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THE REPORT

The Magazine of the International Institute of Marine Surveying

DECEMBER 2018
ISSUE 86

INTERNATIONAL INSTITUTE OF MARINE SURVEYING

The role of the marine surveyor
...a P&I Club's perspective

REPORT ON THE IIMS MUMBAI SYMPOSIUM

THE FUTURE OF THE ISM CODE

THE CASE FOR PHOTOGRAMMETRY IN MARITIME SURVEYS

REVIEW OF 2018

How to survey wooden boats
...a step by step guide

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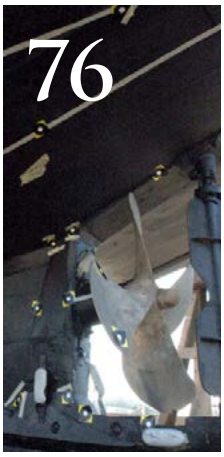

Editor's Letter

Dear IIMS Member

Preparing each issue of The Report Magazine is great fun and a job that I always enjoy. It is a labour of love in many respects and getting the balance of content right is a challenge. Then it is a case of commissioning suitable writers who are experts in their field to prepare relevant content. So much of The Report magazine content these days is especially written for you and I am most grateful to those authors who give their time for your benefit.

I promised to deliver more editorial content for yacht and small craft surveyors in this issue of the Report and believe that box is firmly ticked. The role of the marine surveyor - a P&I club's perspective is one of two lead articles. Jason Wee is Claims Director at Charles Taylor Mutual Management (Asia) Pte. Limited, managers of The Standard Club Asia Ltd and is perfectly placed to share his opinions. In his article he explains clearly and concisely the role of the surveyor and what the P&I club looks for and expects.

Surveying a wooden boat is something surveyors in the UK do less and less of, but I am well aware that wood remains an essential material elsewhere in the world. Therefore I am grateful to Mike Andrews, a specialist wooden boat surveyor, for his expertly written, in depth feature on this subject – see page 50.

Photogrammetry may be a new word to some readers, but in an interview with Experts-Yachts' Jean Sans, he explains the case for photogrammetry and its use in marine surveying. Read Jean's interview from page 76.

Charlie Carter has authored an informative piece in which he argues that the sailing world is ready for technology revolution. With hi-tech data acquisition systems becoming more affordable, he believes we will be seeing some exiting new products reaching the market in the coming years. See page 46.

The ISM Code has celebrated its twentieth birthday in 2018. I am grateful to Yves Vandenborn, who acknowledges the progress made, but believes that the Code can be further adapted in the years ahead in what is an insightful article on page 43.

Past President, Capt Bertrand Apperry, theorises in his article from page 62 about - After a career at sea, why not work as a marine consultant? Nick Parkyn discusses micro ROVs enablers for marine surveyors - see page 66; Ellen Milligan (Bloomberg) tackles the topic of shipping fears engine failures as industry switches to low sulphur fuel (page 74).

Reviewing the year has become something of a tradition for me now. I am a firm believer that it is important to mark an organisation's progress and to share the successes and challenges faced too. You can find my slightly longer than usual, honest and frank review of 2018 starting on page 30.

Honorary Fellow and ex India Branch Regional Director, Milind Tambe, is featured in 'A day in the life of' and as you will discover from page 84, he is a man of considerable hidden talents.

There is a wealth of membership news to catch up on, including a roundup of the many successful training events and seminars we have run recently, including the one day India Branch Symposium held in Mumbai.

If you celebrate Christmas, it only remains for me to wish you all the best for the festive period, good luck and much success for 2019.

Survey well.

Mike Schwarz
Chief Executive Officer
International Institute of Marine Surveying

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The President's Column

Dear IIMS Member

Good day from sunny Dubai. I write to you with a great deal of enthusiasm and optimism for 2019. I say this because it will be our UAE Branch's 10th anniversary year. And in readiness, we have already kick started our preparations for the IIMS Dubai Conference to be held in November 2019. Our Conference partner will be Maritime Sky and the venue will be on board the famous Queen Elizabeth 2 which is docked at Port Rashid in the heart of old Dubai. As I write the final dates are being checked for any conflicts and you will be notified as soon as they are finalized.

We are extremely excited about the conference which will mark such a milestone and please accept this as an early invitation to those who intend participating at this conference. I personally assure you that it will be a conference well worth attending.

Saying that, we have had good response to our Marine Surveying International Fest webinar on the 6th and 7th November 2018 in which we collaborated with the Nautical Institute. I personally received a lot of positive responses as to how it was conducted and a lot of kudos should go to the IIMS team at our headquarters at Portchester who were responsible for coordinating it and making it such a success. If I have one small observation is was that unfortunately we had very little involvement from the students and the younger members amongst our surveying fraternity. It was targeted towards those amongst our group who operate in inconvenient time zones and who do not have the opportunity to travel frequently. I sincerely hope that they have seen the value in it and will participate in the next one in larger numbers.

The IIMS Mumbai symposium which I attended on 10th October 2018 was a great success. One of the highlights was the attendance of the Indian Director General of Shipping, Dr. Malini Shankar who personally opened the conference. It was very rewarding to see the senior professionals amongst us, having such lively discussions at the end of practically every speaking session.

The conference was kept to a tight schedule by the organizer M/s. Offing and the presenters were required to keep strictly to their 20 minute slots. The audience made a huge contribution on how the conference flowed and how it was received. Full marks to the Indian branch and we look forward to many more successful conferences like this.

In the meantime I have been receiving a large number of emails from members and there is a lot of positive feedback as to how the Institute has made a conscious effort to reach out to the global fraternity recently, its branches and the members who are operating far and wide. I look forward to working with Mike and his team at Headquarters to continue to make our institute move ahead with technological advances and a very positive outlook towards improving professionalism not just closer to home but also in the wider marine surveying fraternity globally.

I end with wishing each one of you a very happy holiday season with friends and family, and here's to a great 2019 ahead.

Zarir.

Capt. Zarir Irani, *President*
International Institute of Marine Surveying
Email: Capt.Irani@constellationms.com

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PREVENTING COAL CARGO FROM SELF-HEATING

London P&I Club has analysed the problems associated with the transportation of coal in bulk, such as self-heating and flammable gas (i.e. methane) release. Self-heating can lead to fires and the production of carbon monoxide (CO), whilst methane release can lead to an explosive atmosphere being generated in the hold.

