as the indicator lights are LED, these are working as a half-wave rectifier. This would mean DC voltage is being passed into the bonded earthing system (see note at end of article) An interlocking device to prevent connection.	3000-1.4.100	NO
5. The device does not prevent connection if the polarity is incorrect and relies upon the operator not to connect in these circumstances. The device must be fail-safe.	3004.2-3.5.3.2	NO
6. The device does not prevent connection if the indicator light circuits fail.	Legislation-ACT	

Table 2.

- protective earthing conductor intended to carry earth fault currents only (clause 1.4.100);
- testing is to prevent protective earthing conductors carrying current under normal conditions of operation, Clause 8.3.7.2 [e]); and
- no protective earthing conductor is connected in parallel with any neutral conductor (Clause 8.3.7.2 [f]).

Lastly, the device is to be failsafe, and this is detailed within the legislation for each State and Territory. It is defined as electrical equipment or an installation where all persons and property are free from electrical risk.



Figure 1 – AC Rotary Switch Panel and Circuit Arrangement

Summary of functionality

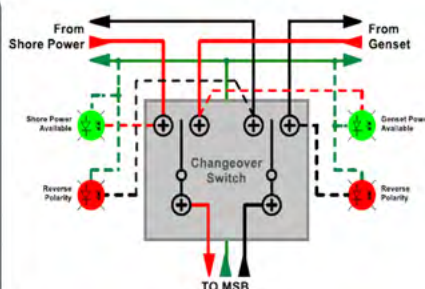
To simplify these clauses into quantifiable terms, these can be distilled down to six main identifiable points that a polarity testing device shall comply with to meet the Legislation and Standards. (See Table 1)

Polarity testing devices required outcomes

There are four types of polarity testing devices available on the market. I have reviewed and tested these to determine if they meet the fundamental safety feature of eliminating electrical risk against the six main required outcomes, as listed above.

3.1 Polarity Indication Lights

The device is a simple indicator



system, using diodes (LEDs) to block AC and allow only DC to pass. When the polarity is correct, the green LED will illuminate, and if not, the red LED will illuminate.

The review has shown that the six items for required compliance and safety were not met. (See Table 2)

3.2 MCB – Double pole (incl. Shunt trip coil)

The MCB is a magnetic over-current trip device fitted with a trip coil. If the active and neutral conductors have been transposed, the trip coil will trip, opening the MCB.

The review has shown that three out of the six items for required compliance and safety were met. (See Table 3)

3.3 Polarity Monitoring Device

The PMD is a monitoring device, not a testing device. The active and neutral conductors are permanently connected. If the active and neutral conductors are

OUTCOMES REQUIRED	STANDARD	MEETS
Polarity testing is to be a momentary test.		
1. The device is not testing and continually monitors the circuit polarity between neutral/earth. There is no connection between the neutral and earth conductors other than that at the MEN.	3017-3.3.3	NO
2. The device creates a second PEN connection to show the incorrect polarity. There is no connecting circuit between the active and earth conductors.	3000-1.4.99	NO
3. The device does not create a circuit between the active and earth conductors. The earthing conductor is not to carry current, other than in a fault situation.	3000-1.4.5&29	YES
4. The devices will only momentarily carry current in the earthing conductor to trip the breaker. An interlocking device to prevent connection.	3000-1.4.100	YES
5. The device prevents connection if the polarity is incorrect. The device must be fail-safe.	3004.2-3.5.3.2	YES
6. The device does not prevent connection if any part of the trip coil circuits fails.	Legislation-ACT	NO

Table 3.

transposed, the contactor's coil will not energise.

The review has shown that four out of the six items for required compliance and safety were met. (See Table 4.)

3.4 Residual Voltage ELCB

This device, ELCB, is a voltage-operated safety tripping device that detects a rise in potential between the protected interconnected metalwork

(equipment frames, conduits, enclosures) and a distant isolated Earth reference electrode.

It operates at a detected potential of around 50 volts to open a main breaker and isolate the supply from the protected premises. However, this device has been adapted so that, once a voltage potential is detected between the neutral and protective earth, it creates a short circuit to trip the RCBO.

These were first introduced about 60 years ago, and some problems have been associated with ELCB used in this application.

Without a proper earth



Figure 2 – MCB and Circuit Arrangement



Figure 3 – PMD and Circuit Arrangement

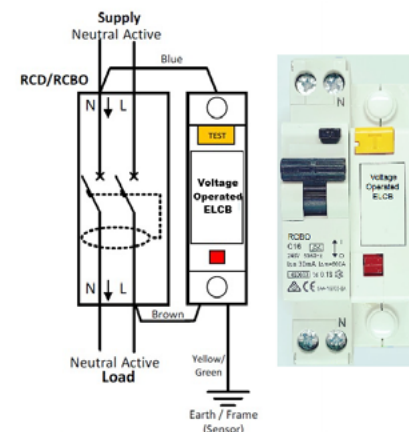
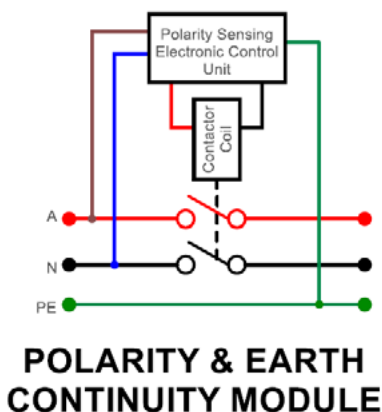


