THE REPORT

JUNE 2016
ISSUE 76

The Magazine of the International Institute of Marine Surveying

IIMS 25TH ANNIVERSARY CONFERENCE LATEST NEWS

AUTONOMOUS SHIPS COMING SOON TO AN OCEAN NEAR YOU...

REVENGE OF THE SAILBOAT: ARE UNCONVENTIONAL WIND POWERED VESSELS THE FUTURE?

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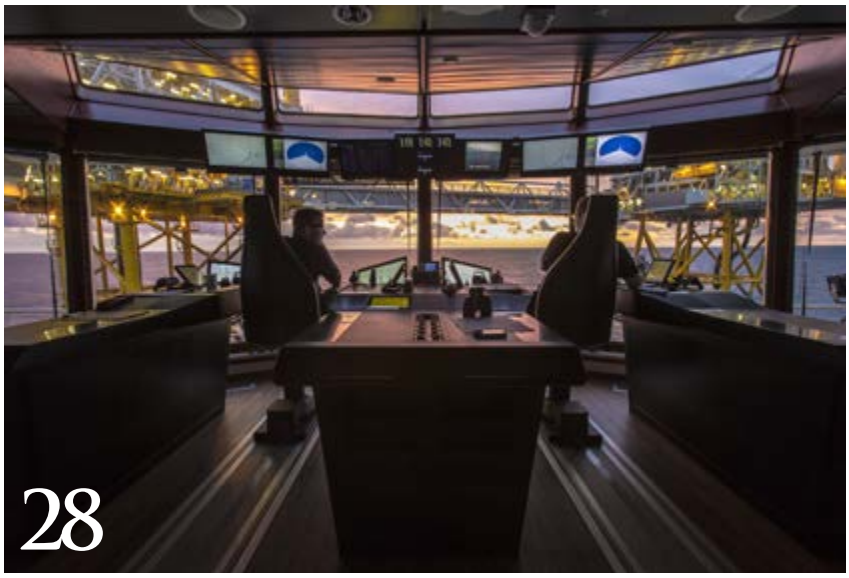

Editor's Letter

It is hard to believe we are already half way through the Institute's Silver Jubilee year; and what a year it is proving to be. IIMS is in good shape. Our improving financial position is due to strong membership growth, coupled with excellent student numbers, encouraging certifying authority activity and growing revenues from other sources, such as handy guides.

Our 25th anniversary year has given us the opportunity to promote our organisation and broad aims to a wide range of people who touch the marine surveying profession, but who are not surveyors.

I have also taken this year as the opportunity whenever I speak publicly to tackle the subject of surveyor standards. Standards matter and never more so than in today's ever increasing litigious world. My desire to tackle this topic was borne out by the many surveyors I have met in various worldwide locations over the past year. The issues are the same everywhere – poor quality surveyors in the market and what to do about them. So if you hear me speaking at one of the various meetings during the rest of this year, I'd welcome your feedback on what I say.

Your Institute's magazine, The Report, goes from strength to strength. In my opinion it is at least comparable with other similar publications. This, the June issue, is another strong edition that will educate and inform with a wide variety and extraordinary depth of content.

I commend the IIMS 25th IIMS Conference, Silver Jubilee Awards and Gala Dinner to you. The next issue will contain pages of photos and a full report on what promises to be two stunning days of celebration and conferencing. If you only ever come to one IIMS Conference, do make it this one! There is plenty of time to reserve your place and you can nominate for an award until 30 June. See pages 21 to 27.

There are two interviews worth reading in this issue. Your next President, Adam Brancher, who takes up his post at the AGM, gives his initial thoughts on what the role means to him and where he would like to see the Institute heading. And the venerable Capt John Noble is the subject of the regular "A day in the life of" feature.

The article entitled "Is a fibreglass boat safe to go to sea?" by Hugo Du Plessis makes for especially thought provoking reading. Hugo has been involved with this material right from the early days and his views are worth reading (pages 34 to 38).

Jeffrey Casciani-Wood covers the key issue of pitting in his own inimitable style. Capt Ruchin Dayal brings readers up to speed with the IMBSC code. Gary Vasconcellos gives a very personal account of the devastation caused to Vanuatu by Cyclone Pam, which he was personally caught up in. And as he says, the only silver lining is he has never been busier! Sad to report the passing of an IIMS stalwart, Peter Clements, whose obituary you can read on page 18. My thanks to all the others who have contributed to this first class edition of The Report and my apologies for not referencing you all personally.

Survey well and I hope to see you at the Conference!

Mike Schwarz
Chief Executive Officer
International Institute of Marine Surveying

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The President's Column

Dear Members

My presidency of the IIMS is coming to an end. I must tell you, I have enjoyed the last two years and the time spent for IIMS chairing the board meetings, or representing the Institute at events has been an important role for me. Yes my second career as a surveyor is also coming to an end soon because essentially of my age.

My present job is very connected to my previous one as a seafaring Master. In a word I have been in command of passagers ships and had the opportunity to implement from 1990 the first version of the ISM code. After a carreer at sea the way for consultancy and training was almost automatically defined among only a few colleagues working in the same sector.

Working hard for myself and IMO and with special thanks to IIMS and Ian Wilkins, I started this speciality of an ISM consultant, which I still propose to this day to shipowners, especially small or starting ship owners who do not have the time and the staff to do it themselves.

The title of IIMS member was a very good reference for this job and Unit 20 in our Institute Diploma was also a strong reference for students trying to enter in to this very specific world. Working among management systems where conformity is the word, we have not forgotten the efficiency where continuous improvement is the key objective. We don't care with quality in maritime safety and security, the three last are sufficient.

Among IIMS we are a very few women and men trying to improve the safety management philosophy, but I know our reputation is fine and somewhere along the way we have been successful in making safety and security improvements in our industry.

Being your President I have had the opportunity to meet surveyors from the rest of the world who are working like me for a better maritime world. However the battle is not finished. Today my kids are still trying to understand what I am doing in my office early every morning. Our ISM and ISPS surveyor speciality is still necessary to our merchant marine industry. We don't need small box tickers like our quality colleagues. We are on the job all the time and this is like a second career at sea.

And so it is the time now to quit my presidency and to hand the baton on to a man coming from overseas again. I'm sure Adam will do a better job than me and oversee the continuing success of IIMS and its members.

I leave the Institute in the strong and very capable hands of Mike the CEO and his staff. Thanks to our impressive group of board members who work so hard on our behalf. I believe the next President will continue to promote 'our baby' in an very changing industry where surveyors will be more and more necessary to ensure a safer world.

Of course I will be around and with you for a long time still I hope.

Good luck Adam.

Capt Bertrand Apperry *President*
International Institute of Marine Surveying
FMIIMS, AFEXMAR President ISM/ISPS specialist

IIMS Organisation & Structure

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Mr Fraser Noble, Chairman Certifying Authority & Finance
Mr John Heath, Technical Response Team
Mr Geoff Waddington

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1996 - 1997 Capt David Linacre
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2000 - 2003 Eur Ing Ian Biles
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Marine News

WELLNESS AT SEA

Sailors' Society has launched Wellness at Sea app, a free app for seafarers

SAILORS' SOCIETY RELEASES FREE WELLNESS AT SEA APP

Sailors' Society has launched Wellness at Sea app, a free app for seafarers. Wellness at Sea app is the next step in Sailors' Society improving on board health and well-being at sea and puts seafarers' wellness in their own hands.

Sandra Welch, Sailors' Society's deputy chief executive, said: "Sailors' Society's Wellness at Sea coaching programme has been well received by the industry and we were keen to take it to the next level by putting the tools to enhance and monitor well-being in the hands of seafarers themselves. The Wellness at Sea app is a fun and interactive way for seafarers to improve wellness whilst providing practical information including local maritime welfare services and ship tracking data."

The app also holds port directories and contact details for services offered by maritime welfare organisations including Apostleship of the Sea, Mission to Seafarers, NAMMA and Sailors' Society, and enables users to track their journey and know their ETA using MarineTraffic AIS data.

The app is Android and iPhone compatible. To download, search for Wellness at Sea.

JORDAN IS THE LATEST TO RATIFY MLC 2006

The Government of Jordan deposited with the International Labour Office the instrument of ratification of the Maritime Labour Convention, 2006 (MLC, 2006). Jordan's decision to join up makes them the 73rd member State to have ratified this landmark Convention. Now over 80 per cent of the world gross tonnage of ships have signed up to MLC 2006.

Jordan, the first Middle East Arab country to have the ratified this landmark Convention, has a merchant fleet totalling 109,602 gross tonnage. The MLC, 2006 entered into force on 20 August 2013 for the first 30 member States that had registered their ratification by 20 August 2012. The Convention will enter into force for Jordan on 27 of April 2017, that is, one year after its ratification.

ONGOING ISSUE OF ENCLOSED SPACE RISKS HIGHLIGHTED BY THE DEATH OF A MASTER

Despite repeated warnings and on-going training, another life has been needlessly claimed from an enclosed space incident. It seems that enclosed space risks and incidents continue to exact a heavy toll on seafarers, often because basic safety precautions are overlooked. A new Mars Report, issued by the Nautical Institute, refers to an enclosed space fatality on board an oil tanker in which an oil sampler had to be recovered from an empty tank.

The atmosphere was found to be 20.6% oxygen, with hydrocarbon at 26% LEL. The Master approved the risk assessment and work plan for two crew members to enter the space with emergency escape breathing devices. When they reached the tank bottom, the men felt dizzy; one exited but the other collapsed. Despite being warned not to, the Master entered the tank and was overcome. Although both men were brought out by crew wearing breathing apparatus, the Master could not be revived.See the IIMS website for details about the incident at: **http://www.iims.org.uk/ongoing-issue-enclosed-space-risks-highlighted-death-master.**

TRITEX LAUNCHES MULTIGAUGE 5650 SURVEYOR THICKNESS GAUGE

Tritex NDT has launched their new Multigauge 5650 Surveyor thickness gauge. The new gauge, based on the already very popular original Multigauge 5600, has new features specifically designed for marine surveyors. The gauge can be used with existing standard soft faced probes for measuring metal thickness through coatings, up to 20mm thick, to give the same high standard of performance as the Multigauge 5600. However, by simply exchanging the probe, the gauge automatically switches to GRP measurement mode which uses single echo. This can be used to assess the condition of GRP when checking for osmosis and delaminations. Either probe can also be used in echo – echo mode, if required, by easily selecting the option from the keypad during measurement. No special probes are needed for echo – echo mode.

The new surveyor thickness gauge has a large modern colour display and an easy to use clear graphic menu. It has been designed in line with Tritex's concept of simple, accurate and robust. Intuitive menus allow for easy navigation whilst the gauge has added features to improve performance. More information at: **www.tritexndt.com**.

Tritex NDT has announced the launch of the new Multigauge 5650 surveyor thickness gauge specially for marine surveyors

POOR DECISION MAKING LED TO THE CEMFJORD'S CAPSIZING REVEALS MAIB INVESTIGATION REPORT

The report into MAIB's investigation of the capsize and sinking of the cement carrier Cemfjord in the Pentland Firth, Scotland with the loss of 8 lives on 2-3 January 2015 has been published.

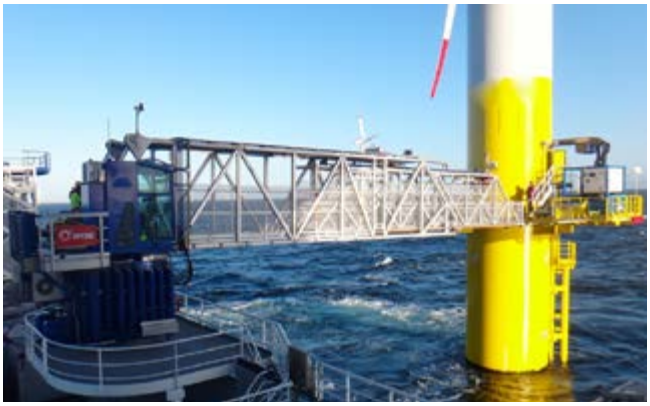
At 1316 on 2 January 2015, the Cyprus registered cement carrier Cemfjord capsized while transiting the Pentland Firth, Scotland; no distress message was transmitted. Twenty-five hours later, the alarm was raised when its upturned hull was sighted by a passing ferry. An extensive search followed but none of Cemfjord's eight crew were found and they are all assumed to have perished. The vessel sank late in the evening on 3 January 2015.

The investigation found that Cemfjord capsized in extraordinarily violent sea conditions caused by gale force winds and a strong, opposing tidal stream. Such conditions are commonly experienced within the Pentland Firth, were predictable and could have been avoided by effective passage planning. The master's decision to take Cemfjord into the Pentland Firth at that time was probably influenced by actual or perceived commercial pressures and his personal determination to succeed. While it is likely that he had underestimated the environmental conditions, his decision to press on would almost certainly have been influenced by his recent experience of a dangerous cargo shift while attempting to abort an approach to the Firth in heavy seas.

In his statement to the media, Steve Clinch, The Chief Inspector of Marine Accidents stated:

"The MAIB investigation found that Cemfjord capsized in extraordinarily violent sea conditions; a fatal hazard that was predictable and could have been avoided. The decision to enter the Pentland Firth, rather than seek shelter, was almost certainly a result of poor passage planning, an underestimation of the severity of the conditions and perceived or actual commercial pressure to press ahead with the voyage. Critically, this decision will also have been underpinned by an unwillingness to alter course across the heavy seas after the experience of a cement cargo shift in similar circumstances about 3 months before the accident. The appalling conditions and rapid nature of the capsize denied the crew an opportunity to issue a distress message or to escape from their ship. Although not a causal factor of the accident, it was also established that Cemfjord was only at sea because of Flag State approved exemptions from safety regulations. This tragic accident is a stark reminder of the hazards faced by mariners at sea and the factors that can influence decision making in such treacherous circumstances."

Capsized Cemfjord



BUREAU VERITAS PUBLISHES GUIDELINES FOR OFFSHORE ACCESS SYSTEMS

The increasing use of offshore access systems that are now routinely used in the offshore oil and gas, as well as the offshore wind industry, has prompted classification society, Bureau Veritas, to publishing some guidelines. The guidelines have been developed for motion compensated offshore access systems, which are used to transfer various personnel from all disciplines to and from offshore vessels and offshore installations and structures.

Guidance Note NI629: Certification of Offshore Access Systems provides a clear and comprehensive overview of the safety principles and technical requirements for the design, manufacturing and operation of reliable and dependable equipment for the safe transfer of personnel at sea.

Matthieu de Tugny, senior vice-president and head of offshore at Bureau Veritas, said: "Getting people safely onto and off unmanned platforms and windfarm towers offshore has become a big issue. Offshore access systems can provide significant safety, operability and/or cost advantages over more traditional personnel transfer methods such as personnel basket or capsule lifts, step-over from crew transfer vessels and helicopter transfers. We see a lot of new vessel types emerging with these motion-compensated gangways and it is imperative that the industry has a standard against which to assess their safety and to help develop safe new designs."

Two different offshore access technologies have emerged: passive transfer gangways, which are first connected to the offshore installation and then put in free-flow mode for personnel transfer; and active transfer gangways which remain motion compensated during personnel transfer. The safety issues and critical components, which differ from one category to the other, require special attention to ensure safe and reliable operation.

SUPERYACHT UK SURVEY REVEALS STRONG GROWTH IN THE SUPERYACHT INDUSTRY

According to the recently released Superyacht UK survey, the superyacht industry grew by more than 10% to £542 million in 2014/15. Out of those surveyed, 48% reported an increase in profits. There was also a 6.9% increase in jobs.

Speaking at the launch of the report, the Head of International Development at British Marine, Richard Selby said: "Despite the challenging environment, these figures show that the UK's marine industry is heading in the right direction. British brands are globally respected and we need to make sure that remains the case."

The report also identifies a new, younger generation of ultra wealthy who want unique experiences rather than goods and services. They "are demanding that the returns on their most precious possession, time, are maximised in every way possible. Superyachts provide the pre-eminent platform to do this," concludes the survey.

The report also identified four trends in the superyacht industry.

1. Growing desire for remote locations such as the Galapagos, Antarctica and Asia, meaning demand for ice-breaking hulls and long range capabilities is on the up.
2. Innovative Layouts: today's yachts are moving away from traditional, compartmentalised layouts toward brighter, open-plan interiors. Also, there is increased attention to the outdoor areas to create a direct, intimate experience of the sea.
3. New Toys and Entertainment: alongside standard toys such as jet skis, water skis and canoes, there is an increasing demand for the latest gadgets such as a jetlev, skibob or hover board. Top-quality cinema rooms are also becoming popular.
4. Focus on Health and Wellness: in order to not compromise passenger health when aboard, yachts are offering expert personal trainers, nutritionists, therapists and masseurs.

EXPECT THE FIRST COMMERCIAL AUTONOMOUS SHIPS BY 2020 SAY ROLLS-ROYCE

Rolls-Royce know a thing or two, having been a world class manufacturer for many years. So, whilst it may be easy to become obsessive with the onslaught and possibilities of new technology, clearly the subject of autonomous ships is not going to go away. It is becoming apparent that such vessels will become part of our everyday lives – and perhaps a lot sooner than most of us realise.

The Rolls-Royce led Advanced Autonomous Waterborne Applications Initiative (AAWA) project recently presented its first findings at a conference in Helsinki, expressing high hopes for vessel automation in commercial service and predicting that it will arrive soon.

"Autonomous shipping is the future of the maritime industry. As disruptive as the smart phone, the smart ship will revolutionise the landscape of ship design and operations." said Mikael Makinen, president of Rolls-Royce's marine division. The firm sees a future in which new entrants could capture a significant share of business, in the same way as Uber, Spotify and Airbnb have done in other industries.

The AAWA initiative's researchers suggested that engineering hurdles would not be a major obstacle. "The technologies needed to make remote and autonomous ships a reality exist – the sensor technology needed is sound and commercially available and the algorithms needed for robust decision support systems – the vessel's 'virtual captain' – are not far away. The challenge is to find the optimum way to combine them cost effectively in a marine environment," said Jonne Poikonen, senior research fellow at the University of Turku and a leader of the project's technology research.

The consortium will soon begin testing of a sensor package mounted on the Finferries passenger vessel Stella, which operates on protected waters of the Archipelago Sea between Korpo and Houtskär. Dry bulk firm ESL Shipping Limited has also joined to help explore the use of autonomous ships for short sea shipping.

Rolls-Royce researchers also plan a series of studies on safety and on cybersecurity, which will be used to make recommendations to the IMO and to class societies for rules specific to autonomous ships.

"This is happening. It's not if, it's when. This work supports the development of remote controlled and autonomous ships and will enable proof of concept demonstration following the completion of the project. We will see a remote controlled ship in commercial use by the end of the decade," said Oskar Levander, VP of innovation at Rolls-Royce Marine.

SUNSEEKER INTERNATIONAL SET TO INTRODUCE VACUUM BAGGING TECHNIQUES

Sunseeker International is to join the other big boatbuilders and start using PRO-SET epoxy and vacuum bagging techniques on its yacht decks. It made the decision following a new case study by West System International (WSI), which revealed that the technique would provide optimal finish across all of its yacht decks. The luxury yacht builder will now use PRO-SET ADV-170 Adhesive and vacuum bagging as standard for pre-fabricated teak deck installation across some 200 boats a year.

Ned Popham, composites manager, Sunseeker International, said that this new method is safer, quicker and cleaner than screwing or weighing down pre-fabricated decks.

"As well as being inconvenient and tiring, weighting the deck down during bonding was a health and safety issue for us. The installation of teak decking is much safer and cleaner now with PRO-SET adhesive and vacuum bagging," he said.

He added that the combination of PRO-SET epoxy for fairing and bonding, combined with vacuum bagging, should help to ensure that there are no imperfections or dips that cause pooling when the decking is wet.

Sunseeker has always used PRO-SET epoxy for bonding, although it has tried other fillers. In the past it used polyester-based fillers but they didn't work well with epoxy and cure times were far too long, said Mr Popham.

With the PRO-SET Fairing Compound, technicians can fair in, sand down the surface and bond down the deck in just a couple of days.

DNV GL'S TECHNOLOGY OUTLOOK 2025 LOOKS AHEAD TO THE NEXT TEN YEARS

Every five years, DNV GL publishes its Technology Outlook. This keenly awaited report is primarily intended to give customers and stakeholders a basis for discussion and insight into the technology landscape of the next decade within selected industries.

"It may be hard to believe we're on the cusp of a technological revolution at a time when the global economy as a whole is slowing. But our view in DNV GL is that we are indeed entering a new 'renaissance' in industrial progress, with the accelerated uptake of cyber-physical systems," says Remi Eriksen, Group President and CEO.

The digitization of information flows will spur the automation of existing processes and functions, and have a positive impact on safety and environmental performance. As the world's leading class society, DNV GL believes that ships are becoming sophisticated sensor hubs and data generators. In effect, vessels are becoming floating computers, echoing developments in the automotive industry where family cars today have more computing power than early space shuttles. Self-driving vehicles of the future will of course have even more. Advances in satellite communications are improving ship connectivity and allowing a massive increase in the volumes of data transferred at ever-lower cost.

The next ten years will introduce many changes. As an example, additive manufacturing – or 3D printing – is dramatically changing where and how things are made. Spare parts for ships, for instance, could be printed out at a port of convenience; conceivably from recycled material as circular economy models become pervasive. The full story is at: http://www.iims.org.uk/dnv-gls-technology-outlook-2025-looks-ahead-next-ten-years

COURT REJECTS €1.56M CLAIM AGAINST MARINE SURVEYOR ACCUSED OF POOR STOWAGE

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 potentially 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."

The Boat Safety Scheme (BSS) Office has asked to raise an error in a recently published article that requires correction.

The article is titled "Marine Installation Safety Training: Diesel fuelled heating" and posted December 10, 2015 by "News Hound".

The article states that "the Inland Waterways Boat Safety Scheme specify that all heater fuel pipes in the engine room must be of metal construction".

The problem lies within the readers understanding of "pipes", and they could be led to believe that flexible hoses are prohibited by the Boat Safety Scheme on such a supply. This would not be correct as compliant flexible hoses are ALLOWED.

The important correction to make is that the Boat Safety Scheme allows that:

"Fuel feed, return and on-engine hoses must be marked to denote both suitability for the fuel used and fire resistance, to BS EN ISO 7840 or equivalent standard."

The specific definitions within the Boat Safety Scheme Manual for fuel lines are:

> LINE is a generic term referring to the overall facility, i.e. fuel filling line.
>
> PIPE refers to rigid metallic lines.
>
> HOSE refers to a line made of flexible material.

The error in the article is effectively one of omission as in the context of the above the statement is factually true, but incomplete.

The concern is that many readers might reasonably assume that ONLY metal pipes are allowed on the fuel lines to the heater.

The correct statement for the position of the Boat Safety Scheme is as follows:

The Boat Safety Scheme primarily seeks to control risks associated with "fire, explosion and pollution". Regarding heater supply fuel lines, this requires that they are well fitted, supported, durable, suitable for the fuel and fire resistant; this does not exclude the use of flexible hose that meet an appropriate fire resistant standard, usually ISO 7840.

For completeness, the specific references in the BSS Examination Checking Procedures, for Private Vessels, on this subject are as follows:

2.10.1 Are all fuel feed, return and on-engine pipes made of suitable materials?

2.10.2 Are all fuel feed, return and on-engine hoses suitable for the fuel used and fire resistant?

2.10.3 Are all feed, return and on-engine pipes secure and in good condition?

2.10.4 Are all feed, return and on-engine hoses properly supported and in good condition?

United Kingdom Hydrographic Office

UKHO ISSUES WARNING OVER COUNTERFEIT NAUTICAL ADMIRALTY CHARTS

The United Kingdom Hydrographic Office (UKHO) has issued a warning over the dangers posed to the safety of vessels, crews and cargoes by counterfeit nautical charts and publications, and has produced a simple guide to help identify genuine Admiralty products.

The UKHO has recently observed an increase in the number of counterfeit versions of its Admiralty charts and publications in circulation. John Dawson, Head of Marketing at the UKHO, said: "The UKHO urges all purchasers, users, inspectors and regulators to be vigilant for counterfeit Admiralty charts and publications. Because counterfeit versions have not been through the same rigorous checking procedures as official Admiralty charts and publications, they cannot be trusted for voyage planning or navigational purposes. As well as failing to comply with SOLAS carriage regulations and possibly also Flag State and Port State Control regulations, the use of counterfeit charts and publications poses a serious risk to vessel safety.

"We are actively seeking to stop the production and sale of counterfeit copies of our charts and publications and have raised our concerns with the International Maritime Organisation, the International Hydrographic Organisation and Flag States. We also encourage anyone that suspects they may be in possession of counterfeit products to get in touch with us."

UKHO has produced a simple guide to help users and inspectors to distinguish official Admiralty charts and publications from counterfeit versions. Official Admiralty charts bear the Admiralty 'Flying A' watermark within the paper and will carry a 'thumb label' strip on the reverse with the Admiralty logo, chart number, geographical area, barcode and date.

Suspect charts and publications can also be identified by comparing them against official Admiralty versions, where variations may be spotted in the look, feel and weight of the product, the colour tone and strength of the ink, the folds on charts and the height and binding quality of publications.

STANDARD CLUB ADVISES HOW TO SAFELY CARRY WOOD PULP

The Standard P&I Club has issued an advisory note on the carriage of wood pulp. Wood pulp is a wood fibre which has been reduced chemically or mechanically to pulp. It is used in the manufacture of paper. The product has a high moisture content and can be susceptible to damage if not carried correctly. The carriage of wood pulp requires the vessel to comply with stringent requirements. These demand that all holds are in top condition; clean, dry, no loose paint and no rust.