Self-heating normally occurs in localised hot spots within a bulk cargo, and temperature measurements are unlikely to identify problems. However, when coal self-heats it produces CO, so measuring the concentration of CO is the most effective method to identify a self-heating cargo.

The atmosphere in each cargo hold should be monitored, at least on a daily basis, for CO, hydrogen sulphide (H2 S), oxygen (O2) and flammable gas (LEL-methane).

The atmosphere in each cargo hold should be monitored, at least on a daily basis, for CO, hydrogen sulphide (H2 S), oxygen (O2) and flammable gas (LEL-methane). If the holds are being ventilated, then ventilation should be stopped at least four hours prior to gas measurements being taken, advises Paul Willis, Senior Associate at Hawkins.

The IMSBC Code requires that the holds are ventilated for 24 hours after loading. However, unless expressly instructed to the contrary, coal cargoes should not be ventilated following this 24-hour period as unnecessary ventilation could promote the coal to begin to self-heat.

Once a self-heating reaction has started, further ventilation will provide oxygen which will exacerbate the self-heating and could lead to ignition of the cargo, Mr. Willis adds.

BAVARIA YACHTS IS RELYING ON 100 PERCENT MADE IN GIEBELSTADT FOR FUTURE SUCCESS

The future development of Bavaria is taking clear shape. The yacht builder will once again build its boats one hundred percent in Germany. Bearing the seal of quality "Made in Giebelstadt", both sailing and motor yachts will be manufactured and handed over to customers in Franconia.
The R55 motor yacht, previously produced in Croatia, will for the first time be hand-built at the company's headquarters in the first half of 2019. The moulds and tools are currently being transported from Croatia to Germany.

"We want our outstandingly well trained and committed employees to develop and build all our yachts primarily under own management. The workforce identifies strongly with Bavaria Yachts; it is the key feature of our company," explains Managing Director Erik Appel, who has been Chief Operating Officer of Bavaria Yachts since December 2017. "This is why we intend to further increase our permanent staff and simultaneously reduce the proportion of temporary workers. This will help considerably to bring down production costs. To increase the efficiency of the shipyard, we will concentrate on our own engineering, i.e. the technical development of yachts, at Bavaria Yachts once again.

BAVARIA YACHTS

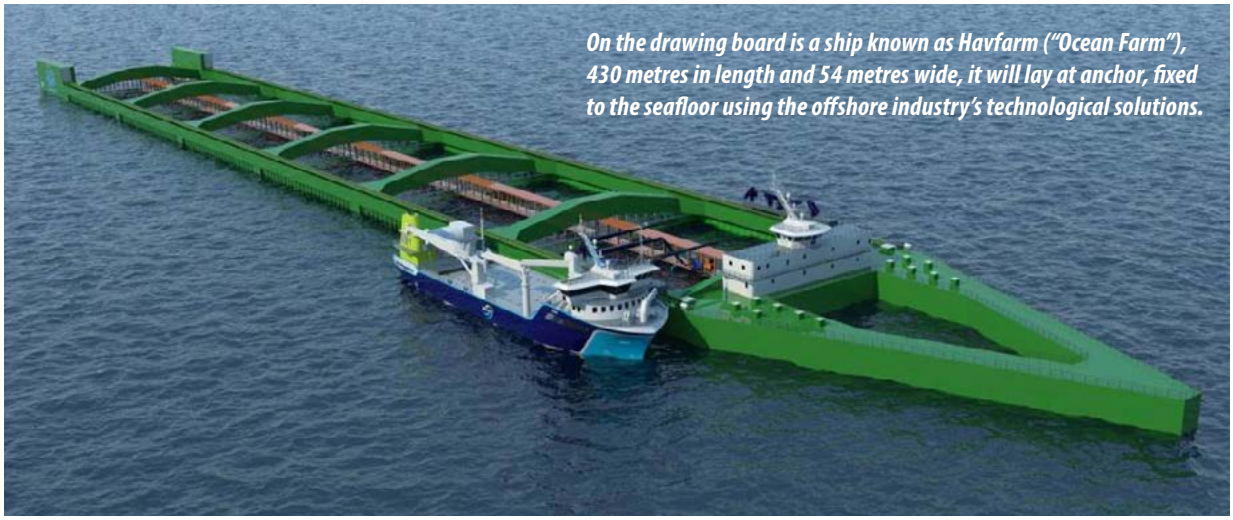
PREPARE AND MAKE WAY FOR THE WORLD'S LARGEST SHIP, THE HAVFARM

In conjunction with Nordlaks, NSK Ship Design has designed an aquaculture ship that could be the beginning of a sustainable revolution in the fish farming industry, named the Havfarm.

There is an air of excitement at NSK Ship Design, because they have been quietly working away since June 2015 on a special project for Nordlaks – a project that can be classified as no less than sensational for the fish farming industry.

On the drawing board is a ship known as Havfarm ("Ocean Farm"), 430 metres in length and 54 metres wide, it will lay at anchor, fixed to the seafloor using the offshore industry's technological solutions. Norway is a world leader in this field, and the Norwegian industry is comfortable creating solutions that can withstand very tough conditions at sea.

If the project is completed as it has been designed, it will be the longest ship in the world. For reference, the world's largest cruise ship is 360 metres long. The longest hangar ship in the world, the American USS Enterprise, is 342 metres long.



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COMPLAINTS RECEIVED BY THE CANAL & RIVER TRUST ARE ON THE UP

252 complaints were received by the Canal & River Trust in 2017/18, according to the latest Waterways Ombudsman report.

The report show that the number of complaints is above the average of 225 over the past five years. During the year the Ombudsman received 35 enquiries about the Trust, down on 39 last year. Fifteen new investigations were opened, which was one more than the previous year and the number of completed investigations was 14, three lower than the previous year.

Of the other complaints, there was one about the routing of HS2, as well as others in some way related to land or property.

Of the 14 investigations completed, one was upheld, while in a further four investigations the complaint was either upheld in part, or elements of it were upheld. Goodwill awards were proposed in three cases, although in one case the complainant did not accept it.