Figure 4 – Simplified Circuit Arrangement

OUTCOMES REQUIRED	STANDARD	MEETS
Polarity testing is to be a momentary test.		
1. The device is not testing and continually monitors the circuit polarity between neutral/earth. There is no connection between the neutral and earth conductors other than that at the MEN.	3017-3.3.3	NO
2. The device creates a second PEN connection to show the incorrect polarity. There is no connecting circuit between the active and earth conductor.	3000-1.4.99	NO
3. The device creates a circuit between the active and earth conductors to show that power is correct. The earthing conductor is not to carry current, other than in a fault situation.	3000-1.4.5&29	NO
4. The device's circuit arrangement, connected to the earth, allows current to be carried. Also, as the indicator lights are LED, these are working as a half-wave rectifier. This would mean that a DC voltage is being passed into the bonded earthing system An interlocking device to prevent connection.	3000-1.4.100	NO
5. The device prevents connection if the polarity is incorrect. The device must be fail-safe.	3004.2-3.5.3.2	YES
6. The device prevents connection if any part of the device's circuits fails.	Legislation-ACT	YES

Table 4.

OUTCOMES REQUIRED	STANDARD	MEETS
Polarity testing is to be a momentary test.		
1. The device is not testing and continually monitors the circuit polarity between neutral/earth. There is no connection between the neutral and earth conductors other than that at the MEN.		NO
2. The device creates a second PEN connection to show the incorrect polarity. There is no connecting circuit between the active and earth conductor.		NO
3. The device creates a circuit between the active and earth conductors to show that power is correct. The earthing conductor is not to carry current, other than in a fault situation.		YES
4. The device's circuit arrangement, connected to the earth, allows current to be carried. Also, as the indicator lights are LED, these are working as a half-wave rectifier. This would mean DC voltage is being passed into the bonded earthing system (see note at end of article) An interlocking device to prevent connection.		NO
5. The device prevents connection if the polarity is incorrect. The device must be fail-safe.		YES
6. The device prevents connection if any part of the device's circuits fails.		NO

Table 5.

connection, the ELCB will not work. If the wire attached to the earthed rod is loose or broken, then the ELCB would not be able to sense the potentially hazardous voltage on the metallic body of the electrical/electronic device.

ELCB is attached between the earthed wire and the metallic body of the electrical appliances. However, many other parallel

paths exist for the currents to flow from the connected device body to earth without going through an earthed wire. For example, many metallic structures can provide a parallel path for the current to flow towards the earth. In this way, sometimes ELCB cannot detect the hazardous voltage on the metallic body of the device, which may cause serious injury.

The review has shown that two out of the six items for required compliance and safety were met. (See Table 5.)

Mark Smith
Accredited Marine Surveyor:
AMSA
Authorised Maritime NZ
Surveyor
AIMS member

“It’s been a long time coming”: Incat worker who helped bring Hull 096 to life

TWO years of planning, problem-solving and teamwork came down to a few hours on the River Derwent on July 31 for Incat project manager Sean Lowrie.

The successful loading of Hull 096 onto the heavy-lift vessel *Black Marlin* marked a major milestone for Lowrie and the wider Incat team, bringing years of work on the record-breaking battery-electric ferry closer to delivery in South America.

Lowrie was part of the project management team supporting the many trades involved in



Sean Lowrie said it was a momentous day for Incat and for Tasmania. Image / Pulse



Incat project manager Sean Lowrie oversaw the loading of Hull 096. Image / Pulse

building Hull 096, from welders and fabricators to electricians and designers.

“It’s a momentous day for us and, hopefully, Tasmania as well,” he said.

“To see it go down the river, it’s been a long time coming. It’s amazing to see something of this size and this scale on a global sense finally go down the river and make its way down to South America.”

Founded in Hobart in 1988 by shipbuilder Robert Clifford, Incat has grown from a small Tasmanian shipyard into one of the world’s leading builders of high-speed aluminium vessels.

The Prince of Wales Bay company has delivered more than 100 vessels to operators around the world and has become a significant part of Tasmania’s manufacturing industry, employing about 500 workers.

Its shift into large-scale electric shipbuilding has positioned the company at the forefront of the global transition to cleaner maritime transport.

Lowrie said the transition to electric technology presented one of the biggest challenges of the project.

“Biggest challenge for the entire project was probably, I guess, just getting an understanding of the new technical capabilities we need to electrify a vessel,” he said.

“Something on this scale, it is the world’s largest electric vehicle and to understand that and transition from where we have previously been a diesel engine operator, that’s probably been the biggest task.”



The battery-electric ferry in Hobart.