It is imperative that operators take all possible steps to ensure holds are of satisfactory condition. It is well known that paper factories do not accept contaminated pulp or pulp contained in contaminated packaging.

The high moisture content in wood pulp means that during the carriage of the cargo the moisture will migrate outwards from the heart of the stow from warm to cold areas. Some of the moisture will be absorbed into the air and this will then condense on the cold areas of the hold and cargo. The process of condensation in itself is not harmful but the wood pulp will expand locally as a result. Consequently the units are pushed against the sides of the hold which will cause damage to occur during discharge. Furthermore, in extreme circumstances the swelling of seriously wetted bales has resulted in structural damage to the ship. As such, ventilation of the holds is of crucial importance for both the vessel and the cargo.

Common causes of damage

The most common causes of damage to wood pulp during carriage are as follows:

- The holds are not washed prior to loading.
- Dust/dirt in the hold;
- Loose paint;
- Lack of ventilation;
- Unpainted and rusty spots/areas together with condensation; or
- Mechanical/chaffing damage.

Preventative steps

Usually, a representative of the shippers will board the vessel at the port of loading to inspect and approve the holds. This inspection is not always performed by an experienced surveyor but sometimes by a stevedore. Consequently only extreme defects are noted and thus in the majority of instances the holds will be approved. Despite this approval the onus is on the shipowner to present a ship with a hold suitable for the cargo to be carried. As such, we strongly recommend that these preventive steps are taken to try and deter a claim:

Ensure the holds are clean and suitable for the cargo; Ensure that the ventilation of the hold has been checked and is of satisfactory quality; and Ensure that the holds are appropriately painted Holds that are not in perfect condition are likely to result in claims for damaged cargo.

RESEARCHERS ARE DEVELOPING UNDERWATER DRONES

Low-cost underwater unmanned autonomous vehicles (UAVs) are to scan the ocean and gather environmental information for management of one of Europe's busiest ports using ground-breaking technology from European researchers.

The on-demand UAVs will drive intelligent data analytics to provide the Port of Leixões, Portugal with environmental impacts in a matter of hours. The Internet-connected UAVs will send observations to a geo-spatial environmental data fusion platform that prepares data for marine risk analysis allowing for rapid response impact analysis. The trial is conducted as part of research by the Euro-pean Commission funded SUNRISE EXPOSURES project.

The project's technical lead Professor Michael Boniface, Technical Director at the University of Southampton IT Innovation Centre, UK,said:

"Marine industry stakeholders will collaborate to create a new data value chain that builds on low-cost drones and advanced data analytics to seamlessly connect surveyors, marine analysts and authorities. These drones are small enough to be launched by one person and cost less than 100,000 Euros allowing them to be preconfigured for marine applications, such as scour and sediment transport analysis."

"By combining the drones with Internet connectivity, geospatial data fusion, and linked data access, marine analysts will have the information they need for assessing threats such as marine accidents, extreme weather events and periodic degradation."

Jonathan Williams, CEO of Marine Southeast, UK, said:

"This revolutionary technology will create opportunity to address many challenges faced by industry operating in the blue economy. From port operations to marine aquaculture and offshore windfarms, SUNRISE EXPOSURES provides industry with ways to transform risks management for maintenance, crisis and regulatory compliance."

MYSTERY OF GHOST TANKER THAT DRIFTS ASHORE MINUS CREW

The Panama flagged oil tanker Tamaya 1 has strangely drifted ashore on a beach near Robertsport on the northern Liberia coast on 4 May. There is no sign of its captain or crew.

According to MarineTraffic, the vessel's last known position was recorded on 22 April 22 2016 as the ship was steaming southward at 0.7 knots towards Senegal after leaving the port of Dakar in Senegal.

Currently theories range from abandonment to piracy, although Tamaya 1's last known position was well north of active Gulf of Guinea pirate groups who typically stick to the waters off Nigeria.

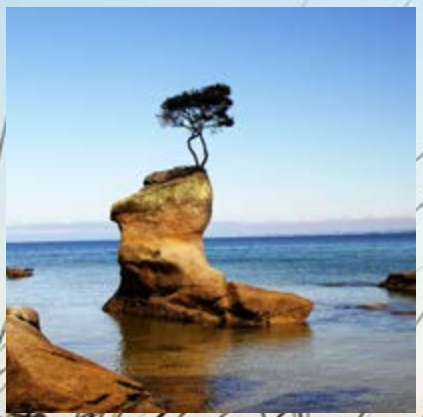
The Liberia national police and bureau of immigration inspected the ship, days after local residents first discovered it on the beach.

Local reports cite a source in Liberia's port authority who said the vessel's owner might have had no money to pay crew members.

"Our best bet is that the vessel's owner might have gone broke and had no money to pay crew members," a source at the nation's port authority told the Liberian Daily Observer. "And therefore, the crew abandoned the ship."

The Report magazine tracked down Adam Brancher, who will take over as the next President of IIMS at the AGM in London on 31 August 2016, at his new base in Tasmania, Australia. Adam has recently left AMSA, the Australian maritime regulatory body, to establish his own independent surveying business. So, just a couple of months before he assumes the Presidency, it seemed an apt time to seek out his views.

The IIMS President Elect Speaks Up...



Q. Are you excited to become the next President of the International Institute of Marine Surveying and what does taking up this role mean to you?

I'm humbled and honoured that members have thought me worthy and have placed this trust in me particularly as my tenure will coincide with the Institute's Silver Jubilee year. The strong and positive position the Institute finds itself in as I assume the role excites me. I have had the opportunity to see and work with many marine surveying organisations over the years and I can honestly say that thanks in no small part to the dedication of the members, the sustained efforts of the management board and the active and professional efforts of the CEO and staff that IIMS is undoubtedly the strongest and most credible marine surveying professional body in the world.

Q. What do you think are the key values of IIMS to its members today and in the future?

First and foremost professionalism. Members are dedicated to gaining knowledge and increasing their competence and capacity in their chosen areas of specialisation and the amount of effort they put in doing so is fantastic. Members' education opportunities are myriad, accessible and focussed. It's hard

when you are busy to take the time to upskill, but the way the Institute is evolving to deliver across multiple means is impressive and highly valuable.

Secondly, the network it affords. It's a great comfort to me, having recently left a regulatory body and starting my own surveying company knowing that someone, somewhere, badged IIMS will know the answer to any problem that I come across; and that they will give willingly if asked to do so.

Thirdly, integrity. Our members are in it for the long haul and realise that in a small industry such as ours only the honest survive. The logo means something and we must all defend it and display it proudly whenever we can in my view. Our Code of Conduct needs to be close to the heart of us all and we need to continually test and ensure we live our professional lives by it.

Fourthly, relevance and advocacy. What surveyors do across all sectors matters. Lives, livelihoods, the environment and the protection of assets and property depends on us getting it right. We are often key stakeholders in political, economic, social and other issues and it's often the case we tell people things they might not want to hear and cost people money they don't want to spend. The Institute provides value in explaining widely across all of our stakeholders what surveyors do and why we do it. In my experience that 'why' is crucial in getting people to buy in, do what's necessary and pre-empt disaster.

Q. What do you feel IIMS needs to do as an organisation to ensure it remains relevant to the modern day surveyor?

I think it needs to continue to listen to its members, take the lead in issues that are important to us as a group, and actively participate and shape debates. As our membership grows around the world we need to continually invest in providing easy access to resources for members, opportunities for Branches to meet and ways to bring new people into our ranks. The branches and local representatives are crucial in my humble opinion. Survey requirements and best practice shifts subtly around the world in different markets and we must continue to be flexible centrally and accommodate local knowledge and experience in parallel with our core principles.

Q. What hopes and aspirations do you have for your two year term as President?

I'm looking forward to working constructively with the other office holders and members to ensure that we grasp all of the opportunities that come our way and that we increase awareness of the IIMS brand and its value every chance we get. I look forward to meeting as many of you as I possibly can and will do my utmost to visit as many of you that I can.

There is an open invitation to any of you that find your way to Tasmania. My wife and I would be delighted to have you visit and we can promise you a genuine Tassie BBQ if you do get here!

Q. What message do you have for IIMS members around the world?

Be proud of your Institute and take every opportunity you can to tell people about us, who we are, what we do and what we stand for. You went through a rigorous assessment process to become a member and you should be rightly proud of what you have achieved to be appointed to the level you are at. Please do continue to learn and grow and make sure as you do you upgrade accordingly.

Q. What would you like to say to current President, Capt Bertrand Apperry, when he finally leaves office at the end of August?

I would like to pass on my and all of our members sincere thanks and grateful appreciation for all you have achieved. It is always easier to take over a vessel that is on course and IIMS is, partly down to your wisdom and leadership over the past two years. Thank you Captain.

Members' News

Lalit Hotel, Mumbai

IIMS INDIA BRANCH 25TH ANNIVERSARY CONFERENCE

The date has been set - put it in your diary now. On Wednesday 5 October 2016, the IIMS India Branch one day Conference, to celebrate the Silver Jubilee of the Institute, will be held in Mumbai.

The venue is the splendid Lalit Hotel in Mumbai, adjacent to the city's international airport for ease of access.

The programme is being finalised and full details will be published soon.

Regional Director, Milind Tambe said, *"I am thrilled that we have finally agreed a date. Our aim is to put on a memorable Conference fitting of this wonderful occasion. I extend a warm welcome not only to IIMS India Branch members, but also to members from the IIMS family worldwide to join us."*

CERTIFYING AUTHORITY SPRING TRAINING

A group of IIMS CA coding surveyors met on 16 May at Portchester Sailing Club for their annual Spring training day, also joined online by a delegate from overseas in a video conferencing experiment, which will be rolled out to all IIMS members in due course. With proposed changes lying ahead in the way UK CA's operate, it was important to bring them together to pass on this news before the formal training began.

Under the guidance of Fraser Noble, CA Chairman, the group worked though the new forms for Small Commercial Vessels (SCV2) and Workboats (WB2). This was followed by a discussion on ISO standards, particularly because the SCV codes refer to many of them, plus the fact that the Institute now holds most of them. The group debated when these are applicable, or may be used in lieu of normal Code requirements and what evidence of ISO compliance is required.

There followed a brief refresher on MLC 2006, including a run through the report and clarification as to when MLC inspection is required and/ or applicable. The day concluded with a short update on tonnages, including details of vessels that IIMS approved tonnage surveyors are authorised to measure and those we have applied to measure.

IMPORTANT NOTICE:
The IIMS ANNUAL GENERAL MEETING 2016 will take place in the Herringham Hall, Regent's University, Regent's Park, Inner Circle, London NW1 4NS from 14.45 to 16.30.

More details will be sent out to members soon.

WESTERN MED TRAINING EVENT SUCCESSFUL

An enthusiastic group of 20 plus IIMS member surveyors and non members arrived on the island of Mallorca for a two day training event in Palma on 28 and 29 April organised by the Western Mediterranean Small Craft Working Group under the leadership of John Walker. The event coincided with the Palma Superyacht Show.

Day one was run by John Excell, IIMS Chairman of Yacht & Small Craft Surveying, and was given over to an introduction to the IIMS Certifying Authority. After lunch the group reassembled for training on how to conduct tonnage measurements. Commencing with theory, John ran through the newly produced tonnage guidance manual on screen. Then despite inclement weather, the group split in to three working groups and headed into the neighbouring STP yard to carry out some practical tonnage measurement training. Measurements were taken and calculations made before the group headed back to the classroom to complete the exercise.

Day two dawned brighter and warmer. Mike Schwarz, IIMS CEO, gave a presentation to delegates. In his talk, Mike spoke about the changing face of the Institute and, in particular, the importance of its 25th anniversary and Silver Jubilee year. In the second part of his presentation, he tackled the issue of

20 plus IIMS members, Mallorca

surveyor standards and the constant need for IIMS members to continue to invest in themselves.

The afternoon was dedicated to small craft surveyor training. Andy Ridyard gave a fascinating presentation on lightning protection systems, how they work and why they are necessary. He followed this up by speaking about the mysteries and myths surrounding earth leaks. It fell to Paul Hamill of Tides Marine to bring this absorbing training event to a conclusion. He spoke about the company's well known range of products and their installation.

SMALL CRAFT SURVEYORS FORUM SEAWORK SEMINAR SCHEDULE

The Small Craft Surveyors Forum has announced plans for its annual seminar taking place at the Seawork show on Wednesday 15 June. All are welcome to attend the free session but please confirm if you wish to attend using the online form at: **http://www.iims.org.uk/small-craft-surveyors-forum-announces-seawork-seminar-schedule.**

Seawork has a new location in Mayflower Park, Southampton and the seminar will be held onboard the Ocean Scene.

The afternoon programme of events starts at 13.00 and runs until 16.30.
Detailed programme of presentations
13.00 Assemble onboard Ocean Scene
13.10 Introduction and welcome by Mike Schwarz, CEO IIMS, followed by:

- The need to enhance surveyor standards
- The IIMS accreditation programme for CMID inspections (Common Marine Inspection Document).

13.40 IMCA's Marine Inspection for Small Workboats. Adding value not cost to small vessel safety management system inspections. Chris Baldwin, IMCA Technical Adviser
14.20 Tea/coffee break
14.40 Workboat Cranes and Stability. Chris Baker from Marine Data, Isle of Man will talk about his experience with cranes on workboats – both installing and moving lifting devices, as well as including them in stability calculations; and he will present a couple of case histories.
15.30 The importance of surveying workboat coatings. Heather Morton, Production Co-ordinator at Jeremy Rogers Design Ltd, will look at the different materials and coatings a surveyor will encounter.
16.30
Conclusion and close

IIMS CANADA BRANCH ELECTS COMMITTEE

The inaugural meeting of the recently formed IIMS Canada Branch took place on 30 April at the Mission to Seafarers in Vancouver, British Columbia. A good number of members were present in person with a handful joining online. The meeting, which lasted nearly two hours, was called with the primary purpose of electing the first committee.

The result of the election was as follows:
IIMS Canada Branch Committee and Officers
Chairman: Ed O'Connor
Secretary: Alistair Beaton
Treasurer: Jostein Hoddevik
Committee member (West): Ian Hopkinson
Committee member (East): Said Nassif
Capt Andrew Korek will continue is his unelected role as Regional Director.

NEW REGIONAL BRANCH WEBSITES LAUNCHED

The IIMS Management Board took the decision to standardize the branch web sites, all of which had their own unique identity, to bring them into line with the main IIMS web site. The ability exists to add local news and events. This supplements the automatic international news and twitter feeds. On each of the branch websites, there is a searchable database of all members locally. The first site to go live was IIMS Canada - see **www.iimscanada.ca.** Commenting on this initiative, IIMS CEO, Mike Schwarz said, *"This is an important bit of work and brings all web sites into line with a common theme and similar branding, without taking away the local feel of the site too."*

IIMS NIGERIA BRANCH FORMATION

Following representation last year made by Nigerian members at the IIMS Conference in London to form a branch and the CEO's subsequent successful trip to the country, plans are now well underway to formalise the unit. Regional Director, Monday Ogadina, is planning a meeting imminently to adopt the Branch constitution locally and to hold the election for Chairman and committee members. Members in Nigeria will be notified.

PETER CLEMENTS HONMIIMS OBITUARY

It is with deepest regret that The Report has to inform members of the passing of our friend and colleague Peter Clements HonMIIMS. Peter was one of the founding members of the IIMS and, having joined the Institute in 1992, it is particularly sad that he should pass away in this, the Institute's 25th year, thus missing the celebrations.

Peter moved to the South Coast in the early 1970's having been involved in boat construction on the East Coast with Essex Yacht Builders on Wallasea Island, where he progressed to Managing Director. He moved to work at Emsworth setting up home at Sandy Point on Hayling Island with his wife Joan. He was employed as Managing Director of Emsworth Shipyard to organise the production of the 40ft Salar motor sailer which was then produced here and the Stag 28, a shallow draft lifting keel yacht designed by Peter Milne for use in the tidal waters of Chichester harbour and the Solent. At that time the yard was owned by Rear Admiral Percy Gick and Peter worked with him through to 1990 carrying out maintenance on MOD craft. He was also closely involved in the production of Gleaner, a new survey craft for the hydrographer. When the yard was sold Peter stayed on as Managing Director for the new owners. When he eventually retired he moved house from Sandy Point to Port Solent with water frontage and a berth for his beloved 30' *Fisher Romanza*.

Peter's other pastimes included looking after the sea cadets across the country and he was also involved in the maintenance of HMS Victory. He spent some time trying to get the craft relaunched to prevent the degrading of the hull which was causing great concern at this time, but was unsuccessful. But he was able to spend his 70th birthday on board her with his family. Peter spent some of his later years cruising with his wife Joan and recording the areas they had covered on a chart on the kitchen wall. But to the last he had his own boat, which he had just arranged to be hauled out and antifouled for what he thought, one last season; but sadly this was not to be. At the age of 83 he passed away. Peter will be sadly missed by all. He was one of the 'old school' marine surveyors with a knowledge and understanding of the marine industry that is rarely seen these days. They don't make them like that anymore. RIP Peter.

Words kindly written by his friend John Kilhams

RNLI MEETS IIMS

On Wednesday 25 May, a group of nearly 30 IIMS members met at the impressive Royal National Lifeboat Institution (RNLI) headquarters and training facility at Poole in Dorset, UK. Their mission? Firstly to have a close look first hand at the RNLI All-weather Lifeboat Centre and the various workshops to see the activities going on. Then after lunch, the group combined with the RNLI surveyors at their conference for an invaluable afternoon of training and knowledge sharing.

RNLI Director, Angus Watson, welcomed the group and said how much he hoped the two organisations could work together more closely going forward.

During the tour around the All-Weather Lifeboat Centre, IIMS members saw:

- Two boat halls with flexible bays for manufacturing and maintaining lifeboats
- Component manufacturing area
- Launch, recovery and boat storage area
- Paint preparation area with built in extraction system and heat curing facility
- Workshop for supporting the RNLI inshore training fleet

IIMS CEO, Mike Schwarz, kicked off the afternoon session when he spoke about the latest news from the Institute and the importance of surveyor standards. Iain Walbridge from RNLI followed him and covered the topic of how the RNLI analyses and monitors ALB stability. Next to speak was John Excell, who gave a refresher on report writing including key components, tips, advice and layouts. After a short break for coffee, Dave Steel and Gary Venning from RNLI talked about a general understanding into the background and lessons learnt practicing Condition Based Maintenance. And finally, IIMS stalwart, Capt John Noble rounded the day off with advice on accident investigations.

The IIMS wishes to pass on its gratitude to all those at RNLI who helped to make the day such a special and memorable one, in particular Richard Morris for his considerable efforts.

As a mark of respect for the fantastic work RNLI does and to thank them for their hospitality, John Excell, IIMS Chairman of Yacht & Small Craft Surveying, presented a donation cheque for £500 on behalf of the Institute.

LIFE TIME ACHIEVEMENT AWARDS GIVEN IN PAKISTAN

The Master Marine Society of Pakistan (MMSP) has given a "Life Time Achievement Award" to veteran mariners at a Gala Dinner on 26th April 2016. Admiral Muhammad Zakaullah NI(M) Chief of Naval Staff was the Chief Guest.

The Lloyds List Award Middle East and Indian Sub-continent was awarded to Capt. Haleem Ahmed Siddiqui, President (MMSP), in Dubai. He was honoured as he was given a "Lifetime Achievement Award" by Lloyds List.

A " Lifetime Achievement Award" was made by MMSP Pakistan to Capt. Anwar Shah. He is the Ex Director, General Port & Shipping, Member, Board of Govenors World Maritime University, Malmo Sweden, IMO secretary general's list of Ports and Shipping experts panel, consultant on the panel of the World Bank and a member of the Board of Pakistan National Shipping Corporation.

Mr. Zahid Rahman (Marine Chief Engineer), who has worked with Lloyds Register for 26 years and whose last position was as Vice President Business Development, Marine, for the Middle East, Africa and Pakistan was awarded the "Power of You Award" by Lloyds Register. The award was made in recognition of his outstanding commitment, efforts and achievement in building and leading the Lloyd's regional team. He is also currently the Vice President (MENA) of the institute of Marine Engineers, Science and Technology (IMar EST) UK.

Capt. Zia Alam (Vice Chairman IIMS Pakistan Branch and vice President MMSP) with Chief Guest Admiral Zakaullah, Capt, Haleem Ahmed Siddiqui, Capt. Anwar Shah and Mr. Zahid Rehman,. Recipient of "Lifetime Achievement Awards"

Capt. Syed Khalid Humail (Chairman IIMS Pakistan Branch) welcoming the Chief Guest Admiral Zakaullah NI (M) Chief of Naval Staff

Capt. Syed Khalid Humail (Chairman IIMS Pakistan Branch) and Capt. Zia Alam (Vice Chairman IIMS Pakistan Branch) with Capt. Haleem Ahmed Siddiqui (President MMSP) recipient of Lifetime Achievement Award by Lloyd's list Middle East and Indian subcontinent 2015

SURVEYING MARINE DAMAGE — 3RD EDITION BY CAPTAIN C.B.THOMPSON

RD FNI Hon.FIIMS

Published in April 2016 by Witherby Seamanship International Ltd.

Available from the publisher in hardback at UK Price £95.00.
4 Dunlop Square, Deans Estate, Livingston, EH54 8SB, UK
Website:
www.witherbyseamanship.com
Telephone: **+44 (0)1506 463 227**

Although the fundamental principles of marine surveying change little with time, the methods by which they are applied do. This is especially apparent with the progress of electronic communications and equipment. This book takes into account these changes and how they affect the surveyor.

This extensive handbook, (3rd edition), whose author is an Honorary Fellow of IIMS, provides helpful and practical advice for surveyors, shipowners, underwriters and lawyers, largely but not exclusively on damage resulting in insurance and third party claims. It sets out the fundamental principles of surveying from receiving initial instructions and attending survey to reporting and preparing for litigation.

It sets out professional surveying procedures as well as the legal risks, also discussing extensions of the traditional survey role into adjustments and recoveries.

The principles are applicable to all types of marine loss or damage encountered in commercial hull, cargo and pleasure craft claims.

25th Anniversary Conference 2016

Having been formed in 1991, IIMS is celebrating its 25th anniversary this year. The 25th Anniversary London Conference 2016 is unashamedly a little different as the organisation proudly celebrates its Silver Jubilee. If you have never taken part in an IIMS Conference before don't miss this opportunity to be part of a history making event on 31 August and 1 September.

The Conference at a Glance...

Wednesday 31 August

Regent's University, Regent's Park, Inner Circle, London NW1 4NS

09.00 to 12.20: Exhibition, networking and five technical workshops

12.30 to 14.00: Silver Jubilee Awards stand-up buffet lunch and ceremony

14.45 to 16.30: IIMS Annual General Meeting 2016

The Museum of London Docklands, No.1 Warehouse, West India Dock Road, London E14 4AL

19.00 to 23.00: The IIMS 25th Anniversary Gala Dinner

Thursday 1 September

The Old Library, Lloyds of London, 1 Lime Street, London EC3M 7HA

08.30 to 16.30:
25th Anniversary Conference Day
Marine Surveying: The Next 25 Years

08:30: Registration

09:25 to 10.55 Session 1

11:10 to 13.15: Session 2

14.00 to 16.20: Session 3

To reserve your place please use the online booking form: **www.iims.org.uk/whats-on/25th-anniversary-conference-2016/**

WEDNESDAY 31 AUGUST (09.30 to 11.30)

TECHNICAL WORKSHOPS

REGENT'S UNIVERSITY, REGENT'S PARK,
INNER CIRCLE, LONDON NW1 4NS

Agenda correct at time of publication by subject to change.

Wednesday Morning

09.30

Choose between...

Technical Workshop 1. Nick Smith:
'Commonly breached warranties for small craft and their implications for insurers and insured'.

or

Technical Workshop 2. Luc Verley:
'Dredging Technology. An interactive workshop that will give an insight into the world of dredging contractors, projects and equipment'.

10.30

Choose between...

Technical Workshop 3. John Reynolds:
FLIR UK: The future of thermal imaging.

or

Technical Workshop 4. Sam Ignarski:
Social media and surveyors.

11.30

Technical Workshop 5. Carol Powell:
'Marine alloys, their corrosion behaviour and how to avoid it. An overview of metals and their relative resistance to seawater, covering general and localised corrosion, velocity effects, de-alloying, stress-cracking, galvanic behaviour and biofouling'.

CONFERENCE PRICE OPTIONS CONFERENCE PRICE OPTIONS CONFERENCE PRICE OPTIONS CONFE

PRICE OPTION 1 Exhibition, Technical Workshop and the Awards ceremony and Lunch on Wednesday 31 August at Regent's University ONLY.

IIMS member: £110 + VAT | Non member: £120 + VAT | Student: £100 + VAT

WEDNESDAY 31 AUGUST (19.00 TO 23.00)

THE IIMS 25TH ANNIVERSARY GALA DINNER

(WITH SURPRISES) IS TAKING PLACE AT THE MUSEUM OF LONDON DOCKLANDS, NO.1 WAREHOUSE, WEST INDIA DOCK ROAD, LONDON E14 4AL

Wednesday Evening

Agenda correct at time of publication by subject to change.

Dress Lounge suits (black tie optional)

19.00
Meet for a celebratory drinks reception in the Museum's special designated area 'Sailor Town'. A glass of Prosecco Frizzante will be provided on a complimentary basis. There is also a cash bar.

19:45 Dinner is announced

Capt Barry Thompson:	Remembrance
Capt Bertrand Apperry:	Grace
The President:	Loyal Toast: Her Majesty The Queen

To celebrate IIMS as a global organisation you are invited to partake of a specially created truly international, sit down buffet to mark the occasion.