There was a very diverse range of complaints. The majority were about boating issues, including the treatment of boaters without a home mooring.

RESULTS OF MARITIME NEW ZEALAND RECREATIONAL BOATING SURVEY PUBLISHED

Maritime New Zealand has published its Ipsos 2018 Recreational Boating Survey, revealing that recreational boaties seem to be generally behaving more safely. There is a steady lifejacket wearing culture, more weather checking, taking two ways to call for help and avoiding alcohol when going out on the water.

Nō te rere moana Aotearoa
MARITIME NEWZEALAND

Recreational Boating in New Zealand

2018

Incoming Chair of the Safer Boating Forum and Maritime NZ Deputy Director Sharyn Forsyth said the 2018 Ipsos survey is encouraging and shows that boaties' safety behaviour has improved in the four key risk areas identified and targeted by the 23-member Safer Boating Forum.

Boating by the numbers 2018

- 1.5 million adults (42% of New Zealanders) were involved in recreational boating last year.
- Kayaks remain the most popular craft used by boaties (33%), followed by power boats under six metres (22%), and dinghies (11%).
- Last year 19 people died in recreational boating accidents on New Zealand waters. Of these, 18 were men – 14 over 40 years (the highest fatality group).
- Lifejackets remain the most prevalent form of safety device taken on boating trips.
- The number of boaties wearing their lifejackets all, or most of the time, on the water, remains stable at 75%.
- The percentage of boaties having at least two ways to signal or call for help if needed 'every time' has risen to 43% in 2018 from 38% in 2017.
- The percentage of boaties checking the weather before heading out on the water has risen to 85% in 2018 from 81% in 2017.
- The decision to avoid alcohol 'every time' either before or during time on the water has risen from 61% in 2017 to 67% in 2018.

Incoming Chair of the Safer Boating Forum and Maritime NZ Deputy Director Sharyn Forsyth said the 2018 Ipsos survey is encouraging and shows that boaties' safety behaviour has improved in the four key risk areas identified and targeted by the 23-member Safer Boating Forum.

Read the survey results in full at
https://bit.ly/2AWrmRi

SUNSEEKER IS SET TO MOVE INTO METAL BOAT PRODUCTION

The new 49m tri-deck yacht will have an interior that can be styled to each owner's taste.

Sunseeker International is set to partner with Dutch based ICON Yachts to produce aluminium boats. The first boat, due for launch in 2021, will be a 49m yacht and will capitalise on the demand the boatbuilder is seeing for larger vessels.

"We know there is demand there for larger Sunseeker yachts as the 155 Yacht proved," said Sunseeker International sales director, Sean Robertson. "The decision to stop building that model was a commercial one based on space and capacity and certainly not due to lack of demand, so we knew we needed to rethink our approach to this size of vessel and have spent considerable time looking at various opportunities."

He added: "A move into metal also means there is no ceiling as to how big we can go in the future, but obviously this requires different expertise and so it was essential to find the right partner to support the project."

Sunseeker first entered the superyacht arena in 2001 with its 105 Yacht. Since then the boatbuilder has delivered more than 125 yachts over 100ft.

UNIQUE IDENTIFIERS FOR HUMAN-POWERED AND SMALL SAIL VESSELS CAN BE EXEMPT SAYS AMSA

From 1 September 2018, owners of human-powered and sailing vessels less than 7.5 metres can be exempt from having to get a unique identifier for each vessel, if a certificate of operation covers the vessels. Alternatively, owners may choose to continue to apply for a unique identifier for each vessel and remain exempt from having a certificate of operation. The unique identifier does not need to be displayed on the vessel.

AMSA recognised that requiring a unique identifier for every human-powered vessel and sailing vessels less than 7.5 metres, may not be practical for some operators, particularly operators with a high number of unpowered vessels that are replaced frequently.

Exemption 1 allows greater flexibility around the unique identifier requirements for human-powered and small sailing vessels covered by a certificate of operation

The change to Exemption 1 means that owners of human-powered vessels and sailing vessels less than 7.5 metres will have now have two options.

Option 1 — obtain a certificate of operation for the vessels and be exempt from all UI requirements
Each vessel will not need to have a unique identifier, as long as they are covered by a certificate of operation.

Option 2 — continue to operate without a certificate of operation and exempt only from UI display requirements

AMSA recognised that requiring a unique identifier for every human-powered vessel and sailing vessels less than 7.5 metres, may not be practical for some operators, particularly operators with a high number of unpowered vessels that are replaced frequently.

Human-powered vessels and sail vessels under 7.5 metres can continue to operate exempt from the certificate of operation requirements under Exemption 3 and apply for a unique identifier on a vessel-by-vessel basis. The unique identifier does not need to be displayed on the vessel.

India's Prime Minister Narendra Modi who asked the shipping ministry to build a maritime heritage complex in Gujarat.

INDIA SET TO CONSTRUCT NATIONAL MARITIME HERITAGE COMPLEX AT LOTHAL

The Indian Ministry of Shipping, through its flagship programme Sagarmala, is closely working with Government of Gujarat state and other stakeholders to showcase India's rich maritime heritage through development of a World Class Maritime Heritage Complex (NMHC) at Lothal in the state of Gujarat.

Preliminary work on design elements of the proposed heritage complex has been completed and consultations from experts are now under process.

In order to further plan and take the project forward, a one day consultation workshop was held at Chatrapati Shivaji Maharaj Vastu Sanghralaya in Mumbai. The discussion was centred on the plan options, themes, design vision, best strategies for the collection of artefacts and design approaches.

RECOMMENDATIONS ON REDUCING YACHT RACING RISKS RELEASED

A new Volvo Ocean Race (VOR)-commissioned report has examined ocean racing at night in areas of high vessel traffic density to establish possible steps to mitigate risk following the death of a fisherman during the race.

The independent Volvo High Traffic Density Report follows the collision between Vestas 11th Hour Racing and a fishing vessel this January, in the final stages of the leg into Hong Kong during the most recent edition of the race. The crews recounted that virtually all the vessels had some form of lighting and exhibited AIS. The fishing vessels were either stationary or travelling at slow speeds of 3-6 knots and they did not form an impenetrable barrier.

The report team found that the risk clearly depends on the level of congestion.