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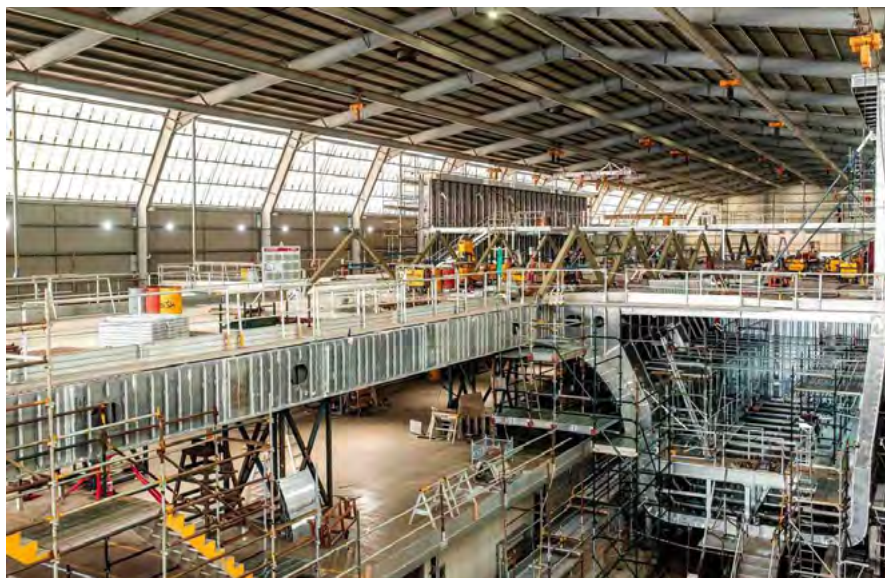
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Incat was founded in Hobart in 1988 by shipbuilder Robert Clifford. Image / Pulse



Incat workers gathered on the water to celebrate the vessel's departure. Image / Pulse



Incat chairman Robert Clifford. Image / Pulse

The successful loading operation was the result of months of preparation involving Incat, Buquebus, heavy-lift operator Boskalis and TasPorts.

Lowrie said there was a strong sense of pride among the Incat workforce as the vessel prepared to depart the River Derwent.

“We had a lot of guys and a lot of workers that came out on the water today to help celebrate and to show support for Incat and for everyone else involved in Tasmania,” he said.

“There’s been a lot of sense of pride, a lot of excitement and now we look to the new project and going forward that will be, yeah, our next possibility to show the world what we can do out at Incat.”

While Hull 096 will soon be operating thousands of kilometres away, Lowrie said its departure was a reflection of the quality of Tasmania’s shipbuilding workforce.

“It’s amazing some of our vessels are 45 years old and are still operating in Greece and across Europe, and it’s just a testament to what the Incat workforce build,” he said.

With three more large electric ferries under construction for Danish operator Mols-Linien, Lowrie said the experience gained from Hull 096 would help shape future projects.

“Yeah, process does get a little bit smoother now with future vessels. I think it holds us in good stead for the new 3 vessels,” he said. “We will be ready to sort of take any technology that comes at us. But yeah, we are excited for the next projects and look forward to it.”

Incat head of public relations and corporate affairs Tom Cooper said the successful loading marked one of the biggest days in the company’s history.



The ferry is bound for South America. Image / Incat

“We saw the world’s biggest electric ship loaded onto one of the world’s largest heavy lift vessels,” he said. “So it was an amazing sight and everything went to plan.

“We couldn’t be happier with

the end result, the culmination of years of work on this project, which has literally been the most significant project in Incat’s history.”

Note: This article was originally published by *Pulse*

Tasmania on 31 July 2026 and we thank Josh Agnew, General Manager at the Pulse Media Group, for allowing the Institute to reproduce the article. (See <https://pulsetasmania.com.au/>)

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A student's journey: Krzysztof Bielicki

Krzysztof (Chris) Bielicki is an Associate member of the Institute and was a nominee for the Student of the Year award at the 2026 AIMS Biennial Conference. This article is Chris' review of his time as a student with AIMS.

PURSUING the Advanced Diploma of Commercial Marine Surveying with the AIMS has been a defining milestone in my professional development.

My professional career began after graduating from five years of marine navigation studies, when I started working as an officer-diver. Over time, I expanded my experience into roles as a diving supervisor, decompression chamber operator and ROV operator, giving me a broad perspective on diving operations.

What sparked my interest in marine surveying was the fact that, during dock operations and in-water surveys, I had the opportunity to work alongside classification societies' surveyors. Those experiences grew into a strong professional ambition to deepen my knowledge and formally develop this path.

With over 10 years' experience in the marine industry, I approached this program not as a starting point but as a structured pathway to expand my qualifications to an international standard.

At the same time, I was sure that my career as a diver – where I have spent thousands of hours underwater and also a diving supervisor at the same time – suggested I needed a change and further development.

Starting the main topic: one of the most valuable aspects of the AIMS program is its strong alignment with real-world surveying challenges.

What, at the beginning, looked like a standard remote learning



Krzysztof Bielicki is a highly-experienced diver but was looking for a change.

course quickly turned out to be one of my best educational experiences. Simple setting up practical tasks for students to complete each module and providing a proper evidence base, especially on his own real-life training, gives way to automatically developing planning skills, imagination and self-criticism – in the meantime focusing strongly on solving the tasks.