INDIAN
Chicken Madras, riz pilaf

ORIENTAL
Stir fried beef, black beans, Chinese greens and soy broccoli, rice vermicelli noodles

AMERICAN
Buttermilk fried chicken, mac & cheese, red cabbage & carrot slaw

ITALIAN
Butternut squash, spinach, mushroom and tomato lasagne, grilled Mediterranean vegetable salad with rocket and parmesan

AUSTRALIAN
BBQ Beef Skewers with garlic and rosemary, roast potatoes and kale with lemon butter

Dessert: Classic lemon tart with raspberry sorbet.
Cutting of the 25th Anniversary cake, followed by coffee.

Half a bottle of wine will be provided on a complimentary basis: Tarabilla White and Tarabilla Red. There is also a cash bar.

21.15 Speakers: Mr Mike Schwarz
Mr Michael Grey
News headlines from 1991
Mr Peter Hancock

23.00 Carriages

RENCE PRICE OPTIONS CONFERENCE PRICE OPTIONS CONFERENCE PRICE OPTIONS CONFERENCE

PRICE OPTION 2 Gala Dinner on Wednesday 31 August at the Museum of London Docklands ONLY

IIMS member: £95 + VAT | Non member: £105 + VAT | Student: £85 + VAT

THURSDAY 1 SEPTEMBER (08.30 – 16.30)

MARINE SURVEYING: THE NEXT 25 YEARS

25TH ANNIVERSARY CONFERENCE DAY.
ALL PRESENTATIONS WILL BE MADE AT THE OLD LIBRARY, LLOYDS OF LONDON, 1 LIME STREET, LONDON EC3M 7HA

Thursday Morning

Agenda correct at time of publication by subject to change.

09:25
2016 at a glance and the future of the IIMS by Mike Schwarz, IIMS CEO
Mike Schwarz, IIMS CEO, joined the organisation in 2014. He comes from a non technical, non marine background. He has overseen a process of great change within the organisation and has developed a number of new initiatives. In his presentation, Mike will review the IIMS year to date and discuss the increasingly important topic of surveyor standards, whch should underpin the future of the IIMS.

09.50
Crisis management by John Guy
John Guy is a master mariner who served on merchant ships and warships for sixteen years before becoming a ship inspector and then a journalist. He has spent the last twenty years advising companies and organisations in the global shipping industry on media and crisis management. He has been involved in many major ship casualties around the world and will speak about the challenges crisis management brings.

10:20
Maritime professionals or automatons? Brave new world or not?
by Philip Wake OBE, Nautical Institute CEO
In May 2003, Philip Wake became the Chief Executive of The Nautical Institute, having served in the Secretariat since November 1999 and was elected a Fellow in 1996. Previously, he served at sea from Cadet to Chief Officer with Ellerman City Liners before coming ashore to a container consortium. In 2015 Philip Wake was awarded an OBE for services to the maritime industry. Philip will speak about that most topical of subjects and how automation could impact on the maritime world.

11:10
The next generation of marine surveyors by Capt Peter King
Peter is a Liveryman, the Honourable Company of Master Mariners and a Fellow, the Nautical Institute. He boasts 57 years maritime experience in liner shipping, tankers, offshore support vessels, AtoN servicing, manufacturing and marine surveying, at all levels including command and senior shore management. He leads the survey team at Seden Clarke Limited, but is passionate about looking at how to develop the next generation of marine surveyors. He will share his vison in his presentation.

11.40
Nathalie Rousseau, Chief Executive Officer, Windfire Benelux BVBA
Topic to be confirmed.

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PRICE OPTION 3 Full day's Conference at Lloyds Thursday 1 September at the Old Library, Lloyds of London ONLY.

IIMS member: £130 + VAT | Non member: £140 + VAT | Student: £120 + VAT

Thursday Afternoon

12:10

Future challenges facing marine insurers by Chris Curran

Chris Curran has worked in the marine sector of Lloyd's for over 30 years and during the last 9 years as a marine Professional Indemnity, Cargo Liability and Logistics Underwriter. In 2004 Chris joined Galatea Underwriting Agencies Limited as a marine underwriter. In June 2010 Chris joined Galleon as Active Underwriter. Chris has given his presentation a broad title to enable him to discuss the challenges that will face insurers in the coming years.

12.40

Bringing the assets to the experts – meshing visual, telemetry, 3D and other complex data types to enable advanced asset assessment from your desk by James Harrison

CEO and co-founder of Sky-Futures, James is an Army veteran who served in Iraq and Afghanistan. He is a former corporate strategist with Deloitte and a passionate surfer. As an end user of drones since 2007 in the military, James is focussed on creating valuable, actionable and organised data from different sensors and platforms. Sky-Futures work with the leading Oil and Gas companies globally including Chevron, Shell, ConocoPhillips and Maersk.

14:00

Case study of the the m/v Happy Star Big Lift project by Capt Andrew Korek

Whilst many of us were enjoying the Christmas period the year before last in the comfort of our own homes, for one IIMS member and marine surveyor it was a Christmas with a difference. Drew will talk about the many trials, tribulations and significant challenges he encountered and had to overcome as the attending surveyor on the extraordinary heavy lift project of the m/v Happy Star, which was also filmed for the Discovery Channel's 'Mighty Ships' series.

14:35

Boxing and Dancing:
The Broken Promises of Safety Management Systems in Global Shipping by Nippin Anand

Nippin works as a Principal Specialist in Safety Management System at DNV GL. He is a master mariner and a social scientist with more than two decades of work experience that spans across hands on operations, academic research, consultancy and certification and regulation in the maritime, oil and gas sector. Nippin is a fellow of the Nautical Institute, a Chartered Scientist and an Associate Fellow at Cardiff University. There is a real concern that the enforcement regime, i.e. compliance with rules, regulations and industry standards has fallen victim to its original intentions of managing safety risks. Nippin will address this in his talk.

15:10

Unmanned commercial vessels: What may lay ahead for marine surveyors in the context of classification by Dr Alexandros X.M. Ntovas

Dr Ntovas BA (Hons) LLB(Hons) LLM (Distinction) MSc (Hons) PhD (Southampton) FHEA (London) Advocate (Athens) specialises in the context of oceanic policy and the law of the sea. Maritime labour law, laid-up ships, cybersecurity of ships and ports, freedom of navigation, piracy, decommission of platforms and offshore installations, and the future regulation of unmanned vessels reflect some of the areas that he is currently involved in. His expertise within the Centre for Commercial Law Studies lies in admiralty, navigational freedoms and practice, which means he is perfectly placed to talk about this topic.

15.50

Conference will conclude with a panel discussion to review the various presentations and to discuss some of the learnings.

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PRICE OPTION 4 (FULL PACKAGE): Attend all events on both days.

IIMS member: £335 + VAT - discounted to £315 + VAT Non member: £365 + VAT - discounted to £345 + VAT
Student: £305 + VAT - discounted to £295 + VAT

IIMS Silver Jubilee Awards

To celebrate the 25th anniversary since its inception, the International Institute of Marine Surveying is proud to announce the IIMS Silver Jubilee Awards, which will recognise excellence in marine surveying throughout the world.

Location: **London,** Venue: **Regents University**

Who can enter? **Open to all IIMS members**

Nominations close: **Thursday 30 June 2016**

You may nominate as many as you wish.

The Awards Categories

Open to yacht and small craft surveyors ONLY:

Outstanding Contribution to the Yacht & Small Craft Marine Surveying Industry Award

The *Judging Panel* will select a winner from a short list of no more than three nominations from recommendations made by the Management Board, Regional Directors and In Country Representatives.

Marine Surveying Project of the Year Award (Yacht & Small Craft)

IIMS members specialising in yacht and small craft surveying are invited to nominate others, or to nominate themselves for this award. Nominations are to be supported with a maximum 200 word description describing the project and supporting photographs.

You may nominate any project between 1 January 2015 and 30 June 2016. The *Judging Panel* will select a winner from a short list of no more than three nominations.
Kindly sponsored by: **Galleon Marine Insurance Agency**

Open to commercial ship surveyors ONLY:

Outstanding Contribution to the Commercial Shipping Marine Surveying Industry Award

The *Judging Panel* will select a winner from a short list of no more than three nominations from recommendations made by the Management Board, Regional Directors and In Country Representatives.
Kindly sponsored by: **Henderson International Asia Pacific Group**

Marine Surveying Project of the Year Award (Commercial Shipping)

IIMS members working in commercial surveying shipping are invited to nominate others, or to nominate themselves for this award. Nominations are to be supported with a maximum 200 word description describing the project and supporting photographs.

You may nominate any project between 1 January 2015 and 30 June 2016. The *Judging Panel* will select a winner from a short list of no more than three nominations.

The Awards will be presented at the IIMS Awards Luncheon on Wednesday 31 August 2016 as part of the IIMS 25th Anniversary Conference **(31 August - 1 September 2016).**

Open to BOTH yacht and small craft and commercial ship surveyors

Most Effective Use of Social Media Award

Any IIMS member is invited to nominate others, or to nominate themselves for this award. Nominations are to be supported with a maximum 200 word description describing how the use of social media is being routinely utilised to assist their business. The *Judging Panel* will select a winner from a short list of no more than three nominations.

Rising Star Award

This award will be given to someone who is still learning his/her craft as a surveyor. The *Judging Panel* will select a winner from a short list of no more than three nominations from recommendations made by the Management Board, Regional Directors and In Country Representatives. Kindly sponsored by: **Sterling Global Marine Ltd**

Customer Focus Award

Any IIMS member is invited to nominate others, or to nominate themselves for this award. Nominations are to be supported with a maximum 200 word description giving examples to show how a strong ethos of customer service is embedded into the organisation. The *Judging Panel* will select a winner from a short list of no more than three nominations.

Best Web Site Award

Any IIMS member is invited to nominate others, or to nominate themselves for this award. Nominations are to be supported with a maximum 200 word description explaining the key features and benefits of their web site. The judges will look at how aesthetically pleasing the site is, but will also consider depth of content, functionality and how well optimised the site is for search engines. The Judging Panel will select a winner from a short list of no more than three nominations.

Innovation Award

This award could be given to an IIMS member, but equally could also be given to an organisation in the maritime industry that has been innovative. The *Judging Panel* will select a winner from a short list of no more than three nominations from recommendations made by the Management Board, Regional Directors and In Country Representatives.

All nominations must be received at IIMS Head Office by 30 June 2016 at the very latest. Late entries will not be accepted.

Sir Alan Massey, Chief Executive Officer of the UK Maritime & Coastguard Agency (MCA), has agreed to present the IIMS Silver Jubilee Awards for Excellence.

TO MAKE A NOMINATION
Email your nomination(s) to awards@iims.org.uk by 30 June 2016. Ensure you state which category you are nominating for and attach the supporting evidence for the judging panel.

The Judging panel will agree the short lists for each award by 15 July 2016 and these will be published.

Final judging will be completed by Friday 12 August 2016.

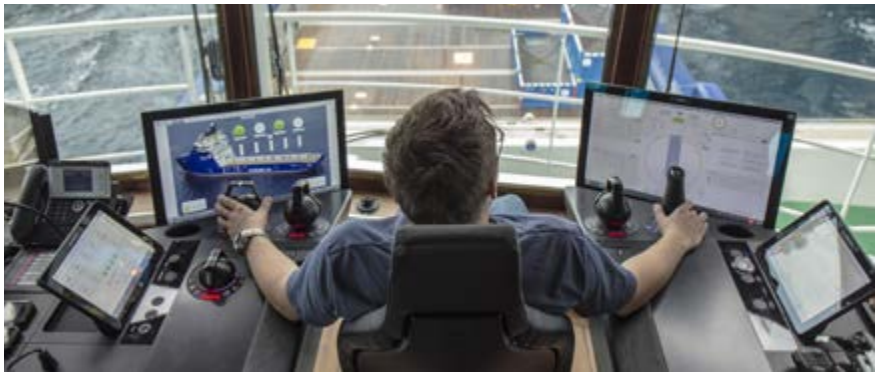
The IIMS Silver Jubilee winners will be announced and Awards presented at the IIMS 25TH Anniversary Awards Luncheon in London on Wednesday 31 August 2016.

Autonomous Ships:

Coming soon to an ocean near you...

World class engineering group Rolls-Royce is one of the vanguards involved in what will be one of, even arguably the biggest and most disruptive changes ever seen in the shipping industry – autonomous ships. As the authors of this article point out, it is a case of when and not if.

In this specially commissioned article by The Report, Simon Kirby and Patrick Wheater from Rolls-Royce give a detailed insight into what this new technology will look like, it's far reaching implications and what it means for marine surveyors.



It is midnight in the North Atlantic. A 50,000 tonne bulk carrier receives the latest weather report. There's a storm ahead. Quickly, quietly and without any human intervention the ship changes course. The route and speed are recalculated to ensure on time arrival. A burst of data bounces off a satellite updating a remote operating centre on the other side of the world which is monitoring this vessel and thousands of others. The ship's owners and the harbour master at its next destination are advised of the revised route instantaneously and automatically. Correcting course once again to avoid a smaller vessel off its starboard bow the ship continues steadily on its way.

A ship this intelligent is some way off. But it's not if, it's when. Rolls-Royce anticipates the first commercial unmanned vessel – a road ferry or a tug perhaps - will be in operation in coastal waters before the end of the decade. The company expects fully autonomous ocean going cargo ships to be routinely plying the world's oceans in 15-20 years' time.

Remote controlled ships, piloted by humans on shore, and autonomous ships, which can think for themselves are the latest beneficiaries of the increasing trend for digital connectivity. The rise of the internet of things has sparked interest in a range of autonomous vehicles including cars, planes, helicopters, trains and now ships. Companies and researchers around the world are working on projects to turn these ideas into reality.

What Rolls-Royce calls "ship intelligence" a portfolio of products and services - comprising equipment and system health monitoring, optimisation and decision support and remote and autonomous operations - which it believes will allow ship owners and operators to transform their operations by harnessing the power of data is, according to the company's Marine Business' Vice President of Innovation Oskar Levander "the future of the maritime industry."

"As disruptive as the smart phone, the intelligent ship will revolutionise the landscape of ship design and operations. Smarter ships and the Internet of Things will allow the creation of new services which will support existing players to make their businesses more efficient and enable new players, with new business models, to enter the marine sector with similar potentially disruptive effects to that Uber, Spotify and Airbnb have had in other industries."

Growing worldwide interest in remote and autonomous shipping has been driven by the potential benefits. They are expected to be safer, more efficient and cheaper both to build and to run.

According to a report published by insurance company Allianz in 2012 between 75 and 96 percent of marine accidents are a result of 'human error.' This is often as a result of fatigue. Remote controlled and autonomous ships will reduce the risk of injury and even death amongst ship's crews and the potential loss of or damage to valuable assets.

Remote controlled and autonomous ships will allow vessels to be designed with a larger cargo capacity, better hydrodynamics and less wind resistance. With no crew to accommodate certain features of today's ships, for example, the deck house, the crew accommodation and elements of the ventilation, heating and sewage systems can be removed. This will make the ship lighter, cutting energy and fuel consumption, reducing operating and construction costs and facilitating designs with more and different space for cargo.

Intelligent ships will also provide a response to a growing maritime skills shortage. Ships are becoming increasingly complex with more and more systems, needing more and more skilled operatives. At the same time changes in lifestyle and expectations are reducing the attractiveness of seafaring as a career with fewer people wanting to spend weeks at a time away from home and family. Remote and autonomous operations could see the transfer of seafaring jobs, requiring high levels of education and skills, from sea to remote operations centres on land and make them more attractive to young people entering the industry. And of course crew costs will be reduced.

At a conference in Helsinki in April the Rolls-Royce led Advanced Autonomous Waterborne Applications Initiative (AAWA) project unveiled a vision of how remote and autonomous shipping will become a reality.

The AAWA project brings together universities, ship designers, equipment manufacturers, and classification societies to explore the economic, social, legal, regulatory and technological factors which need to be addressed to make autonomous ships a reality. The project has received support from the Finnish Funding Agency for Technology and Innovation; Tekes.

The project combines the expertise of some of Finland's top academic researchers from Tampere University of Technology; VTT Technical Research Centre of Finland Ltd; Åbo Akademi University; Aalto University; the University of Turku; and leading members of the maritime cluster including Rolls-Royce, NAPA, Deltamarin, DNV GL and Inmarsat.

Commercial experience and industry insight is provided to the project by commercial ship operators; ferry operator Finferries, and dry bulk cargo carriers ESL Shipping Oy.

According to Jonne Poikonen, Senior Research Fellow, Technology Research Centre at the University of Turku who, with Dr Mika Hyvönen, Senior Research Fellow at Tampere University of Technology, is leading the AAWA Project's technology research: "The technologies needed to make remote and autonomous ships a reality exist – the sensor technology needed is sound and commercially available and the algorithms needed for robust decision support systems – the vessel's 'virtual captain' – are not far away. The challenge is to find the optimum way to combine them cost effectively in a marine environment."

A series of tests of the sensor arrays in a range of operating and climatic conditions will be carried out in Finland in the coming months. Those tests will be on board Finferries 65 metre double ended ferry, the Stella, which operates between Korpo and Houtskär.

The project is also exploring how to combine existing communication technologies in an optimum way for autonomous ship control. It has created a simulated autonomous ship control system which will be connected to a satellite communications link as well as land based systems and will allow the behaviour of the complete communication system to be explored.

The intelligent ship of today is already making use of considerable data as part of its daily activities. Systems already exist to monitor the vessel's main machinery – such as its engines and propulsors - and ensure they are performing as efficiently and effectively as possible.

In the future ever more data will be transmitted from sensors embedded in the heart of all the ship's key systems – engines, deck machinery, electrical systems, propulsors etc. This will allow Rolls-Royce experts and the ship-owner to ensure that the system is working correctly and in the most efficient manner possible maximising ship profitability. When a critical part starts to fail preventative maintenance can be scheduled for the ship's next visit to port or, in a worst case scenario, remote repairs attempted.

The standardisation of ship systems, the collection and analysis of significant quantities of operating data and the development of enhanced analytic capabilities will be crucial to the development of remote and autonomous ships by providing a massive set of historic statistical data from which robust trends can be drawn and valid predictions of ship reliability made. Significantly more standardised and reliable ships will be essential if they are to operate at sea for several weeks without on board engineers.

Such a rich stream of data and more standardised ships will also allow Rolls-Royce experts and ship owners to manage their fleet for optimum profit. By looking at data from individual ships together they will be able to identify the best combination of route, cargo, maintenance schedule and fuel price for the fleet as a whole getting the maximum value from a set of very expensive assets.

Getting this data from ship to shore is vital. Future autonomous and remote control ships will require constant and virtually real-time connections with the shore. In late 2015 AAWA partner Inmarsat, who provide expertise in data transfer and communications, launched its third Global Xpress satellite providing future intelligent ships with high-speed broadband connections from space. This satellite - located 22,000 miles above the Pacific - completes a worldwide network eliminating "coverage blackspots" across the world's oceans.

Protecting those data streams and the ship's systems from hackers - cyber security- is crucial. Rolls-Royce will exploit nearly 20 years' experience in their Aero Services Business which securely streams important and sensitive data from more than 10,500 engines belonging to over 1200 customers.

In the future it is unlikely that there will be a single autonomous solution applicable to all vessel types. Some could be completely uncrewed and look radically different from current vessels. Others will be a blend of autonomous and remote control; sailing autonomously in open water independently picking the best route and speed and remotely controlled where more advanced manoeuvres are required – navigating in congested waters and entering and leaving port. Some, such as cruise ships, are always likely to need crew if only in a customer service, safety and reassurance capacity.

Remote control will be important for the first generation of intelligent ships from a legal point of view. There will have to be a human being in charge, although they may be in charge of a large number of ships at any one time switching between them as the need arises. Different types of ship, or ships at different stages of their voyage, will require

different levels of remote control. A cargo ship far out at sea will require limited human supervision whilst ships operating in more congested shipping lanes, close to shore or on entering port will require much more.

As a consequence the final technological building block is the development of remote control systems and control centres. Building on the experience of other remote control operations centres and the development of simulators for training purposes research is being undertaken into all aspects of the design of such centres. This must take into account not just ergonomic factors but also the user interface, the ease of use and how to convey a realistic awareness of what is happening using all the senses.

As part of the extensive feasibility study into the unmanned ship concept introduced in 2013, Rolls-Royce, together with project partners VTT (Technical Research Centre of Finland) and TAUCHI (Tampere University of Computer Human Interaction), has visually represented the result of research into how ships can be safely and efficiently operated from land-based control centres.

These centres will host a master mariner operating a fleet of vessels from a state-of-the-art control room. Such centres will have an array of technology to help them maintain a real-time overview of worldwide shipping traffic along with status reports on individual vessels. In the event of a malfunction the master can review the available options and recommend the appropriate measures to be taken.

While the concept itself looks as though it could be a scene from Hollywood's latest sci-fi movie, much of the technology presented is currently available and being used in other industries. However, the underlying theme of the results is the important role situational awareness and sensory perception will continue to play in ship operation even when they are controlled from ashore.

In the research, which evaluated the lessons learned from other industries where remote operation is commonplace, such as the aviation, automation, military, forestry, and space exploration sectors, Rolls-Royce, VTT and the TAUCHI found the potential inability to use all the senses to assess ship and machinery performance – the human-machinery interface – as one of the main challenges faced in the development of the shore-based ship control concept.

This was a fundamental aspect of the research, as Iiro Lindborg, General Manager, Remote & Autonomous Operations, Ship Intelligence, explains: "A master mariner or engineer sitting in a control centre thousands of miles away would have no bodily feeling for the vessel, but replicating that 'feel' for the ship through real-time auditory channels and direct video feeds from surveillance drones could create that environment."

"This is the first public display of results from research aimed at understanding the human factors involved in operating ships remotely. Situational awareness has been a major area of this project as we needed to understand how crews ashore can continue to use their senses to get a feel for what is going on in the engine room and other parts of the ship," he says.

Other aspects of remote ship operation considered in the research include working in both local and global environments, the tracking of vessels, the optimisation of ship-to-shore communication, machinery self-inspection capability and ship hand-over processes.

According to Lindborg, the shore-based operation of a vessel would need between 7 to 14 people working in shifts to monitor and control the operation of a fleet of vessels. One supervisor can look after five vessels when just monitoring them. However, roles that currently don't exist onboard ship would need to be created for the shore-based control centre.

"We're living in an ever-changing world were unmanned and remote controlled transportation systems will become a common feature of human life. Remote control and monitoring technology is already impacting the developments taking place in the aerospace and automotive industries, so it is inevitable that this technology will become widespread. It offers unprecedented flexibility and operational efficiency," adds Lindborg.

Acknowledging that unmanned ships and their control centres will have to have full system and software redundancy in order to protect critical infrastructure, Lindborg explains that Rolls-Royce has lot of experience in this area from the pioneering work carried out by the Rolls-Royce Software Centre of Excellence that leads the company's remote engine monitoring activities in the aerospace sector. "Together with our industry partners, we have all the necessary available equipment to safely and efficiently move the

vessel remotely," he says. "This is the big revolution in shipping."

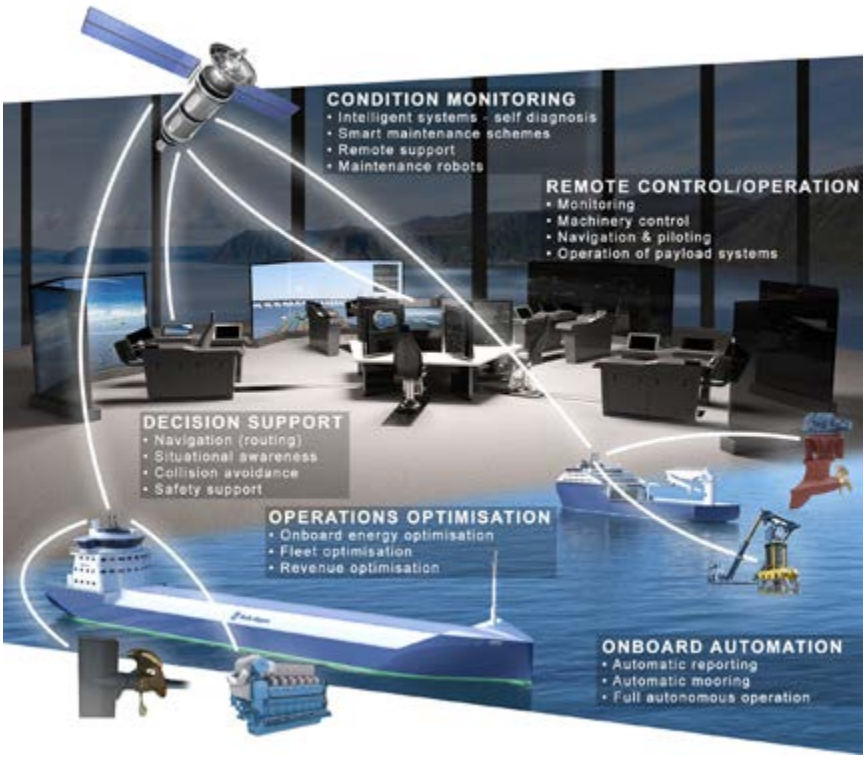
"The next step is to build a project demonstrator, which we hope to have completed by the end of the decade. We are looking at the different vessel types and their operational profiles as they will need different types of control centres in different locations," concludes Lindborg.

To secure regulatory approval, the support of ship owners, operators and seafarers, as well as wider public acceptance, the operation of remote and autonomous ships will obviously need to be at least as safe as existing vessels. According to Risto Jalonen, Senior Research Scientist at Aalto University, who is leading the AAWA Project's safety strand: "The marine industry has some experience of systematic and comprehensive risk assessments. However, when new or emerging technology is involved a wider and deeper understanding of a new and changed risk portfolio – with a variety of known and unknown hazards – is needed. The AAWA project is identifying and exploring these hazards and developing approaches to tackle them."