Recommendations made in the report included use of an improved coax connector and antenna at the masthead for the AIS system and a new testing and monitoring regime for AIS performance; the provision of tailored training packages for the fitted, radar, AIS and navigation systems and their use in collision avoidance and replacement of the FMCW radar with a more appropriate technology for offshore racing.

INSIGHT REPORT ON SAFETY IN THE PASSENGER FERRY INDUSTRY PUBLISHED

The global passenger ferry industry has averaged more than 1,000 fatalities per year since the 1960s, with the great majority occurring on domestic voyages in Asia and Africa.

From 1966 to 2015 there were 750 recorded fatal accidents involving passenger vessels, resulting in 59,600 fatalities. Ninety-three per cent of ferry accidents occurred during domestic voyages, with 90% of fatalities occurring in just 20 countries and 76% in 10.

The Lloyd's Register Foundation identified passenger ferry safety as a challenge in its Insight report on global safety challenges, in 2017. Since then The Foundation has investigated further to better understand the issue. It has drawn on expert knowledge and opinion to determine what activity is already underway to improve safety, what is further needed, and to explore if there is a unique role for The Foundation in line with its charitable mission.

The investigation has focused on establishing or confirming:

- he countries or locations where the most fatalities are occurring
- the predominant causes of accidents in these countries
- the practical measure(s) which could save the most lives.

Read the 48 page report in full at:
https://bit.ly/2AVjPSG

From 1966 to 2015 there were 750 recorded fatal accidents involving passenger vessels, resulting in 59,600 fatalities.

ICS PUBLISHES FREE 32 PAGE GUIDE ABOUT NEW SULPHUR RULE COMPLIANCE FROM JANUARY 2020

To assist shipping companies to prepare for implementation of the UN IMO global sulphur cap for ships' fuel oil, the International Chamber of Shipping (ICS) has produced – free of charge – some comprehensive guidance on implementation planning, to help ensure compliance across the shipping industry with this regulatory game changer.

The free ICS guidance has been prepared for the vast majority of ships that will comply after 1 January 2020 using fuel oils with a sulphur content of 0.50% m/m or less.

ICS Secretary General, Guy Platten, explained: "Shipping companies may need to start ordering compliant fuels from as early as the middle of 2019, and they are strongly recommended to commence developing implementation plans as soon as possible."

Read the 32 page guide at **https://bit.ly/2OxS6LH**

CLIPPER VENTURES EMBARKS ON EXPANSION PLAN IN CHINA

Clipper Ventures has announced the biggest expansion in its 23 year history with the opening of a new division in China.

The company, organiser of the Round the World Yacht Race, hopes that Clipper China will become the industry leader in the development of offshore training and sailing events in the country.

Together with running its own academies, the new division will build its own one-design keelboats and offshore racing yacht fleets under the aegis of British naval architect Tony Castro Design.

Announcing the news at the first China Sailing Cities forum in Beijing, William Ward OBE, chief executive and co-founder (together with Sir Robin Knox-Johnston) of Clipper Ventures, said: "Interest in sailing in China has never been higher. China has featured on the Clipper race route for the past 14 years. Out of over 40 nationalities of crew, China is now our third highest represented."

The creation of the new division follows the meeting earlier this year between Clipper Ventures, the GREAT Britain campaign and the yachting associations of China and the UK. This meeting, held during the Clipper 2017-2018 race's stopover in Qingdao, saw all parties committing to help make China a world sailing force.

Clipper China aims to open its first academy and launch the first yachts in its one-design fleet next year.

Zhang Xiaodong and William Ward OBE celebrate the launch of Clipper Ventures Chinese division Photo: Clipper Ventures

PROBLEMS ASSOCIATED WITH HIDDEN ENGINE ROOM HOT SPOTS

A ro-ro ferry was operating to a normal schedule with contractors on board to conduct repairs to an auxiliary Article written by Joe Maguire, Technical Manager at Skuld P&I Club. The Club would like to draw attention to the continued dangers of fires which originate in the machinery space. Specifically, where the cause of the fire is as a result of a flammable liquid spraying onto a hot surface.

Typical root causes for such incidents have been identified as:

- Missing pipe brackets/supports on oil systems leading to increased vibrations and subsequent cracks or even breakage of the oil piping system.
- Missing cup over the fuel injector valve.
- Original insulation or screening of hot surfaces was not maintained correctly.
- Original insulation or screening of hot surfaces was not sufficient for preventing oil spray onto hot surfaces.
- Insulation soaked with oil caught fire when sufficiently heated up.
- Oil leakages from engine components like exhaust valve indicators spraying onto the exhaust manifold.

It is recommended to enhance prevention and protection against such fires and that a proactive inspection and evaluation programme is incorporated as part of the ongoing planned maintenance schedule to ensure all piping systems and equipment is maintained corrected and that design is appropriate. Combined into this the use of a thermal imaging camera can have great benefits of identifying any areas where a hot spot is developing or has not been identified before.

Routines for this screening should include but not be limited to:

- Mechanical inspection and maintenance of all the internal oil piping on machinery including external oil piping near to all equipment that can potentially leak onto hot surfaces.
- Inspection and maintenance of all the original screening arrangements and insulation installed on equipment.
- Inspection and maintenance of screening and insulation of external oil piping near to the machinery that can potentially leak onto hot surfaces.
- Inspection and evaluation of actual piping design and screening/insulation design.

MAIB REPORT ISSUED ON THE UNINTENTIONAL RELEASE OF CARBON DIOXIDE FROM FIXED FIRE-EXTINGUISHING SYSTEMS ON RO-RO VESSELS EDDYSTONE AND RED EAGLE

On 8 June 2016, the roll on, roll off (ro-ro) vessel Eddystone experienced an unintentional release of carbon dioxide (CO_2) from its fixed fire-extinguishing system while in the Red Sea. A similar incident took place on 17 July 2017 on board the ro-ro passenger ferry Red Eagle while on passage from the Isle of Wight to Southampton. In both cases, gas leaked into the CO_2 cylinder compartment, but was prevented from entering the engine room by the main distribution valve which remained closed. Fortunately, no one was harmed in either of these incidents. However, the unintended release of CO_2 from fire-extinguishing systems has caused 72 deaths and 145 injuries, mainly in the marine industry, between 1975 and 2000.