Every module I finished was an extra motivator and caused me to read more and more and dig deeper for marine surveying knowledge. That was going so fast until one memorable moment when I reached a milestone in my AIMS adventure: the Training Manager was warning me about starting the toughest module – ADMS610 Draft Survey. At that time, I reminded myself that I had to choose seven extra

modules and of course it was only my ambition to choose those hardest ones as a sort of “challenge-accepted” thing.

This was the hardest part of my training and caused long hours of sitting down with my books (I even dig out some books from my studies in my original Polish language to make sure I understand everything properly) and making lots of calculations and excel-programming.

Finally completing this module gave me invaluable skills and led further to a great internship opportunity organised by Sue Brown from the AIMS team. The internship was at Hunter Marine Surveyors (HMS) in Newcastle.

The placement allowed me to apply gained theoretical knowledge in a live operational environment, gaining direct exposure to local industry practices and survey procedures. Changing time zones from Europe to Australia in 40 hours was quite demanding but December in Newcastle sounds great when you would be facing a minus-25 degrees C Polish winter.

Working alongside experienced professionals, and under the guidance of my HMS mentor, Louis Koutelas, I was able to deepen my understanding of inspection processes and strengthen my confidence in marine surveying. I also gained insight into the practical value of CargoMax, a software solution that supports fast, accurate and reliable reporting for draft surveys.

Seeing how technology can

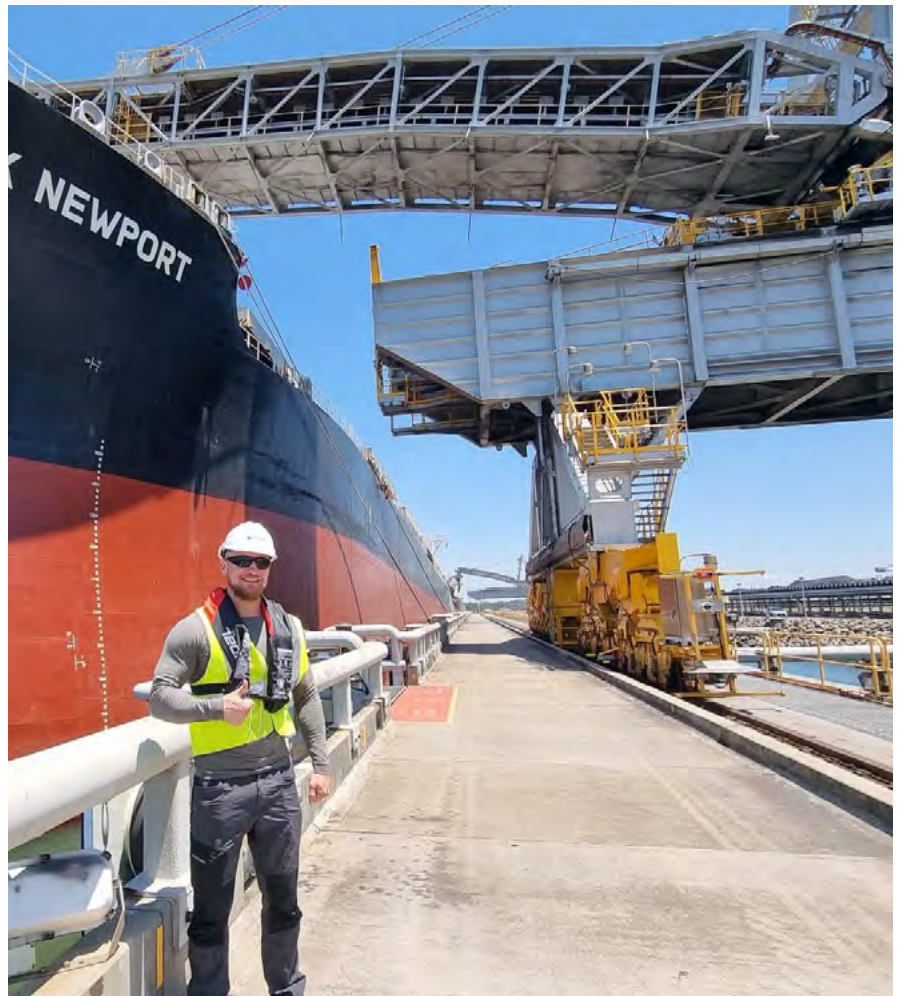
enhance survey workflow and reporting quality was especially valuable, and reinforced the importance of innovation in modern marine surveying.

Throughout the course, I particularly appreciated the emphasis on professional reporting, risk assessment and draft survey methodology. These are not only essential competencies for conducting high-quality inspections but also key skills for communicating effectively with clients, shipowners and regulatory authorities.

Another strength of AIMS is its global perspective. Engaging with a diverse community of marine professionals during the AIMS 2026 conference provided valuable insights into different operational standards, regional challenges and best practices.

This international exposure is especially relevant for me in today's interconnected maritime industry.