The results of such studies will be used to make recommendations to regulators and classification societies to support the development of standards for remote and unmanned vessel operation.

Such rules are vital to the development of remote and autonomous ships according to the project's legal strand leader Dr Henrik Ringbom Adjunct Professor at the Åbo Akademi University in Turku/ Finland: "For remote and autonomous shipping to become a reality we need efforts at all regulatory levels. The legal challenges of constructing and operating a demonstration vessel at a national level need to be explored, while simultaneously considering appropriate rule changes at the IMO. Legislation can be changed if there is the political will."

"Questions of liability for autonomous ships are subject to national variations," Ringbom continues,



"but generally it seems that there is a less urgent need for regulatory change in this field. What also needs to be explored is to what extent other liability rules, such as product liability, would affect traditional rules of maritime liability and insurance." These questions are being studied by researchers at the Faculty of Law at the University of Turku.

According to Levander, "This is happening. It's not a question of if, it's a question of when. Embedding smart ship equipment into an existing vessel is the first step. We envisage a remotely operated vessel in local waters as the first stage and in operation by 2020. By 2025 we hope to have a remotely operated uncrewed vessel at open sea and five years after that we expect unmanned ocean going vessels are to be a common sight on the ocean."

WHAT THIS MEANS FOR MARINE SURVEYORS

The reliability of ship systems will grow in importance for unmanned ships. This will mean more responsibility and work for the surveyor to ensure that the health and condition of all systems are at the highest level. New health management tools will be developed for predictive condition monitoring that will enable the surveyor to better assess the current and future condition of the ship systems and equipment.

More service and maintenance will be performed while the ship is in port. Large service teams with dedicated system experts will board the vessel when arriving in port. Fast response will be crucial as will the need for quick and efficient surveying of the maintenance work at short notice.

The ships being surveyed will have less traditional ship systems, such as HVAC, water production, sewage treatment, freezer rooms, galleys, lifesaving appliances etc. On the other hand, the ships will have more sensors, automation, and communication equipment. This will shift the surveying work to a more digital domain.

IS A FIBREGLASS BOAT SAFE TO GO TO SEA?

BY **Hugo DuPlessis**
HONMIIMS

After the high profile incident of the CHEEKI RAFIKI, which capsized and foundered in the North Atlantic Ocean in May 2014, with the tragic loss of four lives, experienced surveyor, Hugo DuPlessis, poses the question, 'Is a fibreglass boat safe to go to sea?' Hugo is an expert in fibreglass and is a published author on the subject, having written several books over the years.

The sad loss of the CHEEKI RAFIKI has drawn attention to the design, construction and use of fibreglass boats, which I and some others have been forecasting almost since they were first introduced. Yet it is not the material which is at fault but the way it is used to design, build and the freedom it offers, both technical and economic, to escape the constrictions of traditional construction materials. We shall never know what really happened during those terrible last few hours, but we can make some intelligent assumptions based on experience with similar boats and the design of fibreglass boats in general.

To understand what might have happened to the CHEEKI RAFIKI we have to go back to basics. What exactly is 'fibreglass', or more correctly GRP. How does it behave under stress? How does it fail?

Fundamentaly fibreglass appears to be quite simple, but in practice it is the most complex material ever used for building boats. Basically it consists of a synthetic resin, usually the plastic now known popularly, but wrongly, as polyester reinforced with very fine glass fibres. The resin, which binds it all together gives solidity, shape, appearance and compressive strength. The glass fibre provides high tensile strength. The relative proportions vary widely according to the form of the reinforcement and factors, such as a high, or low strength and assosiated cost. Typically they are about 80% resin and despite the name only 20% glass fibre. It is important to realise that there is no chemical reaction between the two. Each retains its full range of properties within the final mixture. Thus the resin solidifies into a solid block or sheet within which are embedded the billions of almost invisible thin fibres, only a tenth the thickness of a human hair.

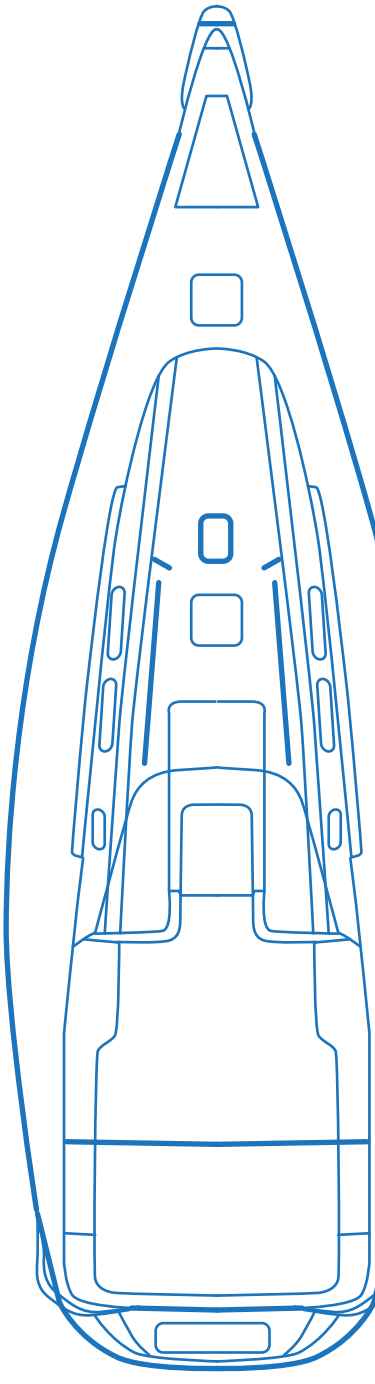
Under ultimate stress the polyester cracks, or crazes into substantial pieces, but the individual glass fibres snap cleanly one by one according to the actual stress in that immediate micro locality. As that will never be the same at every point of a structure it follows that failure must always be progressive.

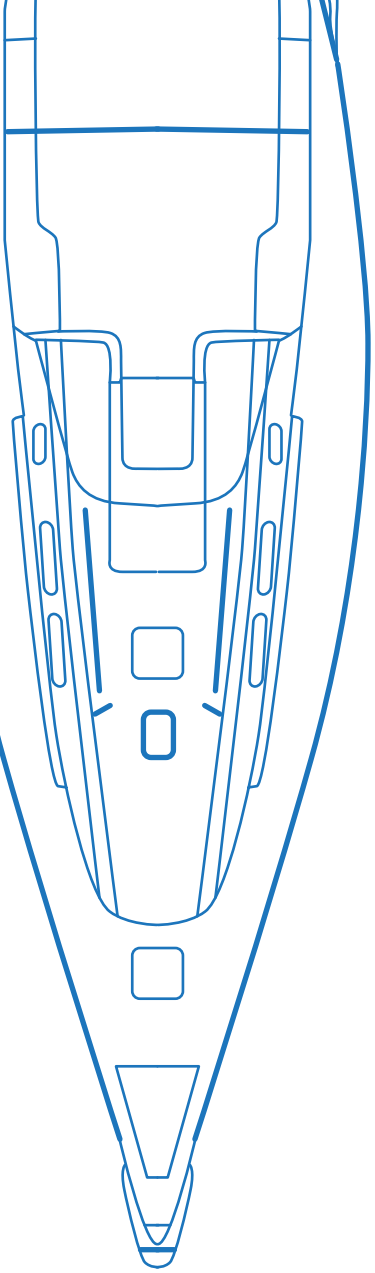
At first it will be too slight to show any sign and the damage will be negligible. Nevertheless a broken fibre will be permanent. All damage however minor will be cumulative. Therefore a great deal of damage is hidden. Not until serious enough to beome visible, generally by hair cracks in the gel coat, will there be visible signs. It is impossible to say at what level of damage they may start. However it is important to realise that cracks are not the first signs but indicate that hidden damage has already reached a significant level. Research has shown it can be 50% and to the full depth of the moulding, not just the gel coat. Because gel coat cracks are undesirable cosmetically some boat builders use 'improved' gel coats which are more flexible. The cracks go but so do the valuable signs of hidden damage.

Repair. It is a feature of fibreglass that damage severe enough to puncture the hull generally takes the form of a split or multiple splits, especially at the ends which are natural stress concentrations. Only when damage gets more severe will the splits spread, or coalesce to form holes. Glass fabrics are strongly orientated and this must be maintained as it is often a sophisticated pattern of stress distribution.

Because fibreglass fails progresively it is obvious that any damage such as a split or bolt hole must be surrounded by a halo of hidden damage where the obvious physical damage merges into sound material. Therefore unless the repair and strengthening is carried well beyond the obvious split the repair is not complete. As the strength lies in the glass fibre it is essential that the repair restores the continuity. It is not enough to simply bung in filler.

WHAT EXACTLY IS 'FIBREGLASS' OR, MORE CORRECTLY, GRP. HOW DOES IT BEHAVE UNDER STRESS? HOW DOES IT FAIL?





IN FACT IT IS NOT DIFFICULT TO PULL STRONG, WELL MOULDED FIBREGLASS LAMINATE APART AND ALSO TO CLEAVE OR PEEL IT, ESPECIALLY IF ALONG A LAYER OF CLOTH.

The damage must be bridged with glass fibre. Although finished fibreglass may appear to be modestly flexible, all bending can only happen through damage along the axis of bending. The sharper the bending the higher the stress. Just how the line has run may require imagination. Very often it is hidden damage. Nevertheless all suspected areas should be repaired or reinforced. Moreover stress can be transferred by other structural members and cause damage at a distance.

For example, a bulkhead can cause damage to the opposite side. The common matting in angle forms a stress concentration and will be damaged by flexing of the panel it secures. There are plenty of boatyards with competent workers able to carry out moulding repairs but, being weak on the theory, they may be unaware of hidden damage. Management too, and even surveyors, especially insurance surveyors employed to minimise a claim, are often even worse and just because they cannot see it may deny that hidden damage even exists at all.

Like plywood, fibreglass is built up layer by layer during moulding. When wet-on-wet there is some chemical connection and if using mat, or spray-up, there is some interlaminate linking of fibres. But wet-on-dry, or with any woven fabric, the interlaminate bond is purely adhesive and although horribly sticky, polyester is not a good adhesive! Therefore a fibreglass moulding is basically layers of strong glass fibre reinforced polyester bonded together by weak unreinforced polyester. In theory it is wrong; but it works. However, only if properly designed. In particular, joins should not be designed in a way which puts the interlaminate bond in tension. Or to put it simply - so that it pulls the two sides apart. This should include what happens in forseeable accidents like running aground. It may be difficult to see where these are, or have been overlooked in the design, including the whole concept of stiffening the bottom by bonding on the complex matrix.

The connection of the matrix to the hull looks simple enough. Two large fibreglass mouldings glued together with a strong adhesive. But examined in detail it looks different and a lot can go wrong. For a start the mateing surfaces are not in intimate contact. Both are unevenly finished and have to be ground smooth. Each side is finished with a layer of polyester, so no matter how super the glue the bond depends on these surface layers of polyester.

In fact it is not difficult to pull strong, well moulded fibreglass laminate apart and also to cleave or peel it, especially if along a layer of cloth. This has puzzled many experts and convinced them that the boat is defective, or even beyond repair. I am glad to say that I have saved some owners extremely expensive and quite unnecessary repairs by showing them it to be normal.

This bond of the major matrix submoulding is the vital component in the whole strength of the keel area of the boat. Failure was probably a major factor in the loss of the CHEEKI RAFIKI. Moreover to get to such a serious condition it must have been building up for a conderable time, probably the life of the boat, and over a large area. It is significant that the main parts of the wreckage seem to be from that part of the boat.

Wood and metals are bought in planks or sheets and there is a limit to how much they can be fabricated to shape with a lot of waste by doing so. There is also a high cost in labour and machinery. The joy of fibreglass as a construction material is the ability to create designs in shapes, complexity and economy never possible before with traditional materials. But as often happens when a new industry develops quickly, bad features creep in too

and, backed by economics and production convenience, become accepted as standard practice despite being contra to the accumulated wisdom of ages past.

The following is an example...
A yacht at sea, hundreds of miles from land, hits floating wreckage or a container and now has a serious leak but the crew is confident they could contain it if they could find the source. However, the accommodation was formed by one large pan moulding and the leak appears to be somewhere behind this where it formed the lockers under the bunks. Consequently it could not be seen and still less reached. Water was gushing in through the maze of clearance holes for pipes and wires and also along the edges where it had broken away. The electric bilge pump could not cope and the rising water would soon put the electrics out of action along with the radio. The crew was having to bale. It was now dark and to add to their danger they faced a rising storm. The situation was desperate unless they could reach that leak. They tried to cut away the fibreglass but did not have proper tools and few yachts these days carry an axe onboard. In any case with the violent motion and small space it would be almost impossible to wield one effectively. Because of its springy nature fibreglass is quite difficult to destroy. Added to this, it would take at least a week to reach the nearest land and long before they got near would have succumbed to exhaustion.

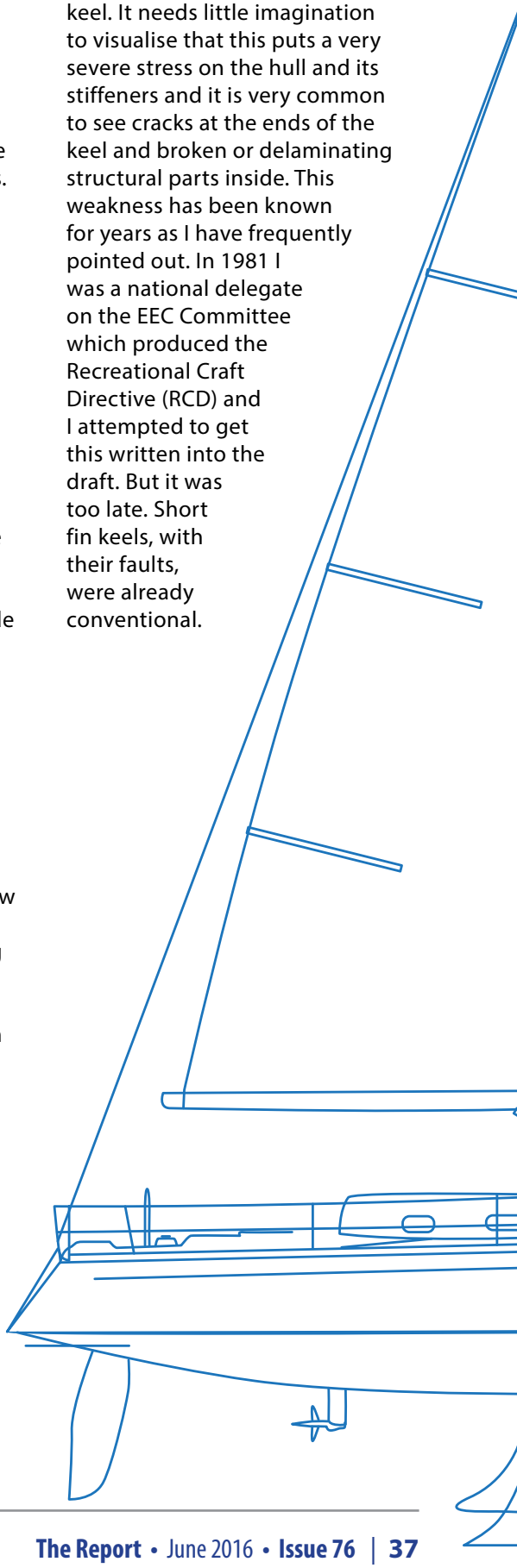
ALL THIS COULD HAVE BEEN AVOIDED QUITE SIMPLY AT DESIGN STAGE...

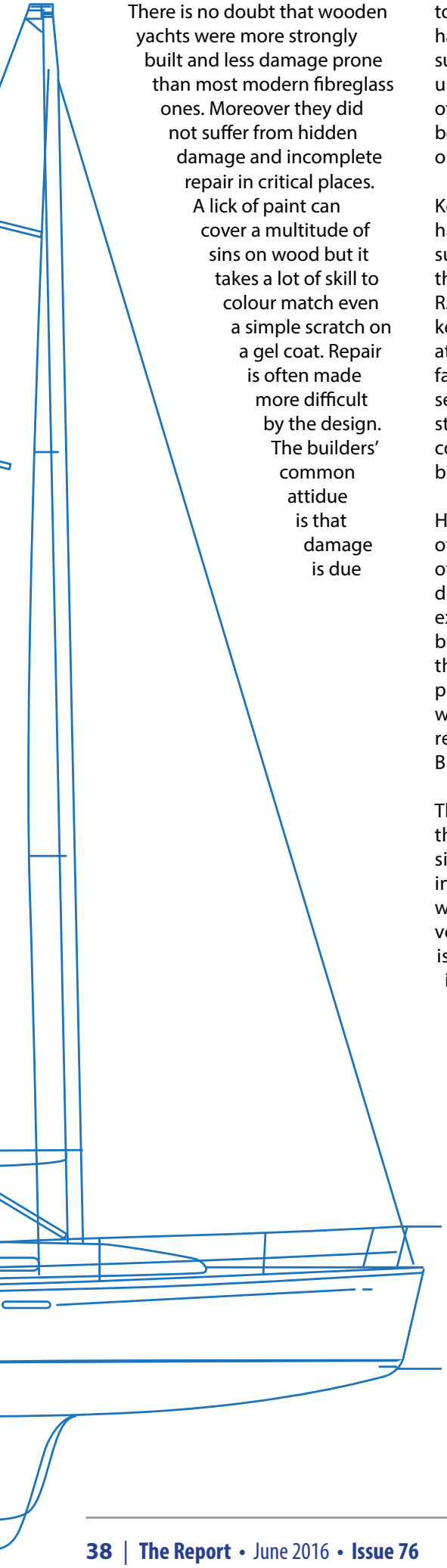
All this could have been avoided quite simply at design stage by making sure all the inside face of the hull could be reached in an emergency. If there had been access, this boat and crew could have been saved just by stuffing a sock into the hole, or one of the other methods devised by desperate mariners in the past. There are endless regulations about safety equipment which should be carried. But there is very little about practical damage control on small sea going yachts.

The problem is not new. I and some other surveyors have been warning of the danger for years. The last signals from the CHEEKI RAFIKI showed that an uncontrollable, inaccessable leak was the frightening situation the crew was having to face; and to make it worse they faced darkness, a rising storm and exhaustion. It is not the material, fibreglass per se, which can make a boat unsafe at sea, but the novel technical and ecomomic designs which fibreglass has made possible. These have led builders to disregard the accumulated wisdom and knowledge of past boatbuilding and the sea.

Very often boats take the ground as a matter of course and are suitably built to do so, but in the more dramatic cases it is unintended. It is a moot point how much a builder should anticipate this. Old wooden yachts had long massive keels, the backbone on which the boat was built. They tended to be strong but heavy. In contrast the natural construction for a fibreglass boat is a thin monocoque shell. Being lighter it is faster too and therefore more marketable. The whole concept of how a boat should be made has changed dramatically. Being no longer needed for strength the keel has become a short hydrodynamic fin based more on aircraft design than boat.

For example, a long keel boat will ride up and over a rock, decelerating comparatively slowly. But a fin keel, as is almost universally used today, will trip and stop dead. The bow drops and the cockpit rears as the boat rotates about the toe of the keel. It needs little imagination to visualise that this puts a very severe stress on the hull and its stiffeners and it is very common to see cracks at the ends of the keel and broken or delaminating structural parts inside. This weakness has been known for years as I have frequently pointed out. In 1981 I was a national delegate on the EEC Committee which produced the Recreational Craft Directive (RCD) and I attempted to get this written into the draft. But it was too late. Short fin keels, with their faults, were already conventional.





There is no doubt that wooden yachts were more strongly built and less damage prone than most modern fibreglass ones. Moreover they did not suffer from hidden damage and incomplete repair in critical places. A lick of paint can cover a multitude of sins on wood but it takes a lot of skill to colour match even a simple scratch on a gel coat. Repair is often made more difficult by the design. The builders' common attidue is that damage is due to the owner's carelessness. I have had many cases where a boat has suffered serious damage or been unduly expensive to repair because of inappropriate design, where a better one would have escaped with only modest abrasion.

Keels do not just fall off. There has to be some reason. The first suspect is usually the keel bolts and that was the case with the CHEEKI RAFIKI. It was claimed that all nine keel bolts broke simultaneously, or at least as many to allow complete failure. Although the possibility seems implausible, modest rust stains from suspected crevice corrosion around the site of one bolt was quoted as evidence.

However the wreckage suggests other possiblities. The remains of the hull show a general disintegration of the keel area except at the ends where the keel bolts appear to have been pulled through. With generous backing plates, secured by a nut and washer, even if a little undersize as reported, this would be impossible. But what if they were not there?

The bolts have been cast into the keel so there is no chance of simply fitting new ones. Even to inspect them means lifting the whole boat off the keel. This is a very serious problem. Obviously it is going to be expensive and will inevitably mean a long delay.

Fibreglass is comparatively easy to crush. A further effect of omitting the strong backing plates is to dramatically increase the compressive stress of tightening large keel bolts. Without backing plates to distribute this stress and prevent crushing it can seriously weaken the whole keel area as well as pre-stressing it. Modern production probably specifies a torsion setting for spanners, which without the backing plate, may seriously exceed the crushing strength of the bottom.

It is not unusual for the main strengthing members to be in the form of a separate sub-moulding bonded to the hull. It can claim to be a well tried sytem. However the safety of the yacht depends entirely on that bond between the matrix and the hull which is apt to break away under stress of damage, accident or prolonged hard sailing. Mistakes during manufacture are also possible. This is obvious at the edges, but what it is like in the large area of the middle where it is is impossible to see, unreliable to test and even more so to repair? Moreover it is just the sort of place for hidden damage and even complete separation, which can only get worse with ageing and hard use.

CHEEKI RAFIKI had a history of hard use, but we can only guess what caused the yacht to capsize and sink and the circumstances of which led up to it.

Books on fibreglass by Hugo DuPlessis

Fibreglass Boats
ISBN-13: 978-0713662092

Fibreglass Boats: Construction, Gel Coat, Stressing, Blistering, Repair, Maintenance
ISBN-13: 978-1408122747

Available from Amazon

In memoriam of the four sailors who tragically lost their lives in the CHEEKI RAFIKI incident:

Skipper Andrew Bridge aged 22 and crew members James Male, 22, Steve Warren, 52, and Paul Goslin, 56.

Planned Maintenance Systems for Superyachts

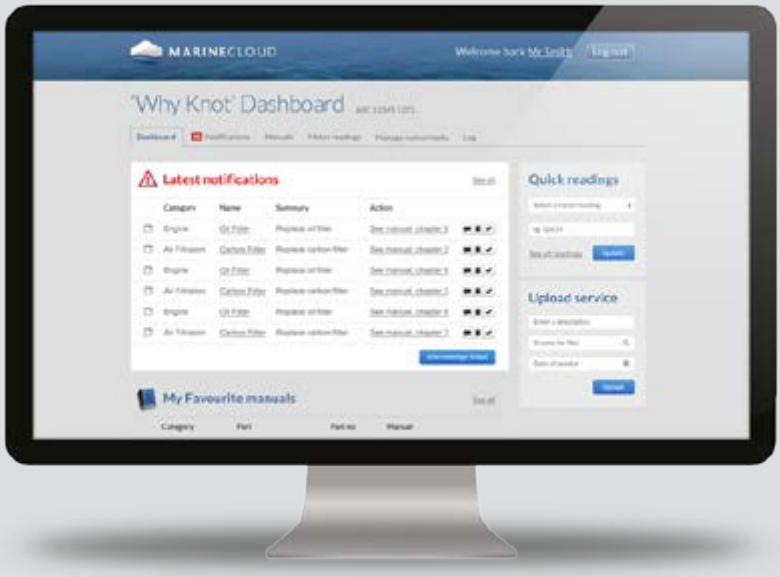
MARINECLOUD

Introducing Marine Cloud, the brainchild of Matt Folkes and Steve Munro.

We hear every day how software developments can make a positive impact on our daily working lives and so it is in the area of superyacht maintenance too. The marine industry can be notoriously slow when it comes to new ways of doing things, as software and digital platforms become more integrated with every aspect of life.

What makes this story even more heart warming is that the two entrepreneurs behind Marine Cloud, are both former IIMS students who connected via the Institute. As a consequence they have developed the software and successfully brought it to market.

Here's their story so far...



The founders of Marine Cloud say that planned maintenance systems are the smart approach to through life maintenance and are a must for the management of any high value marine asset.

What does Marine Cloud do?

Marine Cloud is a Planned Maintenance System utilising cloud technology that assists yachts with the management of manufacturer maintenance schedules, vessel specific maintenance schedules such as class and flag requirements. It also helps with managing operational needs such as certification, checklists, unplanned maintenance and defect reporting.

How did the company start?

The company is fairly new in the marketplace being just four years old. It was originally started to solve the issue of yachts storing hard copy user manuals, which are extremely bulky and difficult to store.

Marine Cloud's initial customers were soon asking if they could add new features to the system. "They knew there were other options already out there, but they liked us and the service we provided," said Matt Folkes. He added, "It's safe to say it feels like we have created a bit of a monster as the service we offer and the digital platform has grown significantly over the last four years."

How did the company grow?

Thankfully early customers were impressed with the product and service they spread the good word. As always a personal recommendation is better than any advertising.