Safety lessons

- The maintenance of the fire-extinguishing systems was inadequate
- The available guidance for the marine industry on the maintenance and inspection of CO_2 fixed fire-extinguishing systems was insufficient

Read the story in full and download the report at **https://bit.ly/2OwfxK6**

SAFETY ALERT ISSUED BY BSEE FOLLOWING INSPECTIONS AND FINDINGS FROM FIRED VESSELS

US Bureau of Safety and Environmental Enforcement (BSEE) has issued a safety alert summarizing its findings and recommendations following a number of recent risk-based inspections. BSEE's team of inspectors and engineers developed several recommendations from inspection findings to reduce the risks associated with fired vessels; hydrocarbon processing vessels on offshore oil and gas facilities with self-contained, natural or forced draft burners.

Between July 17 and July 20, BSEE inspectors visited 27 platforms operated by 14 unique operators to focus on personnel competency, mechanical integrity of fired vessels, managements systems, and maintenance of fire suppression systems.

BSEE inspectors also tested the effectiveness of operators' Safety and Environmental Management Systems (SEMS) by witnessing the application of safety management principles and processes.

BSEE found the following:

- Fired vessel operating procedures were not available to all personnel involved in the equipment operations;
- Operators are not consistently inspecting gauge cock valves to make sure they are functioning properly and remaining in the correct status/position;
- A majority of the inspected operators do not perform documented inspections/reviews beyond regulatory safety device testing of the vessel – specifically, monitoring glycol sample analysis;
- Multiple operators are complying with 30 CFR 250.876, which requires operators to have a qualified third-party remove and inspect, and repair or replace, as needed, the fire tube for tube-type heaters that are equipped with either automatically controlled natural or forced draft burners installed in either atmospheric or pressure vessels that heat hydrocarbons and/or glycol;
- Multiple facilities where the integrity of the flame arrestor and spark arrestor could not be easily inspected, the frequency of inspections was not understood by facility personnel, or there was no documentation of inspections;
- Operators' inspections and maintenance of fire suppression/fighting systems were overwhelmingly in compliance. However, consideration should be given to the location of deluge systems and fire suppression equipment;
- The facilities associated with the PBRI had minimal issues with excessive temperatures;
- Temperature safety element (TSE) coverage on offshore facilities associated with the PBRI were appropriate and in good condition.

Read the story in full and download the safety bulletin at **https://bit.ly/2PHGV4t**

THE DANGERS OF CARRYING NICKEL ORE CARGO AND THE ASSOCIATED RISKS ARE HIGHLIGHTED BY THE WEST OF ENGLAND P&I CLUB

The West of England P&I Club has warned operators and others involved of the dangers of carrying nickel ore. Carrying nickel ore can be dangerous, because of the risk of liquefaction of the cargo on passage when the moisture content is higher than the cargo's Flow Moisture Point (FMP).

After a number of ships being lost, with liquefaction of their nickel ore cargoes suspected of being the cause, the West of England Club published a Notice some years ago addressing the Dangers of Carrying Nickel ore. This Notice is still in forced and was re-issued as No.13 2017/2018 – Dangers of Carrying Nickel Ore from Indonesia and the Philippines – Mandatory Notification Requirements (re-issued).

The Club reminds operators of the risk of liquefaction with this cargo, as showcased by the loss of the 'Emerald Star', which claimed the lives of 11 seafarers in October 2017.

EUROPEAN MARITIME SAFETY AGENCY PUBLISHES AN OVERVIEW OF MARITIME CASUALTIES IN 2017

The European Maritime Safety Agency (EMSA) has published its annual review of maritime casualties. It has reported a total of 3,301 incidents through 2017. The report reveals that the number of very serious casualties has continuously decreased since 2014 with 74 reported in 2017. A total of 61 people were injured and 61 ships were lost. During the 2011-2017 period, 405 accidents led to a total of 683 lives lost, which represents a decreasing trend.

The report contains statistics on marine casualties and incidents that: involve ships flying a flag of one of the EU Member States; occur within EU Member States' territorial sea and internal waters as defined in UNCLOS; or involve other substantial interests of the EU Member States.

Key points:

- With 3301 occurrences reported in 2017, the total number of occurrences recorded in EMCIP has grown to over 20,000. This amounts to an average of 3315 casualties per year over the past four years.
- The number of very serious casualties has continuously decreased since 2014 with 74 reported in 2017. A similar improvement was noted for the number of ships lost, with 12 reports as compared with 41 in 2014.
- During the 2011-2017 period, 405 accidents led to a total of 683 lives lost, which represents a significant decrease since 2015. Crew have been the most affected category of victims with 555 fatalities.
- In 2017, there were 1018 injured persons reported. This number has remained relatively steady since 2014, at around 1000 per year. Again, crew represent the main category of persons injured at sea (5,329 during the 2011-2017 period).

Read the 175 page report at **https://bit.ly/2OTD7Mi**

OVER 40 LESSONS LEARNED FROM US MARITIME CASUALTIES IN 2017 AS NTSB RELEASES ITS ANNUAL REPORT

The NTSB has published its 94 page Safer Seas digest annual report giving an overview of key lessons to be learned from a series of major maritime casualties.

NTSB has noted that many of the issues in last year's report were recurring topics, including fatigue, poor bridge resource management, and distraction. The 41 marine accidents included in the report involved allisions, capsizings, collisions, fires, explosions, flooding, groundings, equipment damage, loss of life, injuries, and significant property damage.

The failure to maintain watertight integrity was the number one cause of vessel losses during the 2017 reporting year. Consequently, NTSB advises owners:

- To conduct regular oversight and maintenance of hulls and watertight bulkheads, even during layup periods.
- Oversight should include monitoring the hull thickness, maintaining sufficient marine coatings, and using cathodic protection systems.
- Known issues with watertight integrity and wastage need to be repaired using permanent means.
- Bilge piping and pumps should be in good working order and alarms should be tested regularly.
- Watertight doors should be checked and maintained to ensure they are properly sealed when closed. While under way, all watertight doors should be closed at all times.