Balancing the program with ongoing everyday professional responsibilities of course required discipline and commitment. However, this challenge also made the achievement more rewarding. It strengthened my ability to manage complex tasks,



Krzysztof (Chris) Bielicki from Poland recently completed the Advanced Diploma of Commercial Marine Surveying with AIMS.

set priorities and maintain a high standard of performance under pressure.

For professionals considering AIMS, I would strongly recommend it as a meaningful investment in both knowledge

and credibility. It is a program that respects prior experience, while pushing you to elevate your standards and think critically about your role in the industry.

Krzysztof Bielicki
AIMS member

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98 pre-arrival safety inspections: one year, hundreds of lessons

IT'S hard to believe another year has already gone by. Over the last 12 months, mt team and I had the opportunity to board 98 vessels and carry out pre-arrival safety inspections before they entered Australian ports. Looking back at it now, it's been a busy but very rewarding year.

One thing that stood out was how the deficiencies were distributed across different vessel types. Around 26 per cent of all deficiencies were identified on container vessels, 24 per cent on Ro-Ro ships, 10 per cent on tankers and gas carriers, and the remaining 40 per cent on bulk carriers. Each vessel type presented its own challenges, which made every inspection different.

People sometimes ask me what these inspections are actually about. The answer is pretty simple. We're not there to point fingers or catch someone doing something wrong. We're there to help. After spending weeks, or even months, at sea, it's completely normal for crews to stop noticing small things.

You walk past the same equipment every day and eventually it just becomes part of the background. Sometimes it's a fire door that no longer closes properly. Sometimes it's emergency equipment that hasn't been tested recently. Sometimes it's paperwork. And sometimes it's simply a conversation with the crew that makes everyone stop and say: "Let's have another look at that."

While preparing this post, I spent some time looking through a database containing more than 1,000 recorded vessel deficiencies. One thing immediately stood out: the biggest problems almost never start with one major failure.

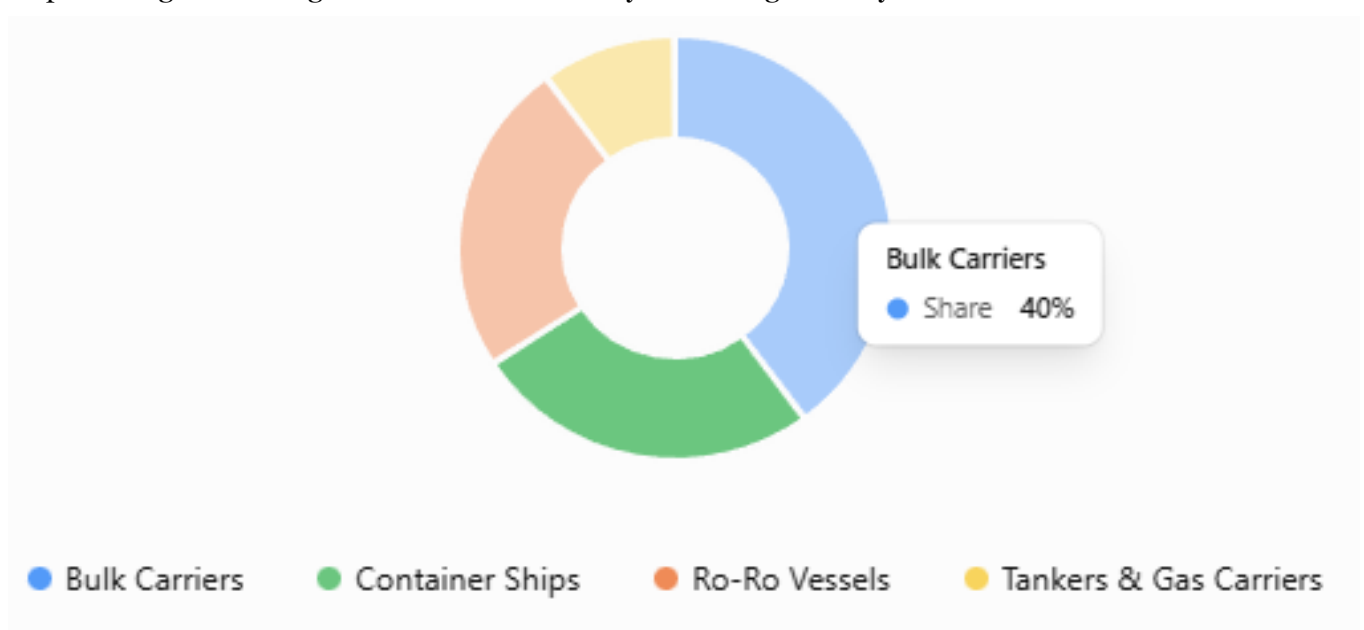
They usually begin with lots of small things. Maintenance gets postponed. A routine test gets skipped. A procedure slowly becomes just another tick in the checklist. Someone says: "We'll fix it next port." Before long, those little things start adding up.