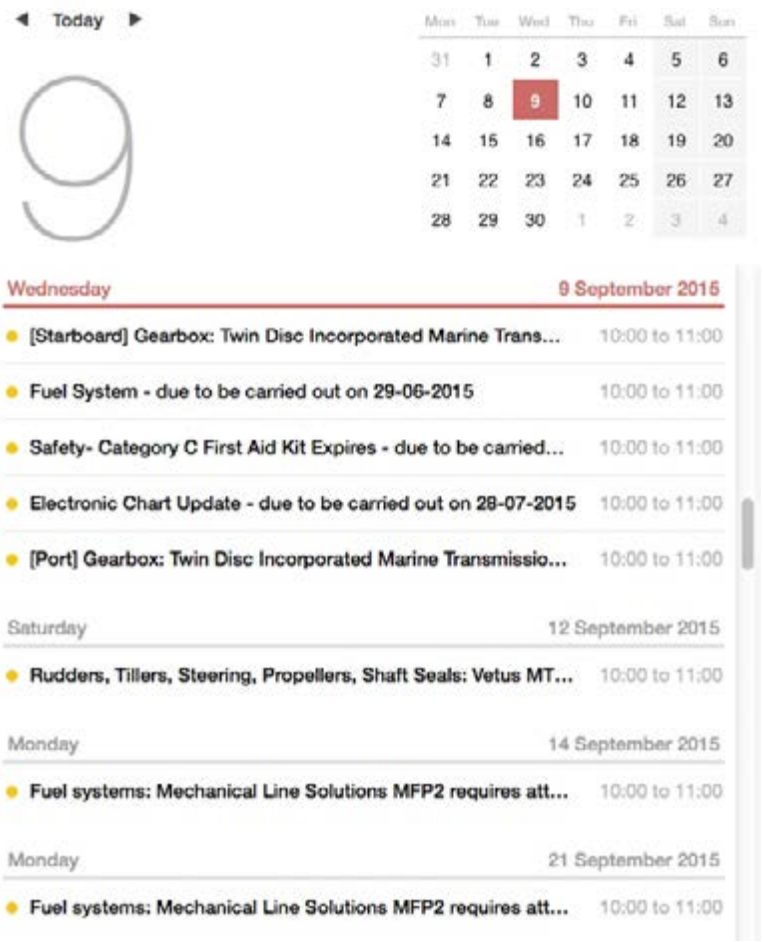
Who are Marine Cloud's customers?

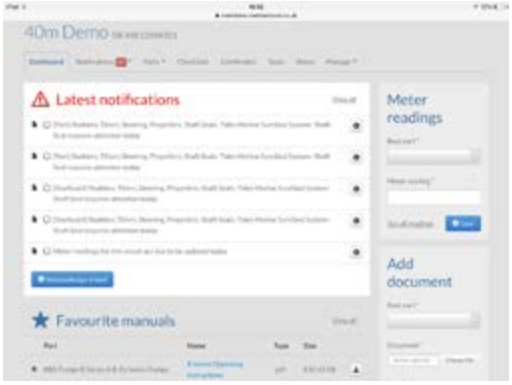
Most of Marine Cloud's customers are private or commercial motor yacht owners and operators between 30 metres and 50 meters. They also have charter sailing yachts and small commercial vessel fleet operators amongst their clientele.

Currently sub 50 metre yachts are Marine Cloud's target, but they are also seeing more requests from sub 30 metre production and semi custom motor yachts which they have embraced in to their programme.

On the whole, their experience has been that yacht crew are keen to embrace new technology and they have had a warm reception. However, some management companies seem more set in their ways, some of this is out of loyalty to their existing providers or in-house solutions which Marine Cloud respects. But as Matt says, "To make progress Marine Cloud needs to be disruptive in its marketplace."

The world of yachting is very dynamic. Many of the Captains and Chief Engineers that the company deals with are often looking after multiple vessels and are always on the move; the cloud based digital platform allows them to access and update vessel data anywhere in the world. They can be sat in an airport lounge with a smart phone and have access to all the details they need.





Why Marine Cloud?

Marine Cloud provides a service where they inventory the entire vessel and setup a Planned Maintenance System. The crew don't need to do anything – just let the team get on with it. It is Matt's opinion that this goes a long way as senior yacht crew involved with new builds are usually juggling a lot of pulls on their time beyond the build of the vessel.

It's a bespoke service so the company's customers know if there is a question, issue or amendment they can pick up the phone, or email and the team will take care of the problem.

Marine Cloud says it enjoys great relationships with their customers and they like that they can pull from the joint experience of a marine surveyor and captain. They get technical and operational input if and when they need it.

Why do yachts need Marine Cloud?

The story is always the same. The boats are getting bigger, more complex and the crew workload is high. Something is needed to help crew with increasing expectations and demands on their time. A planned maintenance system is the solution to this mounting issue.

"What sets us apart is the ease of use," says Matt. "We wanted a system that can be used without needing to read the instructions," he commented further.

Marine Cloud isn't there to tell crew how to do their jobs. It's a tool that assists them through the automation of schedules and record keeping.

Many yachts pay for surveyor build management to ensure the best quality product is delivered. Planned maintenance systems can be looked at as an extension of this. Rolling out a planned maintenance system from day one ensures all maintenance is done on time and recorded in a digital, highly searchable format, allowing export for any future use or examination such as during survey, inspection or the re-sale of the vessel.

What are the benefits?

Recently Marine Cloud was described by a returning customer already with a 40 metre yacht as "It's almost like having another person on-board just for the administration."

Marine Cloud says it was delighted to hear this. The system was doing exactly what they had intended, assisting crew with the administration associated with running a boat; and buying them that small amount of extra time to complete the maintenance and checks, which are often pushed to the end of the list or omitted, ultimately meaning the yacht is better maintained and protects the owner's asset.

Everything is recorded in an online log meaning there is never a question over the amount of work being done on-board. Owners benefit from a comprehensive log of all the maintenance and upkeep which can be harnessed and exported during the resale process.

What's next for Marine Cloud?

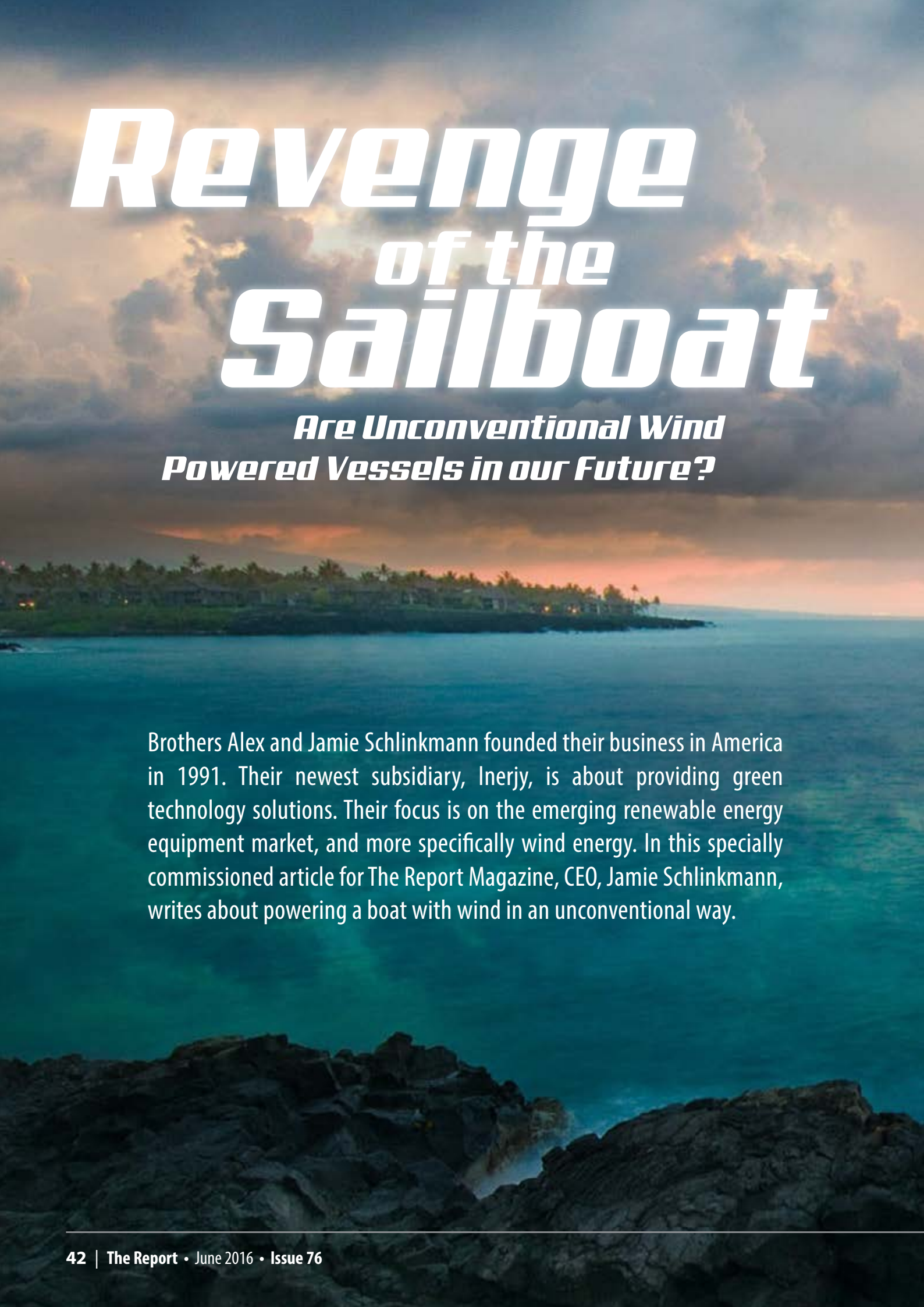
Matt and Steve say they have just released their third and largest software update introducing new features taken from valuable customer feedback. They have already started the process with RINA and DNV-GL for Class type approval, which they expect will galvanise their position as a serious provider of planned maintenance systems.

The business is strategically identifying territories and appointing Account Managers, so that they have more contact time face to face with their customers. Marine Cloud has recently appointed an Account Manager for the South of France, based out of St. Tropez that means they should have good reach and more presence in the area. And that is exactly what Marine Cloud is all about; utilising technology and providing a bespoke, personalised service.

IIMS would like to wish Matt Folkes and Steve Munro continuing success with Marine Cloud.

MARINECLOUD

Marine Cloud can be contacted by email at: **info@marinecloud.co.uk** or see their website at: **www.marinecloud.co.uk**.



Revenge of the Sailboat

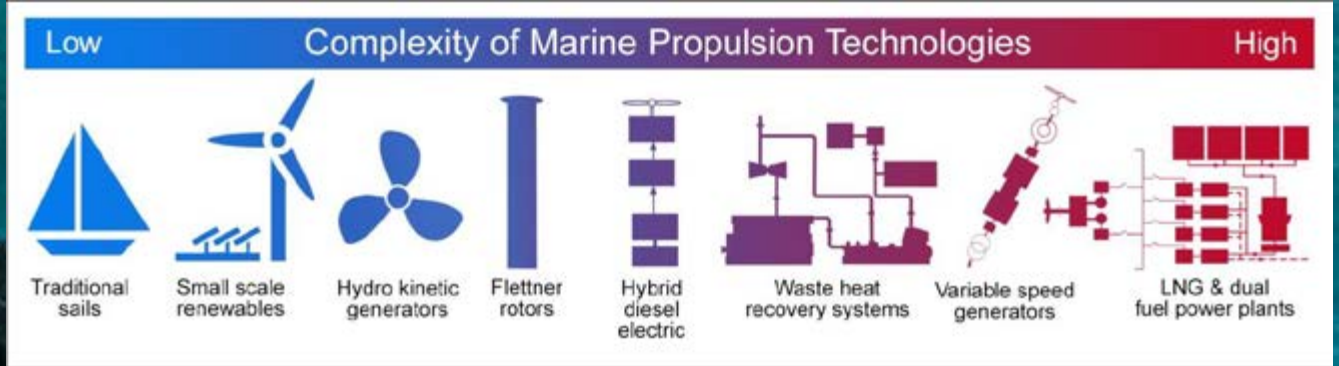
Are Unconventional Wind Powered Vessels in our Future?

Brothers Alex and Jamie Schlinkmann founded their business in America in 1991. Their newest subsidiary, Inerjy, is about providing green technology solutions. Their focus is on the emerging renewable energy equipment market, and more specifically wind energy. In this specially commissioned article for The Report Magazine, CEO, Jamie Schlinkmann, writes about powering a boat with wind in an unconventional way.

There's a new idea getting a lot of attention: powering a boat with wind—in an unconventional way. Aside from pleasure boats built by and for purists, fossil fuels took over the high seas already over a century ago. Since then ship propulsion technology has been refined over and over again, culminating in complex multi-fuelled hybrid electric drivetrains with many pieces of technology added to enhance performance. Although efficiencies and emissions levels have certainly improved, this common theme remains: the prime mover is fossil-fired. Today a variety of factors are calling conventional wisdom into question. In an energy-rich environment such as the open ocean, why carry all of the energy used on a voyage aboard?

MOTIVES FOR CHANGE

Rising fuel prices combined with a desire to curb carbon emissions have spawned interest in technologies beyond traditional efficiency measures. The global commercial marine sector accounts for nearly one billion tonnes of carbon emissions annually, more than the entire nations of the UK, Canada, or Brazil. This sobering fact has prompted the International Maritime Organization, a division of the UN, to issue regulations like the Energy Efficiency Design Index (EEDI) for all new ships exceeding 400 GT. A big question remains whether these standards will reach beyond levels that can be achieved with conventional efficiency approaches. Given the return of cheap oil beginning in 2015, it is a concern that only technologies with the best performance, benefit, or broadest appeal may survive.

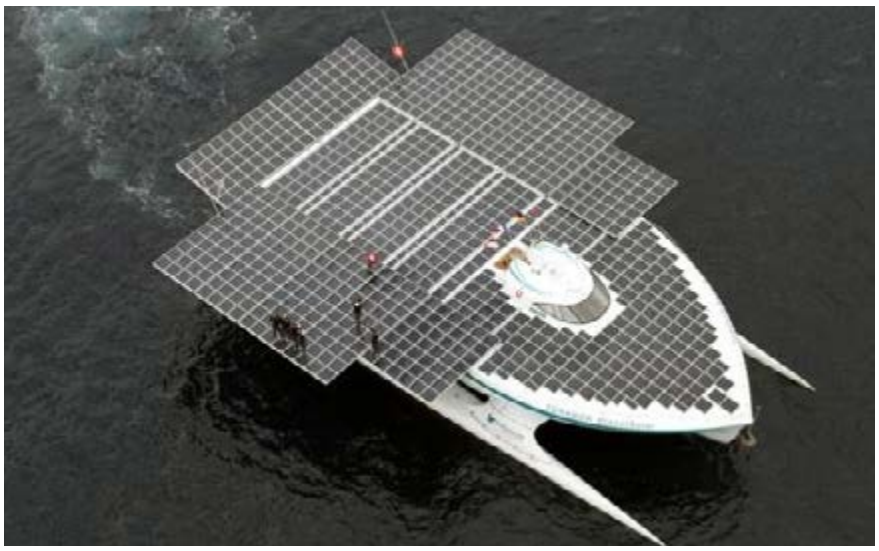


Perhaps above all Northern European emissions restrictions have been the principal drivers for efficiency improvements and the renewed study of wind and non-traditional propulsion technologies. The Netherlands for instance has recently announced plans to eliminate the allowance of any emissions whatsoever on inland waterways. Of course this kind of regulation will mostly promote hybrid drivetrains and battery technologies.

RENEWABLE ENERGY RESOURCES

Wind, wave, and solar PV are the favoured non-fossil energy sources being tested on oceangoing vessels. Wind obviously has the greatest history, and not by accident. Average wind power densities on the open ocean are considerably higher than on land, and except for a narrow equatorial region, exceed 400W/m^2 (measured perpendicular to the wind direction). Wave energies are tremendously dense and most often measured in kW per horizontal meter of wave front (as with wind, perpendicular to direction of travel). Bear in mind wave power only scales linearly and not in two dimensions like solar or wind. Densities of 30kW/m and higher are common, but tapping that energy has proven challenging on fixed or moored devices so even more so on a moving vessel. Solar has the disadvantage of night hours containing no usable energy and in contrast to the wind densities it ranges from about 300W/m^2 in the equatorial region to half of that in Northern Europe.

Note that all these resources have limitations to their extractable energies. For wind, the theoretical limit, known as the Betz limit, is 59.3%. As a device removes power from a free stream of wind, the wind begins to blow around the device. Thus the device's own disruption of airflow limits its usefulness. The most efficient turbines today convert about 50% of the kinetic energy in wind after conversion losses. Monocrystalline solar, currently the most efficient technology available, has about a 32% theoretical conversion limitation and in practice the best cells are working at about a 21% efficiency after conversion losses. This limit is known as the Shockley-Queisser limit and exists because of physical limitations of moving electrons in a semiconductor. Finally, wave energy also has theoretical limitations but they correspond to given wave periods and amplitudes. Every mariner knows that these factors are widely varied and that's one of the key reasons converting wave energy into electricity is so difficult. Some devices claim to achieve 80% efficiencies in lab testing but real-world tested machines have fallen very short of that number. In a shipboard application the absolute power converted for use (resource x efficiency) will take second place to the device's impact on propulsion efficiency and other practical aspects of integration into the vessel.



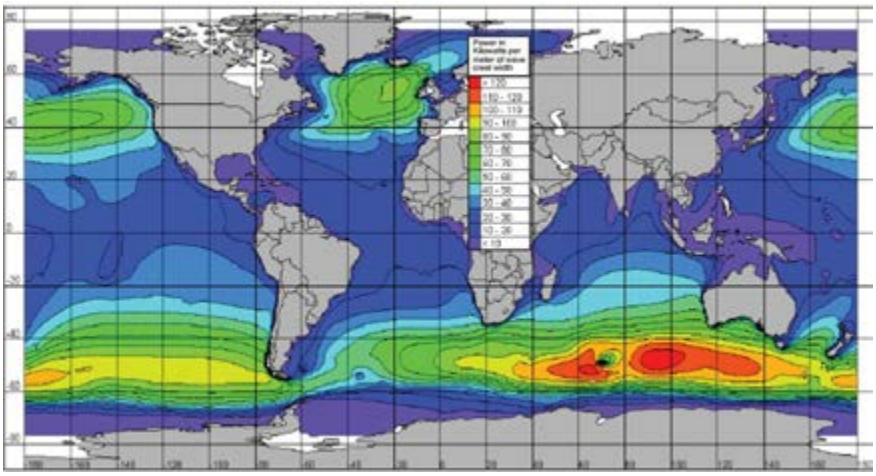
TECHNOLOGIES

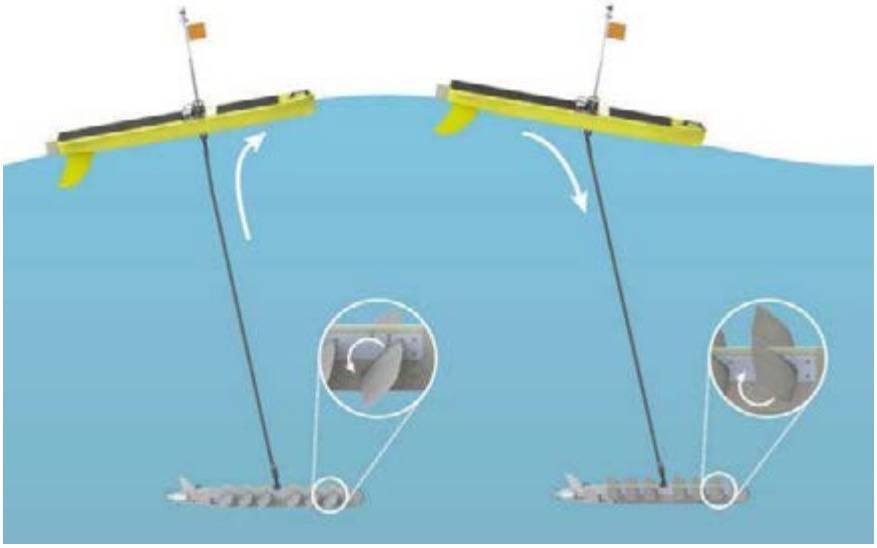
Solar PV

Silicon based PV is great technology. It is simple, reliable, predictable, and cost-effective. PV modules belong on nearly every vessel that has an electrical system developed enough to take advantage of their power output. Many commercial vessels like tankers and bulk carriers could supply entire hotel loads if properly rigged with PV systems. The catch is that it's only enough power for propulsion in dedicated, special purpose vessels. Planet Solar's MS Turanor is a great example. This vessel proved solar's place at sea by circumnavigating the globe on PV power alone. A look at the vessel however reveals some obvious practical limitations to the scale of the energy capture integrated. Other vessels such as Nissan's Nichioh Maru demonstrate successful and practical use of solar on a car carrier. On the yacht side, Italian yard Arcadia builds an 85' vessel with a unique integration of 3.5kW of solar PV. This is a well-engineered example, but just one of many builders now integrating the tech into their builds. Greenline of Slovenia has delivered more than 400 boats worldwide with PV systems and hybrid electric drivetrains. With these boats it is possible to sail on PV power alone, albeit at very slow speeds.

Wave

The most successful wave powered vessel so far, and perhaps the only one in serial production, is Liquid Robotics' Wave Glider®. Its clever design is like a surfboard with an underwater kite tethered beneath it. As waves lift and drop the main hull, the 'kite' has foils that pivot to different angles of attack to pull

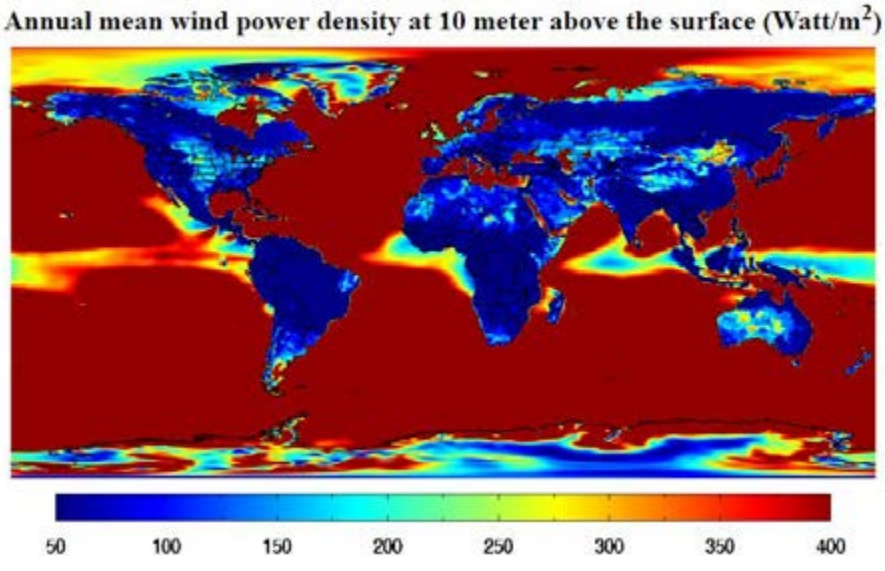




without negatively impacting propulsion dynamics. It remains a contest whether someone can crack the code that unleashes the immense power of waves for vessel propulsion. So far this contest doesn't have many competitors.

Wind

Numerous wind propulsion technologies are coming onto the market. On the commercial shipping side, this topic has such attention that an organization was established to promote and 'sectorize' the effort: the International Windship Association, or IWSA (wind-ship.org). Some are new ideas, many are not, but there is a substantial effort by corporations to market these products and a corresponding audience to consume and test them.



Traditional Sails

Sails could be the most successful invention ever created. We know by ancient drawings that man has been sailing for at least seven thousand years. Imagine having just a 1% royalty from every sail ever sold. Sure there are more wheels used today, but how about a thousand years ago? Sails are simple, reliable, and flexible, but they have some downsides: They are only moderately efficient. Their airfoil shape and limited speed don't capture energy as well as a modern wind turbine. One exception would be a high speed foiling catamaran racer. Since this vessel can sail faster than the wind, its airfoil can do a more efficient job of extracting energy. Also the area of wind acting on a fixed sail is limited to barely over its actual sail area, and its efficiency on that can only be optimized for a narrow range of operating conditions (vessel course, wind direction, etc.). It is cumbersome to adjust sails to suit a given condition, especially when sail area must be added or removed. Sometimes condition or course adjustments are even risky—to equipment and to person.

Kites

Kitesurfing is a mainstream watersport. Kite surfers can be found in waters near virtually every coastal town across the globe. A logical use for the technology that brings such excitement to tens of thousands of people is propelling ships. Some benefits: higher-altitude winds contain more energy; vessel retrofits are more feasible than other technologies. Drawbacks? Hard to automate; limited range of heading/wind direction benefit; hard to maximize the useful area/propulsion benefit. Assuming oil prices rise again, this one should be a no-brainer for existing operators.

Rigid Sails
Promising simpler rigging and higher aerodynamic efficiencies, rigid sails, also known as wing sails, have emerged. Many projects are under construction or test of different rigid sail configurations. These span the range from dinghies to cruise ships. While they can deliver on higher efficiencies, one principal drawback limits the extent of their benefit: they are fixed-area and therefore difficult to reduce their exposure in high winds. Note that most ships and oceangoing vessel concepts depicting rigid sails have a significantly lower sail area than their traditional sail counterparts. It is however a simple and effective way to propel on the high seas.

Hydro Kinetic Generators
These devices are used on sailboats to provide electrical power for hotel loads or charging batteries. Although not a propulsion technology, they allow an otherwise powerless sailing vessel the ability to produce electricity for refrigeration, electronics, or other minor loads, using the motion of the boat through the water. Propeller driven devices can either be mounted below the waterline or even towed. While it's a simple and compact solution, it slows down the vessel by more than its proportional electrical output.

In circumstances where desired electrical power output is a small fraction of propulsion energy, and the loss of speed is acceptable, it is a good renewable solution.