Read the 94 page Safer Seas Digest at **https://bit.ly/2RO8E49**

FOLLOWING THE PUBLICATION OF THE M/V CHESHIRE REPORT, A RECOMMENDATION IS MADE THAT AMMONIUM NITRATE SHOULD NOT BE TREATED AS GROUP C

Following the investigation report of the 2012 built supramax bulk carrier M/V CHESHIRE which was issued by the Isle of Man Ship Registry, INTERCARGO urges IMO to reconsider how Ammonium Nitrate Based Fertilizer should be designated in the IMSBC Code. Currently, the Ammonium Nitrate Based Fertilizer is listed as a group C cargo, however, the accident showed that this cargo, or at least some of the ammonium nitrate based fertilizers shipped as this cargo, should treated differently under the IMSBC Code.

In August 2017, the 2012 built supramax bulk carrier M/V CHESHIRE, en route from Norway to Thailand, fully loaded with cargo declared by the shipper as being "Ammonium Nitrate Based Fertilizer (Non-hazardous)" and not liable to self-sustaining decomposition, suffered cargo decomposition that led to rising temperatures in the cargo holds and the generation of toxic gases.

The decomposition progressed throughout the length of the vessel to such an extent that, after several days, the vessel's Master took the decision to evacuate the crew. The vessel was then left to drift under the supervision of the Spanish Authorities until being salvaged, but in the end, due to extensive damage, the vessel was declared a constructive total loss.

Recommendations - The report makes some important recommendations including:

- Amending the misleading cargo name from "Ammonium Nitrate Based Fertilizer (non-hazardous)" to "Ammonium Nitrate Based Fertilizer (not otherwise classified)";
- The fertilizer manufacturers to provide further information on the behaviour and carriage of this cargo; and consideration of whether the current IMO-stipulated test for assessment of self-sustaining decomposition properties of an ammonium nitrate based fertilizer is adequate.
- The provision of specialist equipment onboard the vessel, monitoring of the cargo atmosphere by the crew, and the development of cargo and ship specific procedures related to the carriage of this cargo.

Read the story in full and download the report at **https://bit.ly/2P4bVi3**

SAFETY WARNING ABOUT WORKING IN ENCLOSED SPACES AFTER THE LOSS OF LIFE ON A FISHING VESSEL ISSUED BY MAIB

This urgent bulletin has been issued after working in a refrigerated saltwater tank resulted in a fatal accident on board fv Sunbeam (FR487) at Fraserburgh, Scotland.

Initial findings
At about 0900 on 14 August, Sunbeam's crew arrived at the vessel's berth ready to begin work. The vessel's refrigeration plant had been shut down after landing the final catch at Lerwick, and its RSW tanks had been pumped out and tank lids opened in preparation for deep cleaning. At some time between 1200 and 1350, Sunbeam's second engineer entered the aft centre RSW tank and collapsed.

At about 1350, the second engineer was seen lying unconscious at the aft end of the tank by a crewmate, who immediately raised the alarm. Three of the vessel's crew entered the tank and tried to resuscitate the second engineer but they soon became dizzy, confused and short of breath. One of the crew managed to climb out of the tank unaided, the other two crewmen and the second engineer were recovered onto the open deck by two crewmen wearing breathing apparatus. The two crewmen made a full recovery, but the second engineer could not be resuscitated and died.

It is unclear when and why the second engineer entered the tank. However, evidence indicated that his intention was to sweep the residual seawater that had settled at the aft end of the tank forward into the tank's bilge well. No safety procedures for entering or working in RSW tanks had been completed before he entered the tank.

Read the story in full and download the safety bulletin at **https://bit.ly/2R2U2NY**

SAFETY DIGEST WITH TWENTY FOUR CASE STUDIES PUBLISHED BY MAIB

The Marine Accident Investigation Branch (MAIB), based in Southampton, UK, has published its latest safety digest that features 24 case studies of accidents and incidents it has investigated.

The information is published to inform the shipping and fishing industries, the pleasure craft community and the public of the general circumstances of marine accidents and to draw out the lessons to be learned. The sole purpose of the Safety Digest is to prevent similar accidents happening again. The content must necessarily be regarded as tentative and subject to alteration or correction if additional evidence becomes available. The articles do not assign fault or blame nor do they determine liability. The lessons often extend beyond the events of the incidents themselves to ensure the maximum value can be achieved.

In his introduction to the Safety Digest, Andrew Moll, MAIB (Interim) Chief Inspector of Marine Accidents says, "Anyone who knows me will already be aware that I like simplicity. There is seldom anything simple about a marine accident, but to my mind there are usually three recurring components: an underlying weakness or vulnerability in the system (which includes the people); a trigger event or additional stressor that exploits an existing weak spot to cause an accident; and the aftermath, or how it is dealt with. As I was reminded as I approached my first sea command, it is not what happens that matters; it is how you deal with it."

Read the story in full and download the safety digest at **https://bit.ly/2ytBejT**

TRANSPORT MALTA INVESTIGATION REPORT INTO FATALITY BY TOXIC GASES IN BOW THRUSTER COMPARTMENT

Transport Malta's MSIU issued an investigation report on the fatality of a crew member onboard the Maltese-registered chemical tanker 'Scot Berlin' in August 2017. The immediate cause of the accident was the entry into a space which had a significant presence of toxic gases suspended in the air.

The vessel arrived at Marsaxlokk Oil Tanking Terminal loaded with two parcels of cargo. Following the completion of cargo operation, the crew members started the ballasting of the vessel since her next trip to Spain was a ballast voyage. Ballasting in the forepeak tank started under the supervision of the second mate.

About an hour later, at about 1300, a high bilge level alarm in the bow thruster compartment sounded on the vessel's Alarm Monitoring System. The bosun proceeded forward to investigate. He immediately noticed water escaping from the forepeak tank's manhole, reaching the bow thruster entrance, flowing over the sill plate and cascading on the bow thruster motor.

Consequently, one of the bilge alarms in the bow thruster compartment triggered the high level alarm. Aware of possible issues with the bow thruster motor, the chief engineer instructed the electrician to inspect the motor for any water damages. Prior to the commencement of the work, three safety documents were signed. The bow thruster electrical supply to the ventilation fan and the bow thruster motor was isolated.

As part of the cleaning process, the electrician sprayed the motor with an electrical cleaner using a pneumatic spray gun. He then proceeded to the messroom and returned to the bow thruster compartment at around 1600. About 20 minutes later, the bosun went to check on the electrician and found him unconscious, lying over the bow thruster tunnel.