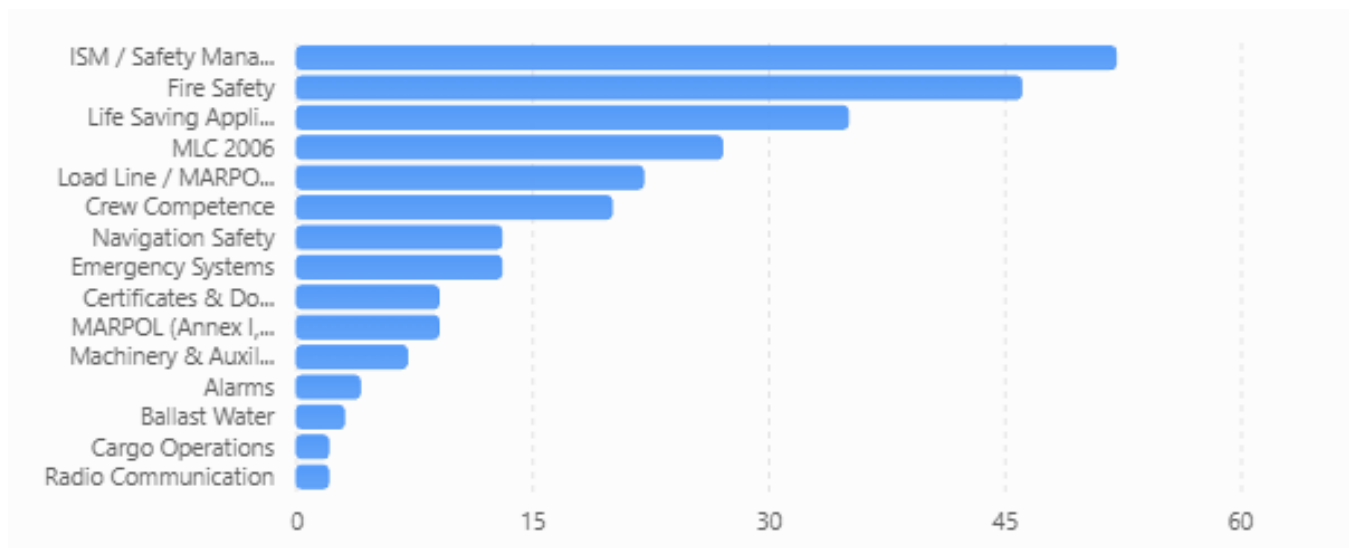
Some of the findings I've come across this year were genuinely

surprising. A fire damper painted shut. Emergency escape routes used as storage. Navigation lights displaying the wrong characteristics. Emergency equipment that looked perfect but hadn't actually been tested. None of those sounds dramatic on their own, but together they tell you a lot about how safety is managed on board.

The other thing that really stood out to me this year was the attitude of the crews. Almost every master, chief engineer and officer I met genuinely wanted feedback. Nobody likes deficiencies but everyone appreciates finding a problem while there's still time to fix it. That's probably the part of the job I enjoy the most. Every inspection feels less like an audit and more like working together with the crew to make the ship a little safer.

Looking back at these 98 inspections, I honestly hope we made a positive difference. Maybe one recommendation encouraged an extra equipment test. Maybe one discussion resulted in better maintenance.





Maybe one issue was identified before it became something much bigger. I'll never know for sure but, if even one vessel became a little safer because we visited, then every inspection was worth it.

I'd also like to thank every master, chief engineer, officer and crew member who welcomed us on board during the past year. Thank you for

your professionalism, your openness and your willingness to improve. That's what makes these inspections worthwhile.

One last thing. Over the past year, I've collected a lot of interesting and sometimes very unusual real-life deficiencies. I'm thinking about sharing some of them on LinkedIn, completely anonymously, with no vessel names or company names: not

to criticise anyone but simply to explain what was found, why it mattered and what we can all learn from it. I believe some of these cases contain valuable lessons that could help others avoid making the same mistakes.

Stay safe, everyone.

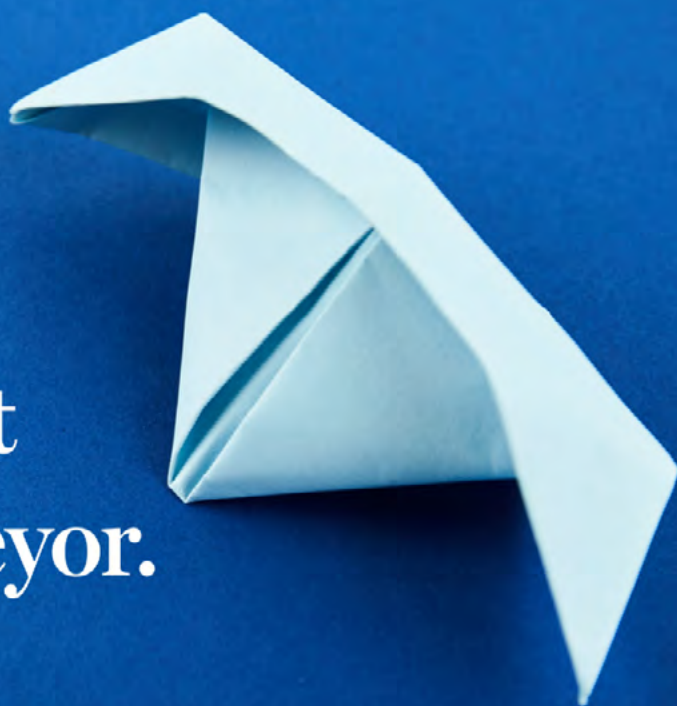
Capt. Sergiy Streletsky
East Coast Manager – Marine
AmSpec Group
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Marine surveying: more than a checklist

MARINE surveying covers a remarkably broad range of vessels and assignments. Working in the United States, my own progression in the industry has given me the opportunity to work across both yacht and small craft and commercial marine surveying.