Flettner Rotors
These tall spinning cylinders can now be seen on several vessels. They work like a sail to provide aerodynamic force that pulls the ship along; only instead of an airfoil they use something called the Magnus Effect to create their lift. This effect is what curves the motion of a spinning ball. Multiple organizations have refined versions of the technology, including Thiiink, Norsepower, and Magnuss. Since the rotors themselves require an external energy source to rotate them, the technology is presently most useful to provide supplemental propulsion to conventional drivetrains. Also, as with a traditional sailboat, the thrust provided is greatest when the wind is at a right angle to the vessel's heading. Since the thrust amount can be controlled by rotational speed, and the cylinders themselves are relatively unobtrusive, it has some mainstream curb appeal. It has also successfully been tested as a retrofit on the Ro-Ro carrier MS Estraden. The ship's operator, Bore Ltd, working with the VTT Technical Research Center of Finland proved a fuel savings based ROI with a single rotor and proceeded to install a second rotor onto the ship.

Wind Turbines
Wind turbines are a logical technology for maritime propulsion. They are extremely efficient at converting wind into electricity, and since the blades move they act on an area of a wind stream much larger than their blade area. This is known as the turbine's swept area, and this helps a control system mitigate loading in winds stronger than desired. Also a turbine can maintain optimal angle of attack and blade speeds regardless of vessel course relative to wind direction. This provides a tremendous advantage over most other wind propulsion technologies. Still, the efficient blades can provide too much load high above the deck of a boat in some conditions; and traditional turbines operate at speeds over 200 mph which makes them uncomfortable to be around.

New Turbine, New Possibilities
The EcoVert75™ wind turbine was designed for distributed generation applications, like powering schools, retail stores, etc. The key requirements focused on people living and interacting near the machine. It is technically called a pitch-controlled H-VAWT, a design originally modelled, prototyped, and tested by McDonnell Aircraft Corporation (now Boeing) in the early 80's. It produces a healthy 70kW in a 21 knot wind at 32 rpm. With a few modifications from the terrestrial version it is an excellent machine for use aboard a vessel. Here are a few reasons why:

- Less than ¼ the head mass and a third the storm wind loads compared to other similarly sized turbines
- Less than ½ the operational blade speeds of conventional turbines at similar power outputs
- Very low noise & safe blade path for vessel occupants
- High power efficiency, Cp > 0.5 at some wind speeds
- The ability to produce propulsion thrust directly with the turbine instead of converting all the wind power into electricity, saving conversion losses

Gemma One
Propulsion scale wind turbine power is the heart of Gemma One. A common metric used to describe a sailing vessel is the sail area displacement ratio (SA/D). This basically allows vessels to be compared to each other in terms of a power to weight ratio. The highest SA/D ratio tested with a turbine thus far has been less than five. Gemma One's target SA/D is eleven. Given that ocean going sailing vessels are commonly around 15, and racing vessels above 20, there is opportunity for future advancement in power to weight ratio metrics. Battery density and desired capacity play a role in this ratio.

The 2,500 kWh energy storage system will be divided into the two outrigger hulls, along with the DC-DC converters, the propulsion motors and drives, and HVAC equipment. Cooling requirements are suppressed by the highly paralleled architecture. Unlike an automobile or even a ferry, the battery system is sized for a very low duty cycle. This approach limits the interfaces with the main hull, eliminates raw water systems entirely, and allows building and testing of these hulls at a subsystem level—completely decoupled from the requirements of the main hull.

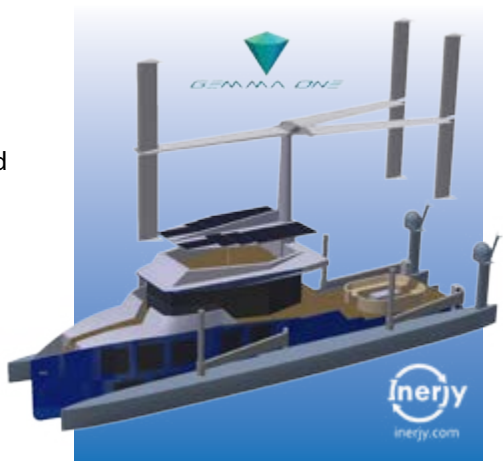
Gemma One's main hull is dedicated to little more than guest and crew spaces. In transit conditions the hull is jacked up clear of the water so it has no main running surfaces. Given the absence of diesels or related systems, all spaces within the main hull can be environmentally controlled, and relatively little mechanical space is necessary. A large enclosed garage is provided for storage of multiple tenders and recreational equipment. Performance numbers are decent for a boat that gets all its energy from the environment. She boasts a top speed of 16 knots and in average Caribbean conditions an unlimited range at 5 knots. Five days at anchor (or adrift) will fill fully depleted batteries.

IC engine propulsion has served ships well and will continue to for many years, especially on high speed vessels. It has drawbacks however that seem ubiquitous today in the absence of alternatives. One such drawback is the physical I/O that contributes to virtually all internal shipboard maintenance:

- Introduction of copious amounts of humid air into mechanical spaces
- Introduction of fuel having conditioning and contamination mitigation requirements
- Introduction of cooling water that fouls complex cooling systems
- Output and exhausting of high temperature gases
- Output of high frequency mechanical vibrations

These negatives are eliminated along with the engines. Moving electrons around is not immune to failure but generally does not require a lot of maintenance, and while the wind turbine has moving parts they are few in number compared to an IC engine. Gemma One is a lot closer in complexity to a sailboat than a modern diesel vessel.

Not all purposes are suitable for wind powered battery electric ship technology. As of now the batteries will hold far less energy than large fuel tanks. But with most regions of the world's oceans having abundant wind energy available on a regular basis, is there a need to carry weeks or months of energy on board?



"REVAMPING OF EXISTING PROCEDURE MAY LEAD TO IMPROVED PERFORMANCE" ...A DRAFT SURVEYOR'S PERSPECTIVE

BY **Capt. REAZ SHAHID,**
AFIIIMS

Progressive development of my insight in to draft survey during service on board bulk carriers as Chief Officer and as a draft surveyor in various ports has inspired me to write this article. I am presently working as an independent draft surveyor in one of the largest bulk exporting port. Though we are known as draft surveyors, our role here is more than that of a draft surveyor as our involvement starts right at the outset of trimming stage - while attending a vessel for final draft survey. At the time of attending a vessel for initial draft survey, the job we perform is similar to any other draft surveyor.

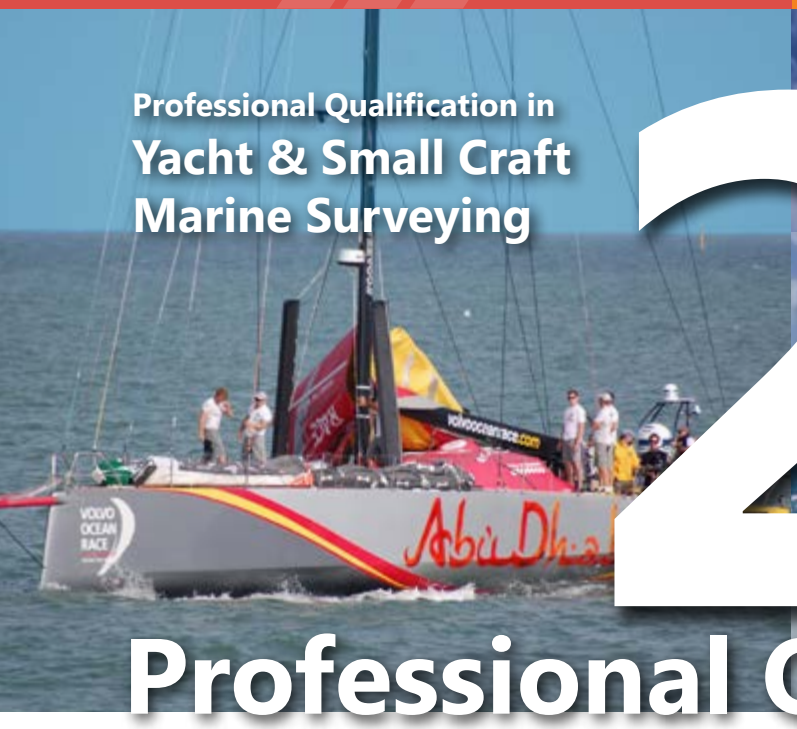
Personnel who know about bulk carrier loading operations are familiar with the terms of Maximum Sailing Draft (MSD) and the trimming of a ship. The port where we are appointed to conduct draft survey, MSD for the vessel is assigned by the port authority depending on multifarious factors, including, but not limited to the estimated time of sailing, tidal range, swell height, load line mark, load line zone applicable to the port and so on. As draft surveyors we ensure that the vessel is loaded in compliance with MSD applicable to the vessel and also determine the total cargo quantity loaded on board.

Only capsize bulk carriers are calling at this port and most of the ships are fitted with nine cargo holds/hatches. Ore carriers with five holds also call at this port, but I have not included that type of ships for my research as very rarely I have attended those vessels. During my attendance on board the ship as a draft surveyor, I have noticed that most of the Chief Officers use either cargo hold/hatch 1 & 9 or 2 & 8 or 3 & 7 for trimming purposes. However, the choice of cargo holds by Chief Officer for trimming of the vessel is contingent upon various factors such as the number of grades to be loaded, availability of grades at the stockpile, assignment of hold for each grades and so on. Hence, the Chief Officer is not in a position to follow any combination of holds that they feel convenient for them. Consequently, we observe that Chief Officers are not consistent in regard to choosing of trimming holds every time we visit the same ship. Prior trimming. The surveyor along with Chief Officer check all six sided drafts to calculate the cargo quantity that has to be poured in pre-assigned trimming hold in order to achieve required departure trim as well as maximum sailing draft.

I have mentioned above only three combinations of trimming holds as most Chief Officers usually use only those pair of holds for trimming purpose congruent to their specific requirement. In the past while I was working on a bulk carrier as Chief Officer and presently as a draft surveyor, I have been closely monitoring the likely changes of fore, aft and mid ship drafts while using each pair of cargo holds for trimming. After loading cargo in cargo hold no. 1 & 9 for trimming, we normally observe the hogging effect on the vessel upon completion of the trimming pour. Contrary to that when cargo hold no.3 & 7 are used for trimming, the vessel experiences a sagging effect. However, loading of cargo in holds 2 & 8 usually maintains the status quo in term of hogging and sagging or per se very seldom, slight sagging of the vessel. However, except on a very few exceptions, it never reduces sag or increases hog. Though aforementioned changes are analogous for most cape size bulk carriers, but the actual values cannot be determined in advance. So far I haven't seen any instrument installed on board the vessel which can take into account the effects of sagging or hogging on actual draft resulting from loading in trimming holds. Hence, while calculating required cargo quantity for trimming, these changes cannot be determined in advance and therefore, actual draft on completion of loading is very much unlikely to match with the calculated draft. It is well understood by all involved with the loading operation that dead freight claim of any amount is usually not preferred by the shipper. Therefore, there is a propensity by all involved with the draft survey to remain on the safe side by reading the drafts which are close to calculation.

Consequent to various restrictions imposed on bulk cargo loading operations in most of the ports (e.g. minimum quantity of cargo that can be ordered for trimming is 500 mt; under normal circumstance, even a small amount of dead freight claim is not acceptable; vessel's sailing draft should be not be more then MSD assigned to the vessel by the port authority), all involved in the draft survey do not have any other choice but to utilize the effect of sagging and/or hogging on the vessel's draft to their advantage as the change of cargo quantity due to hogging and sagging of the vessel is still an enigma to the surveyors.

Inclusion of a clause in the charter party agreement which will allows flexibility of MSD and or minor adjustment to operational procedures may significantly reduce operational difficulties. In my opinion, MSD should not be fixed; instead it should be a range of drafts keeping in mind the statutory requirement. Dead freight claim should not be entertained if a vessel's MSD is within the agreed range of drafts. Alternatively, two times draft checks and three holds trimming should be considered. In such cases, one of the middle hold should be used as final (3rd) trimming hold and second draft check should be carried out prior loading 3rd trimming hold. Surveyors don't need more than five minutes to calculate the required cargo quantity for 3rd trimming hold and it is even possible to complete this calculation even before positioning the loader over the 3rd trimming hold. Operational costs may accrue slightly due to the change of procedure, but this cost will remain far less the other tangible benefits that may flow from implementing the aforementioned change.



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GALVANISM, ELECTROLYSIS & PITTING

BY **Eur. Ing. JEFFREY N. CASCIANI-WOOD** HONFIIMS

A Rare Case of Stray Current Electrolysis

Introduction

The vessel discussed in this paper is a standard British narrowboat of 15.25 m by 2.10 m by 1.30 m with a draught of 600 mm. This type of vessel was chosen because in the forty plus years that the author practised as a marine surveyor he must have examined somewhere in excess of a 1,000 of them. The comments discussed, however, apply equally well to a Dutch or other type of barge or, indeed, to any other type of metal boat. On about 40% of such vessels it is common to find a band of medium to deep pitting on both hull sides just below the waterline of the order of 400 mm width. Listening to owners, yard staff and others and reading other marine surveyors reports such pitting is commonly and incorrectly usually described as being due to electrolysis or, these days, to "hot marinas and stray currents".

To put that into perspective, of the many vessels that the author has seen on slips or in drydocks, he can be sure that only ONE actually had an electrolytic problem and only ONE other had pitting that could be reasonably ascribed to a stray current situation. Without any doubt, the rest suffered pitting which was clearly due to *galvanic* action. The purpose of this paper is, *inter alia*, to clarify the difference between electrolysis and galvanism and to describe what may or should be done to repair of prevent further pitting and to discuss the ins and outs of the bad but common practice of double or over plating.

Electrolysis *versus* Galvanism

Before the subject if shell plate pitting is discussed, it is necessary for the marine surveyor to understand clearly the difference between electrolysis and galvanism. When electricity was first used on board ship in the latter end of the 19th century, it was common practice to use the metal hull as the return. The system was, at that time, direct current only and a wire was run from the switchboard to the item to be powered which was connected directly to the hull. The system was simple but it was soon discovered that the hulls of ships so fitted pitted badly and the fault was correctly diagnosed as due to electrolysis. Thus the word entered the marine vocabulary where it has remained ever since. That problem was solved by the classification society's insistence that a two wire system be installed and use of the metal hull as a return forbidden. Nevertheless, steel hulls still developed pitting which, though it was due to galvanism, was, and still frequently is, incorrectly put down to continued electrolysis. The marine surveyor should note that the word electrolysis like the word osmosis is much mis-used and often mis-understood in the marine industries. The marine surveyor must understand the difference between the two processes which are described and differentiated below and he must use the words correctly and be able to recognise them in the field. When a piece of copper and a piece of mild steel are placed in a container full of a liquid (called the electrolyte) nothing happens. If, however, the two are connected together electrically, then both are collectively called electrodes and a current which can be measured by an ammeter then flows through the connection. To complete the circuit, a flow of electrons takes place from the mild steel (called the anode) to the copper (called the cathode). That results in the mild steel becoming pitted. That process was discovered by Galvani in the 18th century and named after him. The pits are roughly circular in area and conical in section. The principle of the process is illustrated in the Figure 1 above. Since the grains that make up a wrought iron plate are 98% ferrite (*i.e.* pure iron); wrought iron plates do not suffer from this defect when placed in sea water.

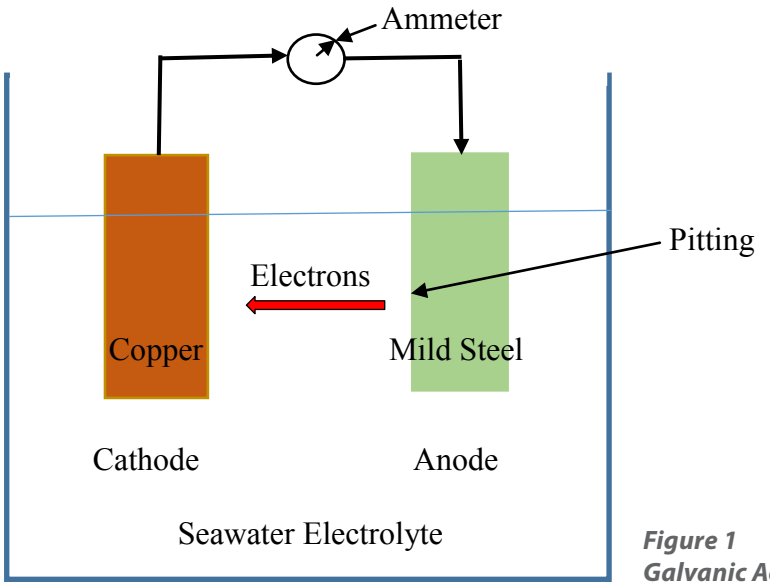


Figure 1
Galvanic Action

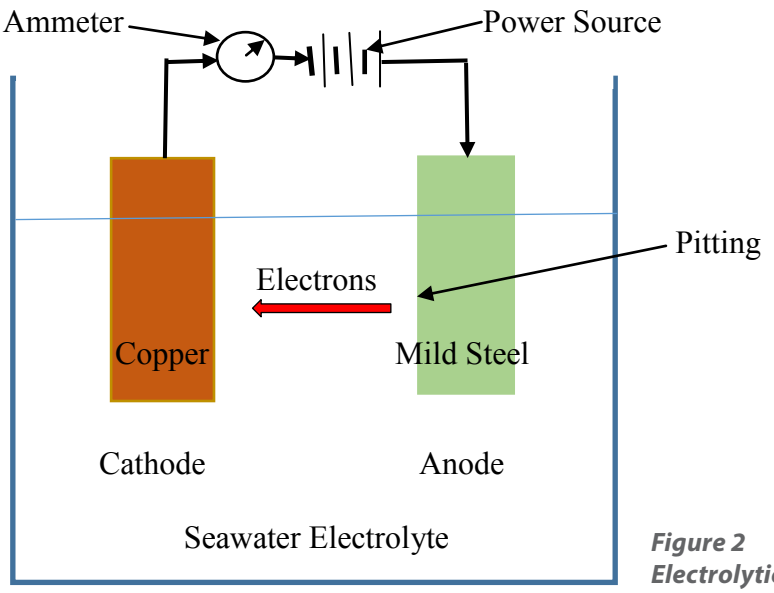


Figure 2
Electrolytic Action

In mild steel, however, the grains that make up the steel are 75% ferrite and 25% various carbides and the latter are cathodic to the ferrite, which means that mild steel does suffer surface pitting when placed in seawater due to such galvanic action. If, however, a power source such as a battery or a stray current is placed in or enters the circuit, the rate and the intensity of the current flow and consequent pitting increases and the process is then called electrolysis. Again, the principle of the process is illustrated in Figure 2 above.

The type and shape of the pits resulting from the two processes are the same. The pits that result from galvanic action, however, are usually in the main concentrated in a band, as stated above, of about 400 mm width which runs the full length of the vessel just below the water line whereas those that result from electrolysis are usually concentrated in one smallish area and often run vertically downward. To prevent either electrolytic or galvanic pitting, the mild steel must be fitted with blocks of a suitable metal called

sacrificial anodes. That action is called cathodic protection and its principle against electrolytic action is shown in Figure 3 below which also shows that it is the anode that pits and corrodes not the steel. The same principle applies if the source of the pitting is galvanic in origin. The anodes should be made of zinc for use in salt water, aluminium alloy for use in brackish water and aluminium alloy or magnesium for use in fresh water.

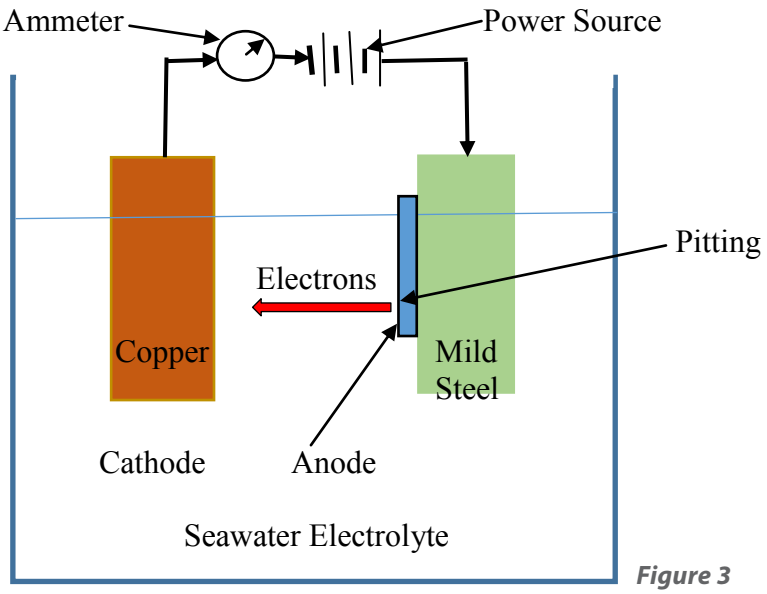


Figure 3

The Principle of Cathodic Protection

Examination of Pitting

If, when surveying a steel boat, the marine surveyor sees that she is badly pitted, there are a number of things that he should notice or examine. They are:

1. The position of the pitting on the hull,
2. The area pitted relative to the vessel's wetted surface area,
3. The pitting concentration within the affected area,
4. The density of the pitting,
5. The vertical shape of the pits,
6. The depth and surface area/ depth ratio of the pits.

The marine surveyor should check by means of a grinding test whether the metal from which the vessel is built is wrought iron or mild steel. It is not necessary to try to determine which of the several processes for the production of steel has been used.

1. The Position of the Pitting on the Hull

The position of the main areas of pitting should be described in the marine surveyor's report by stating on which side of the vessel it was found, its depth below the waterline and its distance from either the forward or the after perpendicular. This information should be given in the marine surveyor's report so that, in any future survey, any extension or increase in area of the pitting can be estimates and action taken as necessary.

2. The Area Pitted relative to the Vessel's Wetted Surface Area

To be able to do this, the marine surveyor needs to be able to make a reasonable estimate of the wetted surface area of the vessel he is surveying. It is not necessary to use any of the standard methods offered in books on naval architecture for *calculating* such an area as they are far too complex and require the measurement of carefully spaced girths round the hull. It is accurate enough to use a simple formula which is based on the well known Kirk's analysis and which states that:

$$A_{WS} = kLWL(B_{WL} + 2_{HM}) \quad m^2 \quad (1)$$

where

A_{WS}	=	wetted surface area	m^2
L_{WL}	=	waterline length	m
B_{WL}	=	waterline breadth	m
H_M	=	mean draught	m
k	=	a constant	-

The value of the constant k varies with the type of boat but for most of those considered in the article it usually works out at about 0.98.

The marine surveyor may be aware that a well known supplier of anodes has published a similar but incorrect formula for wetted surface area to that given above.

The wetted surface area of the narrowboat used as an example in this article was 49.45 m^2. On a survey the total area of pitting found on the boat and which was considered to be severe was 11.6 m^2. That gave a pitting area/wetted area ratio of 0.2345. Analysis of the author's records would suggest the following Table (page 58) as a guide line.

In practice, the marine surveyor must use some common sense when using this Table (page 58).

Pitting Area Severity

Pitting Area Ratio	Description
≥0.25	severe
0.15 to 0.19	Heavy
0.10 to 0.14	Medium
≥0.09	Light

Table 1

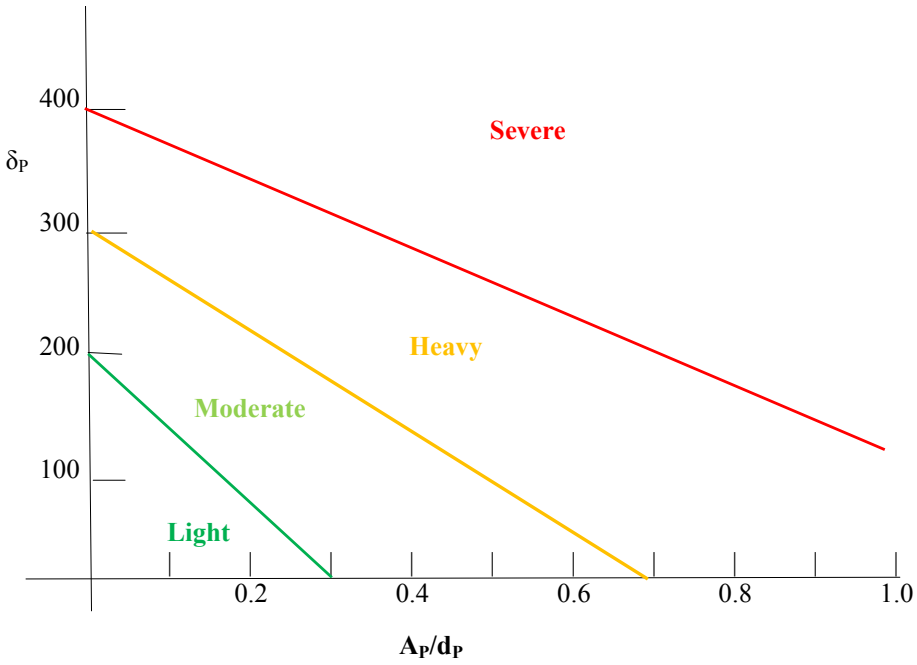


Figure 1 Pitting Assessment

3. Pitting Concentration within the Affected Area

With normal galvanic pitting the defect is usually evenly spread over the affected area. If, therefore, the marine surveyor finds that there is an area where the pitting is particularly heavily concentrated, he should look for a reason to explain it. It may be that, in addition to the galvanic action, there is also an electrolytic or stray current leak (unlikely) or it could be due to a different steel manufacturing method. ***Beware!***

4. The Density of the Pitting

It is good practice when surveying a narrowboat with a wide band of pitting round and just below the waterline for the marine surveyor to make a check on the density of the defect which is usually defined as the number of pits within an area of one square decametre and given the symbol δ_P. He should note that the nominal thickness of the plate (t_P) has no effect on the pitting density but is, on the contrary, affected by the depth (d_P) and/or the surface area/depth ratio (A_P/d_P) of the pits. Having measured the depth of a reasonable number of the deepest pits, it is good practice to record, possibly in his report, the pit depth/plate thickness ratio (d_P/t_P). Figure 4, which is based on the author's long experience and careful study, gives the standard which he used to use as one against which the severity of the density can be measured.