Crew members were mustered and attempts made to lift the electrician from the bow thruster compartment. Eventually, shore assistance was requested and personnel from the local Civil Protection Department lifted the electrician to the open space on the forecastle deck. However, he was pronounced dead onboard.

Read the story in full and download the safety report at **https://bit.ly/2R2WV1a**

OBITUARY

JOHN ALFRED POLLEY
BY HIS FRIEND AND COLLEAGUE JEFFREY CASCIANI-WOOD

It is with great regret that we announce the passing of John Polley, one time member of the IIMS, who will be known to some UK members. John was born in East Ham on the 5th January, 1937 and died after suffering cancer on the 3rd October, 2018. John served an apprenticeship as an engineer and, after serving in Cyprus in H.M. Forces returned to the U.K. where for some years he acted as a professional photographer often travelling abroad and particularly to Russia to carry out the work. For a number of years he was also a Special Constable.

John took over the management of Springfield Marina and acted as Captain on the Thames river boat My Fair Lady. He owned the narrowboat Red Baron which he kept at the St Pancras basin where he was also a member of the Cruising Club. John spent his last working years as a surveyor and he was held in high regard as a meticulous and careful professional.

John also spent a number of years as a Justice of the Peace. He was a much respected man who would help anyone in need. He leaves behind a widow, Maureen, and two daughters and will be greatly missed both as a professional colleague and as a friend.

News has also reached IIMS Head Office of the death of Trip Vawter, an IIMS member based in Florida, USA. At this time no further details nor an obituary are available to publish.

SAFETY BRIEFINGS RESOURCE

IIMS receives regular notification of safety briefings and the lessons learnt from the various flag states and other sources following their painstaking investigations. These reports and findings have now all been brought together and published on one page on the IIMS website. They are categorised for ease as follows:

- Commercial Ship Safety Briefings
- Workboat Safety Briefings
- Marine Accident Investigation Branch (MAIB) Safety Briefings
- Yacht & Small Craft Safety Briefings
- Offshore Safety Briefings

In total there are nearly 50 links giving access to the outcome of hundreds of case studies, incidents and accidents.

Access the new safety briefings page at **https://bit.ly/2Qm9WCs**

INAUGURAL MARINE SURVEYING INTERNATIONAL FEST 2018 A SURPRISE HIT

On Tuesday 6th November at 11.00 UK time, IIMS opened the first 24-hour non-stop marathon Marine Surveying International Fest 2018, hosted live from the Institute's offices in Portchester, Hampshire.
The aim of the event was to recognise and celebrate as many different branches of the surveying profession as possible through a series of twenty four presentations with a new subject being introduced on the hour every hour. Presentations were delivered by experts in their field from various worldwide locations including Australia, New Zealand, America, Singapore, South Korea, UAE, India, Europe and the UK.

The presentations have been recorded and are still available to purchase. Just one low fee gives you access to the entire video content, which is not being made publicly available at this time.

Here is a review of the content that was delivered:

1. Mike Schwarz, IIMS CEO and Capt John Lloyd, Nautical Institute CEO spoke in earnest about aspects of the marine
2. Capt Zarir Irani presented: Latest trends in surveying using new techniques for evidence collection
3. Professor Christopher Abraham explained the concept of VUCA (volatility, uncertainty, complexity and ambiguity) as he talked about why we need to open our eyes to disruptive technologies happening all around us
4. Jon Sharland, Tritex NDT Ltd, presented: Ultrasonic thickness gauges and how to use them
5. Milind Tambe presented: What a surveyor needs to know about making best use of a digital camera and digital image asset management
6. Paul Winter presented: Effective report writing and reducing the potential of claims from a PI underwriting perspective
7. Mick Uberti presented: From ISM code to Domestic Commercial Vessels
8. Phil Duffy presented: Large yacht and small craft valuations
9. Andrew Drage, Copper Development Association, presented: The corrosion behaviour of metals in seawater
10. Simon Ward, MatthewsDaniel presented: From jack-up to belly up
11. Andy Ridyard, SeaSystems Electrical Controls presented: Teach a man to fish – electrical controls
12. Nippin Anand, DNV GL, presented: Near miss reporting: A (mis)leading indicator of safety?
13. Mike Schwarz presented three short business management topics: Looking good on the web, cashflow management and strategy preparation
14. Luc Verley presented: Dredging technology
15. Peter Broad presented: Big commercial shipbuilding – the challenges and highlights
16. Ken Livingstone presented: A basic introduction to subsea
17. Gary Lowell presented: An Introduction to surveying wooden runabouts
18. Jason Wee, Claims Director, Standard Club presented: The role of a P&I Club surveyor
19. Nick Parkyn presented: A background and introduction to synthetic yacht rigging
20. Mike Wall presents: Speed and angle of blow assessment
21. Capt Ruchin Dayal presented: Iron ore fines – IMSBC Code 2018
22. Karen Brain, Matrix Insurance presented: How to write an expert report for court
23. Jayan Pillai presented: Firefighting on ships and boats
24. The Fest concluded with a panel discussion with a group of 'veteran surveyors' with a combined age of 400 plus years. They spoke openly about the challenges of surveying, what makes a good surveyor calling on their considerable experience and wisdom.

The cost to puchase the entire content is just £100. This entitles you to unlimited access to the entire video content at your leisure any time you wish. More details at **https://bit.ly/2OlrP2T**.

IIMS SCOTLAND LYSCWG ANNUAL TRAINING REPORT

The annual two day training event for IIMS members in Scotland took place on 12/13 November at Inchinnan Cruising Club by Glasgow Airport and drew a dozen members.

The first day opened with an update on head office matters. Jon Sharland, Tritex NDT, had travelled north with his ultrasonic thickness gauge testing equipment and after the theory came the practical session out on the hard. Simon Limb from Sunbird Yachts gave an informative presentation on surveying from a broker's perspective, which seemed to capture delegate's attention.

The afternoon session was mostly devoted to Nigel Clegg, who brought his extensive knowledge of osmosis and moisture meters to the proceedings. In his first presentation, he assessed what has been learnt about osmosis over the past forty years and offered some helpful tips to surveyors. His second presentation reintroduced delegates to the theory of moisture meters and the makes available. There followed a practical session outside on the boats on the hard. Ian Lumley and Ricky Tropman brought the day to a close as they spoke briefly about some of the known challenges associated with surveying Sealine boats.