One assignment may involve a pre-purchase survey of a recreational vessel, working through the hull, machinery, electrical and onboard systems before continuing with a haul-out and sea trial. Another may involve boarding a commercial ship to conduct an initial or final draft survey associated with thousands of tons of cargo.

The vessels, scale and purpose of these assignments can be very different. Yet the fundamentals remain remarkably similar: careful observation, accuracy, practical vessel knowledge, accepted standards, documentation and professional judgment.

Looking beyond whether it works

On the yacht and small craft side, an inspection cannot be reduced to whether equipment simply works.

An engine may run normally at the dock but reveal a cooling, fuel or operating issue once placed under load. Electrical equipment may function despite an installation that deserves attention.

A vessel that presents well cosmetically may tell a different story in its machinery spaces, bilges, electrical panels or less accessible structural areas.

Sea trials and haul-outs add important pieces to that picture. Operating machinery under load provides information that cannot be obtained at the dock, while hauling the vessel exposes the underwater hull, running gear, through-hulls, anodes and other components that cannot

be adequately inspected while afloat.

The surveyor's job is to bring those individual observations together into an objective picture of the vessel's condition at the time of inspection.

Observation before assumption

Some deficiencies are immediately apparent. Others begin with something much smaller: a sound, unusual temperature, staining, corrosion, movement or an installation that simply doesn't look right.

Following those observations is part of the job, but so is understanding the limits of the survey.

Not every concern can be completely diagnosed during an inspection. Knowing when to document an observed condition and recommending further evaluation by an engine technician, electrician,



Machinery-space inspection aboard the bulk carrier M/V Las Palmas.



Pre-purchase marine survey of a 1988 48-foot Camargue Cockpit Motor Yacht during the out-of-water inspection.

composites specialist or other qualified professional is an important part of providing useful information to the client.

A different scale

Commercial surveying offers a very different perspective.

During a draft survey, for example, the focus shifts from vessel condition to accurate measurement and calculation. Drafts are observed, water density is measured, ballast and other liquids are accounted for, and hydrostatic data is used to determine vessel displacement.

Comparing initial and final conditions allows the quantity of cargo loaded or discharged to be calculated.

When cargo quantities reach tens of thousands of tons, seemingly small observations can have significant consequences.

While that assignment may appear far removed from a recreational pre-purchase survey, the underlying discipline is much the same: observe carefully, measure accurately, verify information, document the findings and avoid assumptions.

That discipline transfers in both directions. Yacht and small

craft surveying builds familiarity with machinery, electrical systems, pumps, piping and vessel operation.

Commercial work reinforces consistency, measurement and documentation. Each side has helped strengthen how I approach the other.

Continuing to learn

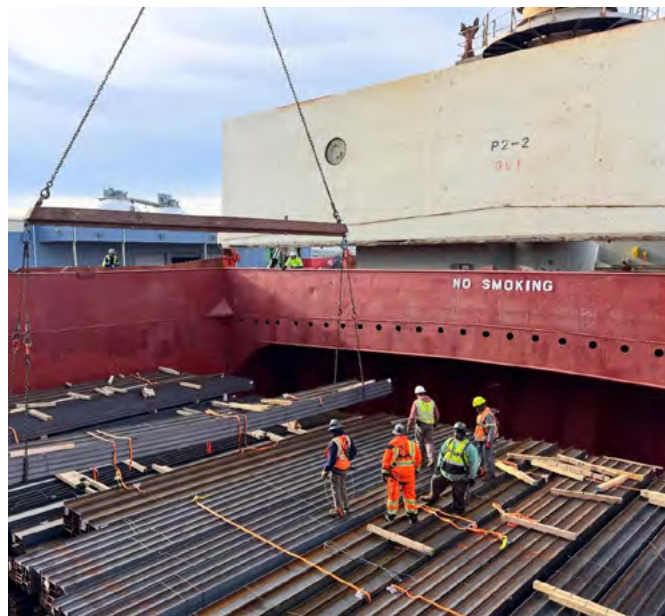
One of the clearest lessons I have learned is just how much there is to know.

No surveyor can be an expert in every hull material, propulsion system, electrical installation or piece of equipment encountered aboard every vessel.

Technology changes, standards evolve and every vessel presents something different.

Continuing education and professional development come from many sources: professional organisations, technical training, industry standards, manufacturers' information, hands-on experience, and relationships with experienced surveyors and other marine professionals.

Just as important is knowing when something falls outside your expertise. The client is better



Discharge supervision of steel products aboard the bulk carrier M/V Nitaya Naree at the Port of Wilmington, North Carolina USA.

served by a recommendation for the appropriate specialist than by speculation.