At least three places in such a band of pits should be checked, measured and photographed on each side of the vessel. The marine surveyor should choose such places and mark on the side of the hull a 100 mm x 100 mm square together with an identifying mark in white chalk and take a dated and timed photograph of each. The number of pits within that area should be counted on a print of the photographs. Copies of the photographs should be included in his written report.

5. The Vertical Shape of the Pits

The vertical shape of both electrolytic and galvanic pits is usually but not necessarily a rounded cone. Any major alteration from that shape will usually indicate that another factor is at work and the marine surveyor should investigate to see whether he may be able to identify it.

6. The Depth and Surface Area/Depth Ratio of the Pits

It is possible to purchase a proper pit depth gauge but one can be easily made using a sewing bodkin pushed through an ordinary bottle cork. The depth of, perhaps, a dozen pits within each of the measured areas should be measured and the arithmetic mean and mean standard deviation of the figures obtained calculated. Such data need not be reported to the client unless the depth is more than 50% of the nominal plate thickness but the marine surveyor should keep the record in his own files.

The surface area of the pit is, of course, $\pi/4$ times the square of the diameter and it is sufficient to record the area/depth ratio simply as the diameter squared divided by the depth. That can then be used together with Figure 1 above to guide the marine surveyor in his recommendations.

The Amount of Steel Lost by Pitting

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

The volume of metal lost by a pit is its plate surface entry area multiplied by its depth times a constant to allow for the fact that it is generally conical in shape not cylindrical. Thus:

VP	=	$\frac{2}{3} \times \pi/4 \times d_A^2 \times d_P$	mm3	(2)

If, on a given plate, there are n pits covering an area a x b mm^2 then the mean loss of metal over that area is given by: -

ML	=	$n \times \pi/6 \times d_A^2 \times d_P/(a \times b)$	mm	(3)

where

VP	=	volume of pit	mm3
ML	=	mean metal loss	mm
dA	=	mean diameter of pit's surface area	mm
dP	=	depth of pit	mm
n	=	number of pits in area a x b	-
a, b	=	dimensions of pitted area	mm
π	=	3.1416	

A Bad Case of (Severe) Galvanic Pitting

Pitting Repairs

If the metal loss is less than the difference between the original plate thickness and the net thickness plus 0.5 mm, then no action need be taken but the converse is also true. The net thickness is usually taken as the arithmetic mean of a suitable number of UTS readings over a given area of plate. Many individual pits will be found to be deep enough to penetrate into the net thickness of the metal. Where such are scattered or isolated, they should be pooled or filled with welding but, if numerous, then, regardless of the mean metal loss value, the affected area should be cropped and the metal renewed. Severe pitting should be dealt with by cropping and renewing the affected plate, heavy pitting by cropping and renewing the plate in the worst areas and by back welding or, as it is otherwise called, pooling the rest of the pits, moderate pitting by pooling the worst pits but slight pitting may be ignored. Doubling or overplating is not **recommended** even though it is common practice. Even if it specifically **recommended** by a competent marine surveyor, it must be realised that the procedure does not constitute a proper repair as doubling a plate only hides the problem and has to be considered to be considered a cheap, bodge job which can give more problems than those that it is intended to solve. If, however, it is decided to double plate an area, then the marine surveyor is reminded that he must keep in mind the all too ignored or forgotten **Law of Unintended Consequences**.

The Law of Unintended Consequences and its Effects

One of the small snags in his operation that even the most careful marine surveyor will meet from time to time is the Law of Unintended Consequences. The Law states that:

Whenever a person orders a certain action to be taken, it will frequently be found that other unintended or undesirable consequences not considered or taken into account will be entailed in that action.

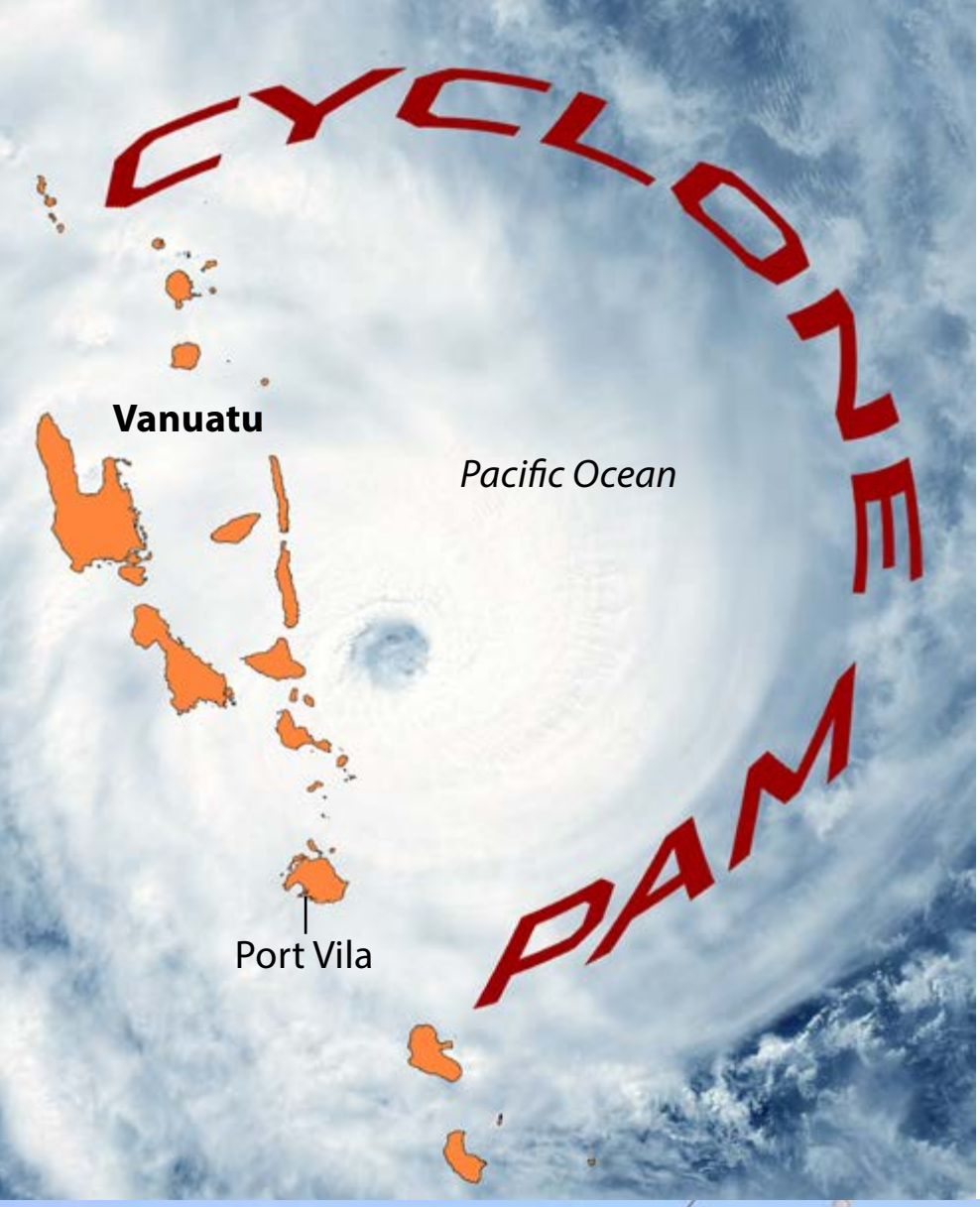
With the best of intentions, the marine surveyor will **suggest** or **recommend** that a certain action be taken without realising that the action necessarily entails certain other effects which may be deleterious to the action. The given Law is even more certain in its inevitability than its better known cousin, Murphy's Law. The covering of defects on a steel hull with a doubling plate is a classic example. Seemingly a good, cheap idea, in addition to merely hiding the defect, it also results in other undesirable qualities in the vessel concerned.

When a doubling plate is added to the side of a vessel below the waterline in fresh water, it will add 6.86 kilograms of weight per square metre of the plate's area per millimetre of its thickness. That, inevitably, has the following effects on the vessel:

1. It increases the weight of the hull,
2. It increases the draught,
3. It reduces the freeboard,
4. It reduces the amount of reserve buoyancy,
5. It reduces the load the vessel can safely carry,
6. It reduces the minimum down flooding angle,
7. It reduces the metacentric radius,
8. It alters the height of the centre of gravity above the keel.

If placed forward or abaft the longitudinal centre of gravity it will alter the vessel's trim further altering the metacentric radius and position of the centre of gravity. If fitted to one side only it will alter the vessel's angle of heel or change it from the upright.

All of those defects are, by their nature, deleterious... **BEWARE!**



WHAT HAPPENS WHEN THE IRRESISTIBLE FORCE OF NATURE TAKES OVER?

I was concerned when I looked at the weather on the 7th March 2015 and totally unaware at that time that in a week we would be hit by the worst cyclone to hit these islands in 28 years. The computer weather models showed a possibility of massive cloud and thunderstorm activity to the north east of the Vanuatu group. For those of us living in the tropics it is routine to check the various weather sites during the cyclone season, which runs from November to April. But at this time I had no idea what we were about to experience and what Mother Nature was brewing up for us.

We, (my wife and I), have been living in this part of the south pacific for the last 25 years and have experienced quite a few cyclones. Some pass us by and a few have affected the islands. The last real big one which was before our time, was in 1987, Cyclone Uma, which packed winds in excess of 130 knots.

This article sent in by Associate IIMS member, Gary Vasconcellos, looks at the devastation caused to Vanuatu by Cyclone Pam more than one year on following the disaster.

So when there was talk in the pub about the possibility of a "big one" and the fact that everyone had become complacent and blasé about cyclones, (the "experts" gave their do's and don'ts and the sceptics prediction " it will never get here"), is what made us start planning for the worst.

The yachts that decided to ride it out on their moorings, prepared doubling up on mooring lines, checking chafe gear. All sails were removed and all loose gear stowed. There is an unspoken camaraderie among sailors when expecting a storm, how they help each other without expecting reward. The local Port Vila Boatyard worked throughout that week slipping boats and filled the yard to capacity. They secured all the boats to huge steel rings, which were concreted; into the ground and Akro props were used under the hulls.

By Wednesday afternoon of the 11th March a steady southerly wind started blowing and gradually increased to force 8 by midnight. That morning, the storm was named 'PAM', as she started her southerly track towards the archipelago.

We spent the rest of Thursday securing the house for cyclones in the usual manner and my son decided to bring his family to us, as it was a safe place to ride out the storm knowing what previous cyclones have been like. I checked the barometer before I turned in that night. It had dropped 10 points and was sitting on 1000 hps. I did the rounds and made sure torches, tools and water were in their places, all children safely settled and all shutters secured. The wind had changed 2 points to the SSW and started to increase.

It gradually picked up to force 10 by midday on Friday the 13th… ominous or superstitious? The sky was thick and grey. We plotted her track and listened to reports from the northern islands as Pam slipped by just missing them. By 1800 hrs the wind started to scream sending us all into the house for shelter and I cranked up the music really loud to help mask the awful sound in the gusts.

We waited for the storm to reach its zenith as the noise of breaking trees and thundering surf made it impossible to talk. Water began to pour in through every conceivable crack as now it was flowing horizontally, or even vertical as in the case of the louvered windows. At 3am the house shook as a branch protruded through the roof as if shot from a long bow. It stayed for a brief moment before being carried away by the next gust. Slowly, ever so slowly, the wind began to die back and the gusts began to have longer intervals between them. Huddled up in the safest part of the house we managed to get some disturbed sleep until dawn.

What greeted us as I opened the back door was a scene from a movie where a bomb had exploded and the earth had uprooted all its belongings.

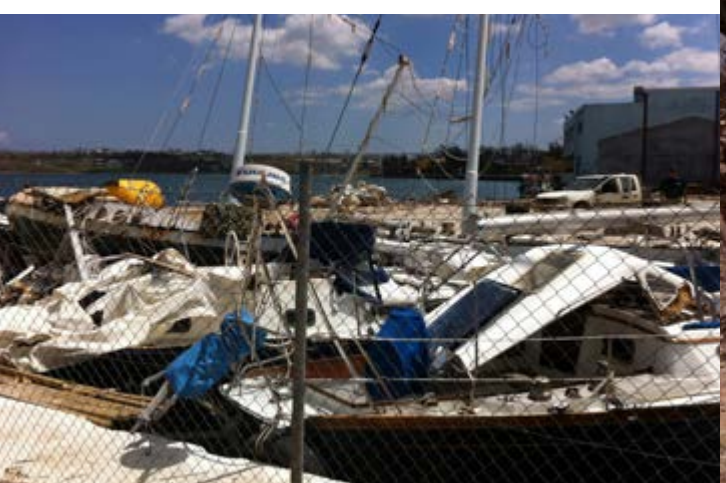
We needed a chainsaw to cut our way out of the property and my son and I started the long drive to the boatyard to assess the damage caused by Pam.

Ninety five percent of the fleet was either on the beach, against wharves or sunk. Four boats were still on their moorings, tattered and covered with debris. The boats on the hard had survived with little damage, but were covered with broken foliage and the paintwork somewhat sandblasted and dull. The clean up had begun and the international aid, NGO's and world media began to swoop on this little nation for breaking news and to cash in on this disaster.

A year down the track, we still have abandoned boats on the beach, a harbour full of sunken vessels and buildings still in the process of being repaired.

Marine surveyors and consultants are still assessing and surveying rebuilds, salvaged vessels and representing clients, as witnesses for their law suits. The silver lining in this cloud is the fact that Cyclone Pam has given us an incredible amount of business.

It will take a while longer for this wee island to recover from this natural disaster, but the memory and stories will continue for many years.



IBEX 2016

AN EXPANDING TECHNICAL TRADE EVENT THANKS TO POSITIVE INDUSTRY TRENDS

IIMS is proud to be a media partner for the forthcoming IBEX show later this year. The Report invited IBEX's Kate Holden to tell IIMS members why they should visit the world's largest marine tradeshow in October 2016.

The International BoatBuilders' Exhibition & Conference (IBEX) returns to Florida this fall and brings more products, more exhibitors, and more technology than ever before. IBEX is the largest technical marine tradeshow in the world and exists to introduce technology and bring together trade professionals such as boatbuilders, naval architects and designers, boatyard/marina operators, repairers, surveyors, engineers, and technicians. More than 7,000 industry professionals from 50 countries travel to the show. This year, IBEX takes place October 4–6, 2016, in Tampa, FL, and is open only to trade professionals. IBEX is produced and organized by the National Marine Manufacturers' Association (NMMA) and Professional BoatBuilder magazine.

NEW PRODUCTS AND NEW COMPANIES ON EXPANDED SHOW FLOOR

As part of its expansion for 2016, IBEX is adding a first floor exhibit hall, featuring more than 150 new exhibitors—manufacturers and accessory suppliers never before seen at IBEX. "As our industry continues to strengthen, there are new companies with innovative product solutions looking to

introduce their services to more marine professionals," Anne Dunbar, IBEX show director, says. "We had so many new exhibit requests this year, it made sense to expand. Our new first floor exhibit hall will be packed, and will be a great opportunity for marine professionals to meet new companies and see new products." With this expansion, IBEX 2016 will feature over 550 exhibiting companies.

MARINE INDUSTRY TRENDS

New powerboat sales are on a multi-year rise with pre-recession levels on the horizon in several boat segments as early as 2016. The NMMA estimates new powerboat unit sales will be up as much as eight percent in 2015 when the industry tallies its final figures. They anticipate the industry will continue its growth spurt with an increase in new powerboat sales of six to eight percent in 2016. The powerboat category is comprised of outboard boats, wake sport boats, inboard cruisers, sterndrive boats and jet boats, as well as personal watercraft, which includes such brands as Sea-Doo, WaveRunner and Jet Ski. Most powerboat categories experienced year-over-year growth through the third quarter of 2015, including: jet boats, up 22.3 percent; wake sport boats, up 10.6 percent; deck boats, up 10.3 percent; personal watercraft, up 14.3 percent; pontoon boats, up 8 percent; and, bass boats, up 41.1 percent. Other fiberglass outboard boats (including center console boats, sportfishing boats, and flats boats) were up 5.8 percent, and other aluminum outboard boats (including all-purpose fishing boats and jon boats) were up 6.3 percent.

These trends are good news for IBEX, especially as it returns to a Florida location. Sales revenue is currently up over 2015, thanks to the expanded exhibit halls which are sold out with a growing waiting list in place. NMMA President Thom Dammrich reports, "IBEX is growing and gaining momentum reflecting positive trends for the recreational boating industry. If you are doing business in the marine industry, IBEX has something to offer you; from innovative new products to outstanding education to unparalleled industry networking."

FUNDAMENTAL SKILLS AND ADVANCED TRAINING

Training is an important element to IBEX, and the Education Conference offers three programs to provide everything from introductory to in-depth training for all skill sets: The IBEX Seminar Series, Super Sessions, and Tech Talk Workshops.

The IBEX Seminar Series caters to marine professionals from around the world with technical, timely, and accessible 90-minute courses relevant to today's industry. Organized through a partnership with the NMMA, American Boat & Yacht Council (ABYC), National Marine Electronics Association (NMEA), American Boat Builders & Repairers Association (ABBRA), and Professional BoatBuilder magazine, IBEX seminars are broken into six discrete educational tracks: Composite Methods & Materials, Design & Engineering, Survey & Repair, Manufacturing Management Policy, Marine Electrical Systems, Onboard Systems, Boatyard & Marina Operations, and ProBoat Editors' Picks, hand selected by the editors of Professional BoatBuilder.

As the premier technical educational and professional development program for boat manufacturers, naval architects, boat repairers, marine management professionals, and marine surveyors, this year's IBEX provides 57 basic to advanced classes, presented by the world's foremost experts in the marine industry.

Expert technicians and presenters at IBEX are encouraged to share openly what they've learned and what they know. Attendees walk away from these seminars with the knowledge to work smarter, with a better understanding of trends in the industry, a working knowledge of current techniques and tools, and the ability to produce stronger results on an everyday basis.

With seminar tracks dedicated specifically to marine survey and repair, onboard systems, and boatyard and marina operations, marine surveyors truly benefit from attending IBEX. Topics in 2016 include Surveying and Testing Spars and Rigging with Spain-based marine surveyor Roby Scalvini and American surveyor John Koon covering wooden masts to carbon-fiber spars. Mr. Scalvini will also be participating in a seminar entitled Infused Laminates: Diagnosing Repair with composites specialist Andre Cocquyt. Throughout the seminar series, participants will be able to join a basic seminar on inspection techniques, a how-to lesson in thermal imaging, and a more advanced electric diagnostic tools and techniques course led by the trainers at the ABYC. For an even more in-depth seminar about electrical installations, join world renowned author Nigel Calder for Proper Electrical Installations.

Because IBEX is at the Tampa Convention Center, located at the mouth of the Hillsborough River directly off Tampa Bay, some dockside courses will be available. Small seminars on grounding and galvanic corrosion as well as electrical troubleshooting will take place outside with certified ABYC technicians. The NMMA is hosting an onboard diagnostics seminar as well.

Attendees can register for seminars a la carte, or they can purchase packages. Discounts are available for attendees who register before September 9. For 2016, professionals needing Continuing Education Credits (CEUs) will be able to earn even more credits for every seminar they complete. Each 90-minute seminar is worth 1.5 CEUs.

The Super Sessions are specialty workshops, organized by exhibitors, which review in-depth topics and provide hands-on interaction with materials and processes, including a day-long course in Fiberglass Boat Repair with the WEST SYSTEM experts at Michigan-based Gougeon Brothers or a highly informative, hands-on class on Practical Propeller Matching with the Society of Naval Architects and Marine Engineers (SNAME). These Sessions are held the day before the exhibit floors opens on Monday, October 3, and allow participants to focus solely on training. Seats are limited for the IBEX Super Sessions, and those wanting to participate should not delay in registering.

Tech Talk Workshops are free to IBEX attendees. Presented by exhibitors, these short presentations, starting every hour on the hour, provide live demonstrations, new product introductions, or technical tips.

Anyone interested in the marine industry on a global scale should attend IBEX in Tampa for its educational program.

TEST DRIVES ARE ENCOURAGED

IBEX's Fleet will include more dock slips at the Tampa Convention Center waterfront, which means more boats with the newest technology and accessories. Exhibitors will be able to demonstrate their products in-action on the water as they take attendees out for test drives.

Other hands-on, interactive displays at IBEX 2016 include:

Future Materials — a technology showcase available from a wide variety of sources, including marine, aerospace, automotive, and applied academic R&D. The goal is to present innovative near-term practical applications for industry professionals as well as ideas to inspire novel solutions to current and future challenges in composites design, fabrication, marketing, recycling, and repair.

The Connected Boat — a hands-on, interactive display brought to you by NMEA and Chetco Digital showcasing how various systems connect using existing network technology. The Connected Boat will allow participants to see new electronic wireless technology and how it can be used to simplify system interconnectivity.

Innovation Way — the coveted Innovation Awards for 2016 will be displayed along Innovation Way. You'll see what's new and innovative from our exhibitors.

CONNECT AND NETWORK WITH THE INDUSTRY

Several events during IBEX 2016 give attendees opportunity to meet potential new business partners or catch up on the latest developments with long-time industry peers. The IBEX Industry Breakfast continues to grow every year with hundreds of marine professionals attending. This year's event, expected to exceed last year's attendance, is being moved to the Marriott Hotel, just across the channel from the Tampa Convention Center, but within walking distance. The NMMA will present the current state of the marine industry. Plus, company leaders who have excelled in innovation will receive annual IBEX Innovation Awards.

Tuesday evening is the Opening Night Party at the IBEX Sail Pavilion, located on the patio of the Tampa Convention Center. Drink specials, live entertainment, and a food truck bazaar will keep the energy of the opening day going well into the evening.

EXHIBIT HALL REGISTRATION IS FREE

IBEX is free to qualified marine industry professionals — and includes full access to the exhibit hall floor and attendance at many of the networking events for registered badge holders. (Tickets to the Awards Breakfast are additional. Seats are limited, so be sure to register early for a guaranteed seat.)
To see full details of education descriptions, exhibitor list, floor maps, and networking events, as well as to register, visit **www.ibexshow.com/report**.

Sampling of Iron Ore Fines

The Immediate Challenges from an Indian Context for a Worldwide Problem

Reference is made to my last article in mid-2015 which covered the compliance aspects of the IMSBC Code, especially in the Indian context and how important a tool the can-test can really be on the ship's deck. While much work is done with the laboratory accreditation in India, the actual understanding of the process for drawing samples has been rather undermined and subverted. Drawing really representative samples from a huge in-situ (static) stockpile remains a challenge and really any analysis and/or certification is meaningless unless the samples drawn are truly representative of the consignment.

BY **CAPT RUCHIN C DAYAL,** MIIMS

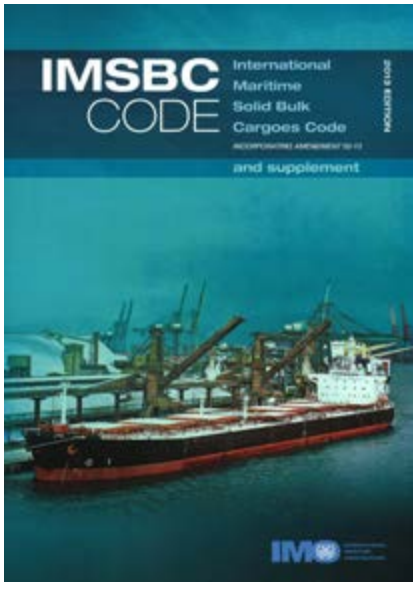
There is ample guidance provided in this regard in the IMSBC Code under section 4 but interpretation of the provisions remains ambiguous. Reference is also made to MSC.1/Circ.1454, which is now part of the code; wherein guidelines and procedures for sampling in line with section 4 are expanded upon. While these may seem to be prepared to assist shippers, the same can be adopted by surveying companies, especially in regard to setting up procedures, training and review.

BRIEF MARKET BACKGROUND

While Indian iron ore exports may have collapsed from 125 MMT (Million Metric Tonnes) in 2011-2012 to barely 5 MMT in 2014-2015, exports from Brazil and Australia have forged ahead despite the lowest price of ore in over ten years. Vale is close to completing expansion of the world's largest iron ore complexes at Lajaras, while both Rio and BHP are investing heavily to expand their network of mines and infrastructure in Australia's Pilbara region. Few people may be aware that India actually became a net importer of iron ore in 2015. India imported 15 MMT compared to an export of 5 MMT. With the markets finally showing signs of revival and the Government incentivising exports by cutting duty, iron ore exports from India are set to pick up this year; specially so in Goa, where the long imposed ban on mining and export by the Supreme Court has now been lifted.

THE INDUSTRY AND THE IMSBC CODE

The Brazilian and Australian iron ore export markets are by and large organised, their industry relatively mature, while the export from India still remains hugely unorganised, uncertain and seasonal. The challenge exists in understanding and accepting that ore, whether loaded in Brazil, Australia or India, will exhibit similar properties in a ship's hold. Whether India exports 5 MMT or 150 MMT, every ship loaded MUST comply with the provisions of the IMSBC Code. The International Maritime Solid Bulk Code (IMSBC Code) governs the carriage of bulk solid cargo and is mandatory under the SOLAS Convention. It is literally considered the Bible for provisions for carriage of solid bulk cargo. While Brazil and Australia have deployed state of the art mechanised sampling plants, engaged with adequately equipped laboratories and embraced the amendments to the IMSBC Code pertaining to the new schedule for iron ore fines and the newly adopted Modified Proctor & Fagerberg test (also called Type D method), India's progress has been rather slow albeit steady.