An independent set of eyes

Ultimately, whether the assignment involves a recreational boat or a commercial ship, the surveyor provides something valuable: an independent and well-documented set of eyes.

A survey cannot predict every future failure. It can document observable conditions, identify concerns within the scope of the inspection and provide information that allows the client to make better-informed decisions.

Working across both yacht and small craft and commercial surveying in the United States has given me an appreciation for just how broad the marine surveying profession is.

The vessels may change dramatically but the responsibility remains much the same: observe carefully, understand what you are seeing, document it accurately and communicate it clearly.

Billy Berg
Owner

Double B Marine Services

Surveying the world's largest hospital ship

SCOTTISH maritime technology company Tymor Marine has completed a lightweight survey and inclining test aboard the *Global Mercy*, using Tymor's own digital survey technologies, building on a decade-long partnership with global humanitarian charity Mercy Ships.

With 7,000 square metres of medical facilities, six operating theatres and 200 hospital beds, the *Global Mercy* is the world's largest purpose-built civilian hospital ship. The work took place during the vessel's annual maintenance period at the Port of Las Palmas, Gran Canaria, ahead of its next healthcare service in Ghana.

The *Global Mercy* provides free surgery and healthcare services to people with limited access to safe medical care, while also supporting training and capacity-building in the countries it serves. Mercy Ships also operates the *Africa Mercy* hospital ship, currently on deployment in Madagascar.

An inclining test establishes a vessel's lightship weight and

centre of gravity. The resulting stability information, once approved by flag and class, defines the loading and operating limits the vessel works within for the years that follow. The survey was carried out on board by Tymor Managing Director Kevin Moran and Principal Naval Architect Niall MacLennan.

Tymor Marine Managing Director Kevin Moran said: "An inclining experiment takes weeks to plan and a long day to run, and what usually survives it is a report with a number in it.

"On *Global Mercy*, the readings behind that number sit in DeadW8 with the lightship figure, and every subsequent change is recorded against them. That is a continuous record through the five-year statutory period, and it means the next survey starts from what is already known instead of being rebuilt from scratch."

Two of Tymor's technologies were used on board. DRFTMRKS uses video capture and analysis to record the draft readings that determine the vessel's weight, or displacement. DeadW8 data

can be updated at any point in the five years between surveys, keeping the spaces where weight varies regularly up to date and providing the loading instrument with a more accurate overall figure of deadweight.

Shelley Pigott, Executive Director of Mercy Ships UK, said: "We're so thankful to Tymor Marine for their ongoing partnership with Mercy Ships and for blessing us with this recent lightweight survey and inclining test.

"With the stability information it produced approved by flag and class, we can confidently embark on our next healthcare service, with the survey process recorded and stored digitally for the years ahead."

Mercy Ships was founded in 1978 and has focused on partnering with African nations for more than three decades. Each year, volunteer professionals from around the world serve on board its hospital ships, including surgeons, nurses, seafarers, engineers and technical specialists.



Global Mercy, the world's largest purpose-built civilian hospital ship. Tymor Marine recently completed a lightweight survey and inclining test aboard the vessel in Las Palmas, Gran Canaria, ahead of its next field service in Ghana. (Photographs courtesy of Tymor Marine and Mercy Ships.)



Onboard launch to read draft marks: Tymor Marine MD Kevin Moran and Principal Naval Architect Niall MacLennan travel by launch to capture draft readings as part of the lightweight survey aboard Global Mercy.



Tymor Marine's Niall MacLennan (front row, seated, left) and Kevin Moran (standing, eighth from left) with crew members aboard the Global Mercy.



Global Mercy in Las Palmas.

Mr Moran added: “Most of Tymor’s work takes place aboard commercial ships and offshore assets, so stepping aboard the *Global Mercy* is a reminder that shipping can serve very different purposes. Knowing that our work will continue supporting the vessel as it delivers life-changing care is extremely rewarding.”

About Tymor Marine

Tymor Marine is a maritime technology and naval architecture consultancy with offices in Aberdeen, Glasgow and Lafayette, USA. Founded by ex-seafarer Kevin Moran and Professor Colin MacFarlane, the company combines practical marine experience with software development to support vessel stability, motions and survey work across ships, offshore assets and floating wind units.

Tymor Marine’s relationship with Mercy Ships spans more than a decade, during which the firm has provided pro bono naval architecture, structural analysis and marine consultancy services across both of the charity’s hospital vessels. The partnership was formalised with an MOU in 2024.

About DRFT MRKS

DRFT MRKS is Tymor Marine’s award-winning AI-powered draft survey app, designed to deliver fast, accurate and auditable draft readings from video captured using a smartphone, tablet or drone. For more information, or to download the app free of charge, visit www.drft-mrks.ai

About Mercy Ships

Mercy Ships is a Christian international health charity. It brings free, life-changing surgeries to women, men and children facing poverty in sub-Saharan Africa, and trains healthcare professionals and builds stronger medical services for everyone, creating change for decades to come. More information: mercyships.org.uk



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