The Directorate General of Shipping in India is the competent authority recognised in the code. The DGS, as it is commonly referred to, has an excellent accreditation program for marine laboratories under which many specialised marine laboratories have attained accreditation; many of which are doing a great job while others are struggling to maintain their standards in these depressed markets.

THE ACCREDITED MARINE LABORATORIES

The majority of the DGS approved laboratories have attained the required skill-sets in determining the Transportable Moisture Limit (TML) by the Flow Table Method but the competence in using the P&F type D test is non-existent. Moreover, surveyors and laboratories alike fail to understand the difference between an iron ore stack and iron ore cargo; sampling for determination of the Fe content and sampling for demonstration of cargo behaviour inside the ship's holds.

It is frightening to note but extremely common that sampling is not given the attention it deserves and the task is more often than not delegated to junior personnel who do not fully appreciate the significance and importance of the process. Yet, correct sampling techniques and making of a representative sample makes the fundamentals of any analysis which may reflect the overall condition of a stockpile. There is no point in using the latest analytical methods and equipment, spending considerable time and effort in resource training and management for the analysis, if the samples presented for analysis are not representative in the first place. If sampling is not carried out correctly, the entire measurement chain is corrupted at the outset and no amount of reanalysis will fix the problem. What follows are some of the most important aspects to consider during the sampling of iron ore stacks which will be end up as cargo in the ship's holds.

THE BASICS OF SAMPLING

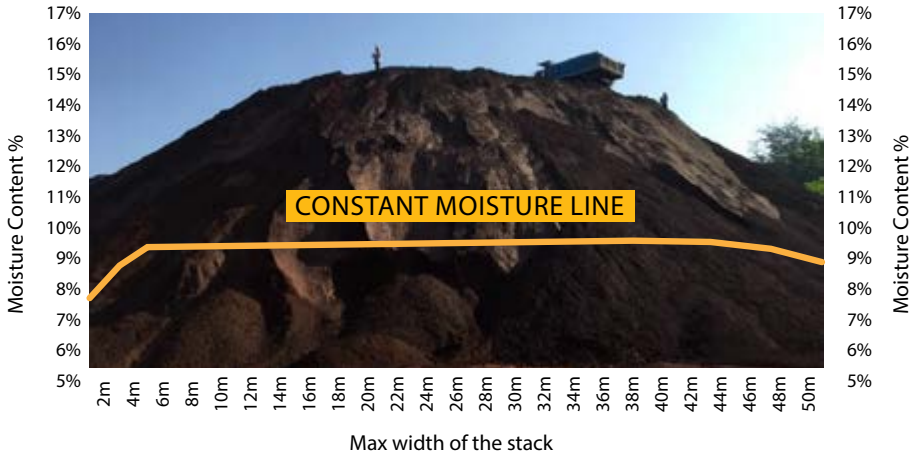
The fundamental rule for correct sampling and sample preparation is that all parts of the material being sampled must have an equal probability of being collected and becoming part of the final sample for analysis. Every standard talks about this & there are exhaustive papers published on precision and bias samplings but very little is committed towards actual static stockpile sampling; how then is a static stockpile to be sampled? What are the factors and assumptions to consider during the sampling process? There is sufficient guidance provided in the IMSBC Code where stockpile sampling is concerned but seldom is it understood and applied properly.

The adjoining pictures shows a stockpile approximately about L-35 X B-50 X H-25 mtrs in size; stock of about 100,000 MT of processed Iron ore fines. So how does one go about sampling a stockpile like this? There are no easy answers; no short cuts and definitely no playing around. This has to do with the safety of lives of fellow seafarers. Over the last decade or so, eDOT Marine has worked extensively in the field, mainly in Goa-India and tried to adopt measures proactively in a bid to streamline the sampling techniques being followed by surveyors; all of which includes recommendations of the IMSBC Code as a minimum. Let's start with the definition of cargo. The word "cargo" is used loosely almost every day by hundreds of people around the world.

IRON ORE STOCK OR CONSIGNMENT

CARGO

Quite clearly, a consignment of iron ore becomes cargo when loaded on a ship. This is extremely important to understand, especially for the sampling process. Samples drawn from a stockpile will be transported to a laboratory, where determination of the TML (transportable limit) will be carried out on a sample which will represent cargo loaded on- board a ship. Whether it may be 700 gms of sample on the flow table, 5 Kgs in the penetration table vessel or 3 Kgs in the Proctor & Fagerberg cylinder, the sample will be subjected to compaction as experienced inside the ships holds. The TML will then be compared to the "moisture content", where MC<TML will translate into the consignment being acceptable for sea carriage.

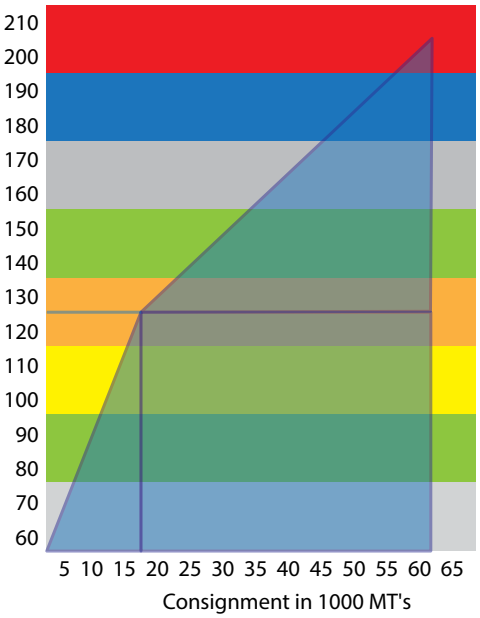


THE SAMPLING PROCESS

Sampling for MC determination and sampling for the TML demand different regimes. The TML determination may be based on the "ability" of the "cargo" to "handle" moisture; its porosity, does it absorb moisture or permeability, allow water to pass through, while the moisture content MUST reflect the moisture content of the entire stockpile. The stockpile may comprise of sections with different moisture contents and it is *imperative* that a method for determining a stockpile profile for moisture is established and diligently followed. A typical stockpile profile may look like the adjacent diagram. The challenge lies in digging through the first few metres into the stockpile, which is possible only by the use of mechanised sampling/cargo handling machines, like the JCB or a wheel loaded bulldozer with samples being drawn from the exterior of the stockpile towards the centre in a controlled environment.

While the code (sec 4.6) does a fairly good job of providing guidance on the sampling process, how many samples and how much and from where, it is a good idea to have an objective ready reckoner chart for the sampling team on the ground. A typical ready reckoner may look like the one the eDOT team often uses and is produced here as a not-to-scale example for the purpose of better understanding only. The cargo quantity drawn up will meet the section in blue with minimum incremental samples on the left while the coloured bands indicate the minimum major sections the stockpile may be divided into which may be further divided into subsections; each moisture sample comprising of 3- 5 incremental samples.

Minimum Incremental samples required to be drawn - Each incremental sample is abt 200 gms -3 to 4 incremental samples are mixed to arrive at a single moisture sample



Number of sections dependent on the size and disposition of the stockpile. Each section is divided into 2 subsections; 3 to 5 moisture samples to be made from each sub-section

ASSUMPTIONS FOR SAMPLING

Static stockpile sampling may be only performed by a person who is aware of the properties of the consignment; local knowledge can often prove to be invaluable and extremely important. Iron ore fines are nearly always shipped as "processed ore", extremely homogenous in size and notoriously different in moisture content. Unprocessed iron ore is extremely difficult to sample as a static stockpile and unless the samples can be drawn from its full depth, must be avoided.

Iron ore may be crushed or washed or otherwise suitably beneficiated prior being stockpiled for shipment. Invariably, ore from different stacks are blended to form a single shipment as per the demands of the sales contract. Each stack or stockpile may have to be sampled and analysed separately to ensure that the final cargo on-board the carrier is safe for sea carriage irrespective of the blending ratios. Hence, prior to any sampling of static stockpiles, the following must be considered as a minimum:

- The homogeneity of the material; processed ore, IOF, Lumpy, mixed or ROM
- The dimensions of the stockpile; the objective being to reach the constant moisture line (CML)
- The age of the stock; remember that you have trucks and other heavy machinery working atop. Some of these are over 30 MT in weight
- Make a plan for the process. Have an objective method to conclude on the number of sections, sub-sections, incremental and sub samples and moisture samples
- Be extremely careful of using IS1405:2010; this allows static stockpile sampling upto a height of 3 mtrs but the process MUST be understood properly. This India Standard demands digging of a trench right through the cargo and samples are to be drawn from the entire depth of the stockpile, often not interpreted by most surveyors.
- Can-test to be conducted during the sampling process with possibly common personnel attended on-board during the loading operations.

If despite all efforts, within limits of practicability and safety, the CML has not been arrived at (evident during the analysis), then the stack will have to be resampled for moisture when broken down during the shifting/loading of cargo; This MUST be unequivocally mentioned in the certificate supplemented by the report issued for the particular sampling.

Sampling is an exhaustive subject and this article in no way claims to be a scientifically vetted authority, nor is it written to undermine any standards or contrary point of view; but it is based on purely the practical existing scenario in the Iron Ore exporting states in India with the purpose of providing practical, common sense solutions to complex situations which hopefully may result in highly improved and meaningful outcomes.

Reader's suggestions and views are welcome. The author may be reached on ruchin@edot-solutions.com.

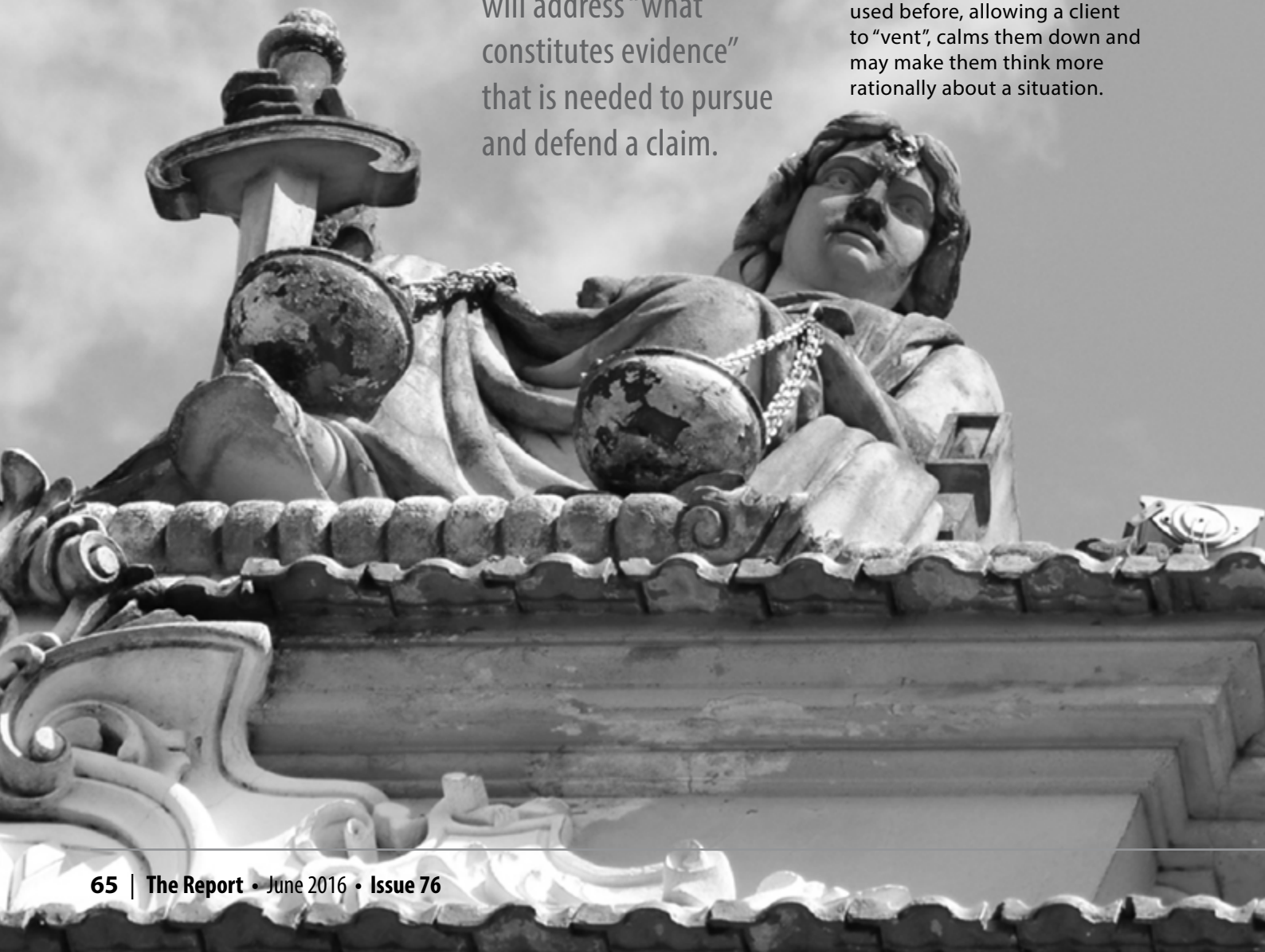
Fifty Shades of Insurance: Chapter 9

THE CLAIMS PROCESS – JUSTICE IN LAW?

We hear so often the words "that's not fair". The legal system does not always seem fair but often this arises from the lack of evidence to defend a claim. In this article we summarise the claims process and in our next article we will address "what constitutes evidence" that is needed to pursue and defend a claim.

WE WILL START AT THE BEGINNING.

You receive an unexpected email or a telephone call from a disgruntled client. What do you do? Keep clam and listen at first as often, a phrase we have used before, allowing a client to "vent", calms them down and may make them think more rationally about a situation.



Never feel pressurised in to admitting any liability as this could affect whether insurers will indemnify you.

At this stage you have an occurrence that may give rise to a claim and you should notify your broker or if you insure direct with an insurer, your insurer.

Sometimes insurers with small value claims may ask to "sit behind the scenes" and this usually means they provide draft correspondence for insured's to send out as this can sometimes prevent a matter from escalating; often insurers are seen as a "soft touch" by claimants. Most of the time insurers will take control of handling a claim, although some only do so when a formal claim by a claimant has been received by an insured and submitted to them.

We will assume for our example that an insurer has taken control of a claim against an insured. They may handle the claim internally within the insurance company or elect to engage a solicitor. In either case it is normal practice to send out an expert to undertake an independent survey or occasionally undertake a "desk top" review of documents received.

Insured's are obliged to provide assistance to insurers to defend a claim as insurers only "step into the shoes" of an insured as they are not the ones that are named in litigation.

Unfortunately it is not unusual for all concerned in a claim to find their lives consumed by it as it takes a significant amount of time to find all relevant documents needed to defend a claim, to produce witness statements and liaise with those who are representing you.

Hopefully you will have kept all the relevant documents and other evidence required to provide a strong defence. Even with the latter nothing is certain in litigation as there is only one person, the Judge, who has to be persuaded on the evidence provided, hence why many claims settle before they reach Court. Parties are now encouraged to undertake mediation before commencing litigation or during the litigation process.

We cannot stress enough how important it is to identify and gather your evidence at an early stage. Keep contemporaneous notes and make sure all information however incidental it may appear is provided to your insurers or to whom they have engaged to defend you.

It is always a good idea immediately you are aware of an incident that may give rise to a claim or as soon as you receive a formal claim to write a document listing dates and times of what occurred in date order. In this document it is helpful to include emails sent and received, letters, reports, telephone calls, contemporaneous notes, photographs and when meetings occurred. This document can be the basic list which may expand or contract of what may constitute your evidence for your defence. Also for your benefit and those defending you, write a resume of your understanding of what occurred as this is very helpful and sets the scene. Also most people's memories fade!!

So what is in your list? What can be used as evidence? What needs to be included? What will be excluded? Well this is now into the realms of the experts; by this we mean your lawyer or counsel as evidence is one of the most complex areas of law on which there are some very large books for "bed time reading". So in our next chapter we can only hope to skim over the essential elements of the mystery of "what constitutes Evidence".

Karen Brain
Managing Director – solicitor non-practising

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A day in the life of
Capt. John Noble

Capt. John Noble is a name that many IIMS members will be familiar with. As Chairman of Administration and the Education Committee, he has a central role within the Institute. John is also one of the IIMS's longest standing members having joined in 1992; so it is fitting to catch up with him in this most special of years for the Institute to seek out his views on the profession and to find out a bit more about the man.

Q1. What would you say have been the most frustrating changes in the marine surveying profession over the past 30 years? Red tape and regulation perhaps? Or is that a good thing?

I think the continuing ability for inexperienced or unqualified individuals to practise as marine surveyors is a frustrating change that has not taken place. In terms of changes, undoubtedly the increasing bureaucracy has made the surveying task more difficult. In some jurisdictions it can take days to gain access to a port, for example.

Q2. How would you say 'the lot' of a surveyor has changed over that time?

The introduction of digital cameras and the development of the internet has certainly changed how survey reports are dealt with. Clients now expect real time reporting with photographs. Constellation Marine in Dubai is developing an App that allows the client instant access to the surveyor's whereabouts and photographs. Compared with life 25 years ago we now have to be technically savvy with the latest devices and communication facilities. I think it was so much easier in the days before mobile phones and social media. The telex was then the best communication device, then the Fax! The surveyor could concentrate on the job in hand without worrying about instant reporting.

Q3. What do you feel are the most important challenges facing the shipping industry at large in 2016.

Much is being reported about the development of unmanned ships. If such ships do enter service there are some interesting challenges. The survey industry will have to adapt. Analysis of electronic systems will form an integral part of post-incident response. The surveyor will still be an important player; someone will still be required to examine damaged cargo, or damage to ships after groundings and collisions. Unmanned does not mean incident free!

Q4. And in a similar vein, what do you feel are the most pressing challenges for surveyors to deal in 2016?

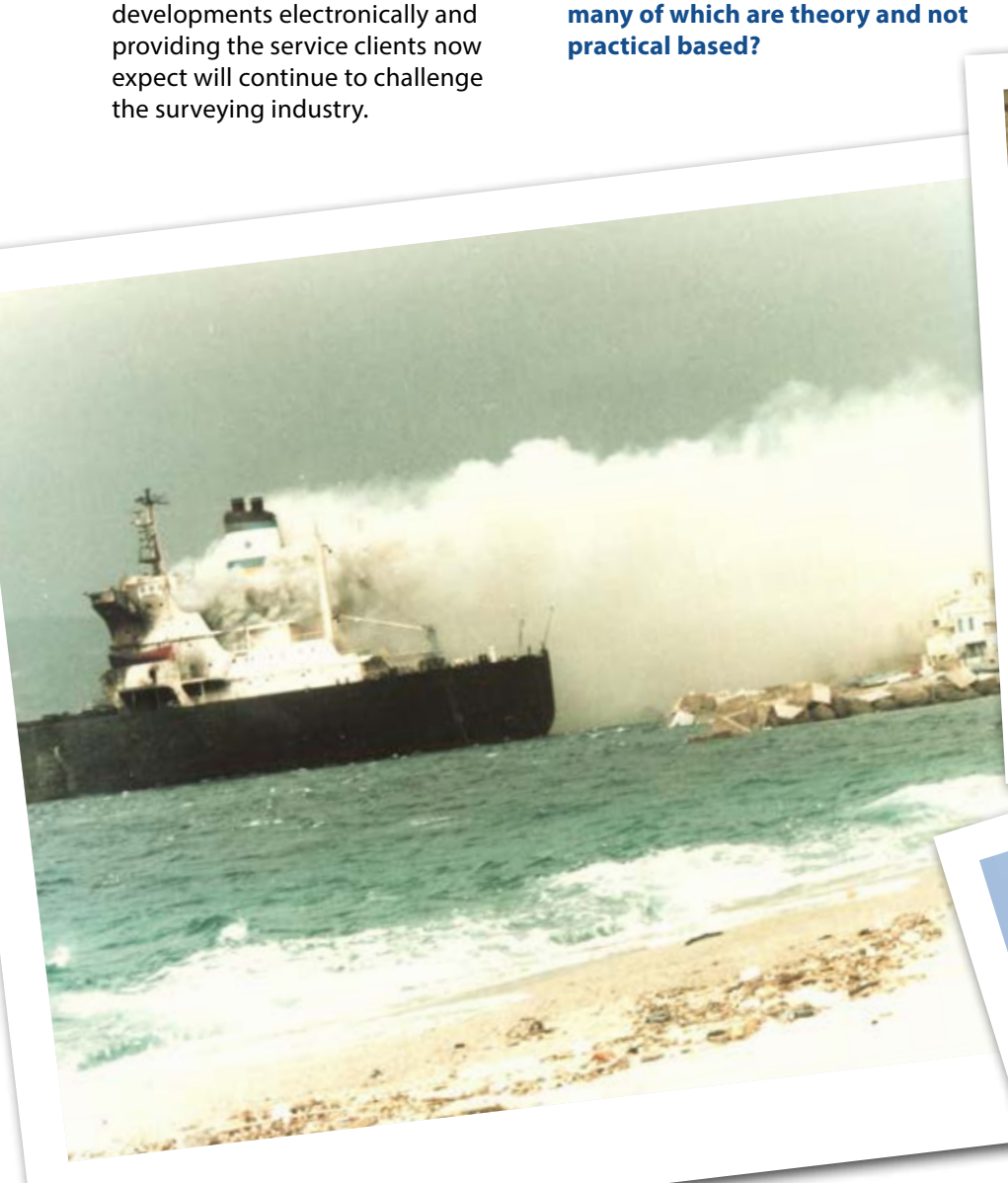
Keeping up with reporting developments electronically and providing the service clients now expect will continue to challenge the surveying industry.

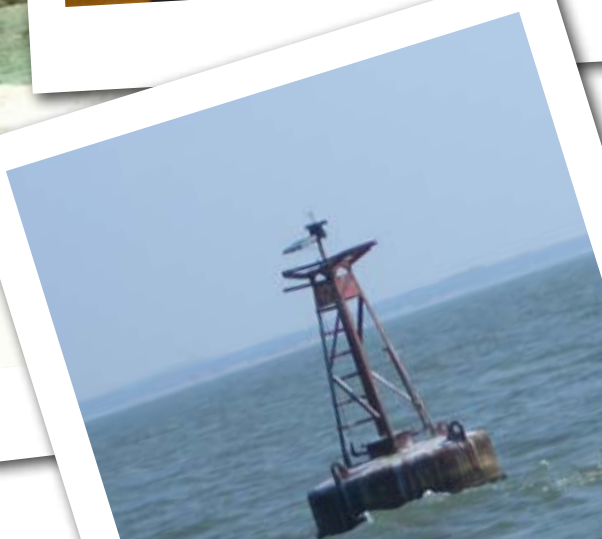
Q5. As Chairman of the IIMS education committee, what would you say are the best aspects of the recently launched Professional Qualifications?

In recent years the IIMS has developed a really professional approach to the education of surveyors. The HNC/HND offering was well regarded. We now must stand on our own two feet. By developing the units that were an important feature before, the IIMS is now able to offer education at an equivalent standard under the IIMS banner. The costs are less to the student and the standards are as high, or higher because the IIMS is dedicated to providing members and prospective members with a relevant choice of units.

Q6. And with education firmly in mind, what are your views on the various degrees and qualification available in the marine sector, many of which are theory and not practical based?

This is an important question. Many organisations that presently purport to offer "Marine Surveying Degrees/Diplomas" and the like, have a profit priority.
Just as there is nothing to stop anyone offering marine surveying services, at least in the UK, there is nothing to stop individuals and organisations from offering marine surveying education. The team members at IIMS, involved with education, are each true and recognised experts in their field. The 30 or so units on offer are compiled by those experts in the unit topic. The peer review system in use and marking of units are two areas where students can be reassured their work is being assessed by true experts in the unit topic. Anybody acquiring an IIMS qualification can be reassured that their work has been assessed by someone who has practical experience.





Q7. Although not quite a founding member of IIMS, but nevertheless a very early one, what are your thoughts now that the Institute has reached 25 years and celebrates its Silver Jubilee?

I joined in 1992 and have followed progress throughout that 24 year period. Like any organisations the IIMS has had its ups and downs. Overall, during the 25 years, the IIMS has matured. Perhaps most importantly, users of surveyors are increasingly referring to the IIMS website to find or confirm the experience of a surveyor. Over the next 25 years I would like to see insurers, owners and all other categories of client insisting that any surveyor to be appointed on their behalf is a member of the IIMS.

Q8. With the IIMS 25th Anniversary Conference just around the corner, what is your message to those who are thinking about attending?

The published programme is a real gem. I think the conference will be fully booked, so my advice to anybody thinking of attending is "get your booking in now!" When compared with other conferences, the cost of attending the IIMS event is really outstanding value.

Q9. As a 'wily' old hand and seasoned veteran, what advice would you give to a young marine surveyor making his way in this ever changing world?

The surveying occupation is challenging. My first advice to anyone thinking of becoming a surveyor is to get a "mentor". Guidance from an experienced individual will help prevent a young surveyor from failing. Perhaps most importantly, I would advise prospective surveyors to undertake some proper training and education. Successful surveyors must not only have a sound knowledge of their spheres of working, but must be able to communicate effectively and write a report that can be understood by clients.

Q10. How do you choose to spend your time in 'partial' retirement these days?

On a professional level, I still do some work with the IIMS; I am involved with education, office administration and sit on the Board. I am also involved as Branch Chairman at The Nautical Institute, Solent Branch. A word to those maybe approaching retirement; there are organisations out there who will approach you and ask you to help them. Take time; do not rush in. I have just had my fingers (and wallet) badly burned by an international organisation that abused my expertise and declined to refund expenses!

The nice thing about "semi-retirement" is that you can spend more time with the family and attend sporting fixtures without feeling guilty!

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