Day two dawned and those present were treated to videos about wooden boat surveying and disruptive synthetic rigging technology. Karen Brain, Matrix Insurance, gave detailed information and advice on how to write an expert report for court. The morning session was brought to a conclusion by Tim Bannister, Akzo Nobel, when in the first of two presentations, he spoke about corrosion.

It was Tim again who opened the afternoon session with a presentation that introduced attendees to the various types of paint and coating testing equipment, much of it used in the superyacht sector. After the theory came the practical and one by one, those present had a go at trying out the myriad of paint testing equipment on offer. IIMS Certifying Authority Chairman, Fraser Noble, closed the event with an update on the various activities of the IIMS CA and the many regulation changes emanating from the Maritime & Coastguard Agency.

To mark and recognise Tim's excellent work and contribution, IIMS has made a charitable donation to the Rona Sailing Trust.

REPORT ON THE SECOND INLAND WATERWAYS TRAINING EVENT

A group of a dozen plus surveyors, all with a keen interest in surveying inland waterways craft and narrowboats, met at Aqueduct Marina in the tiny village of Church Minshull, Cheshire, UK on 22 October for what turned out to be a valuable training day and sharing of knowledge opportunity.

Gerry Sheridan spoke knowledgeably and at length on the topic of spray foam insulation, an area which it was evident, most delegates knew little and about which he knew plenty gained from over 30 years in that sector. Paul Winter, Winter & Co Insurance, who is known to many IIMS members, gave his usual thought provoking (and sometimes chilling) presentations on things that go wrong with the writing of the report as well as the actual survey itself. He shared a number of case studies and it acted as a reminder that a surveyor is only as good as his/her last report.

After lunch, the group was given a tour round the marina workshops and all were surprised, and agreed, that the investment in Church Minshull was pleasing to see, setting itself apart from many other similar organisations.

Mike Lewus from the British Stainless Steel Association addressed the subject of welding in his presentation and in particular how to spot bad welds, welding defects and what repair might be required to make good. It fell to the inimitable Jeffrey Casciani-Wood to close the event as he gave an informative short presentation entitled 'Corrosion, pitting and anodes'.

LYSCWG 'SUPER' TRAINING DAY REPORT

More than twenty surveyors met at The Maritime Club in central Portsmouth on 29 October for the annual Large Yacht & Small Craft Working Group 'Super' training day. A diverse group of speakers presented to an audience eager to learn.

After a welcome from John Excell, LYSCWG Chairman, Mike Schwarz gave an update and overview on IIMS HQ activities. He was followed by Jeffrey Casciani-Wood, who at short notice due to a speaker cancellation had stepped in to reprise his presentation from the week before.

After a short presentation on managing cashflow, a key skill for surveyors running their own business, Andy Ridyard from SeaSystems Electrical Controls gave a fascinating talk entitled 'Teach a man to fish - (and give him a fishing rod) - electrical controls'. Friend of IIMS, Jon Sharland from Tritex NDT spoke about ultrasonic thickness gauges, explaining the technology behind them and how to use them.

The afternoon session was opened by Charlie Carter from Spinlock. The theme of his presentation was 'Load measurement for validation and data collection'. He also introduced the new App about to be launched called Sail Sense, a system that will provide a detailed log and record of the life of a sail. Another friend of IIMS, Karen Brain from Matrix Insurance, talked about how to write an expert report for court. In her presentation she stressed the obvious need for clarity and precision in the report.

The day was concluded by Alasdair Reay, CEO HPI Verification Services, who tackled the thorny topic of how to spot a fake boat and what marine surveyors need to know about the Recreational Craft Directive. The RCD remains problematic for some and his thoughtful approach to this subject was appreciated by those who attended.

2019 CALENDAR OF IIMS EVENTS

JANUARY
Friday 18 and Saturday 19 January - IIMS US Conference Baltimore, USA

FEBRUARY
Monday 18 February - Large Yacht & Small Craft Working Group training day - UK location to be confirmed

MARCH
Monday 11 and Tuesday 12 March - Large Yacht & Small Craft Working Group training at Malahide Marina, Dublin, Ireland

APRIL
Monday 1 April - Inland Waterways training day - UK location to be confirmed
Monday 8 April - UK tonnage training day at Itchenor, UK
Thursday 25 and Friday 26 April - Western Mediterranean Large Yacht & Small Craft Working Group training at Palma, Majorca

MAY
Monday 13 May - Certifying Authority Training Day - Portsmouth area

JUNE
Wednesday 12 June - Seawork (Small Craft Surveyors Forum)
Monday 17 June - IIMS London Conference, Regent's University, London
Tuesday 18 June - IIMS London Conference and AGM, Regent's University, London
Wednesday 19 June - eCMID London seminar, Regent's University, London

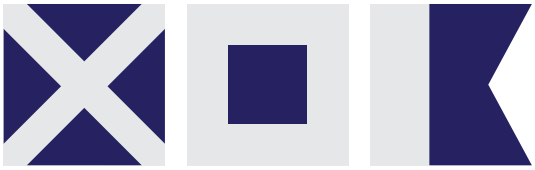
AUGUST
Thursday 1 and Friday 2 August - IIMS Australia seminar and workshop. Venue to be confirmed.

SEPTEMBER
Monday 23 September - Certifying Authority Training Day - Portsmouth area

OCTOBER
Monday 7 October - Inland Waterways training day - UK location to be confirmed
Tuesday 15 October - Tonnage training - European location to be confirmed followed by an IIMS training day on Wednesday 16 October at the same location

NOVEMBER
Monday 4 and Tuesday 5 November - IIMS Scotland Large Yacht & Small Craft Working Group training
Tuesday 19 and Wednesday 20 November - Second Marine Surveying International Fest 2019
Monday 25 November - Large Yacht & Small Craft Working Group training day - Portsmouth area

MARINE SURVEYING ACADEMY



MARINE SURVEYING ACADEMY UPDATE

The Marine Surveying Academy (MSA), a subsidiary owned by IIMS, has had a solid year. After a year of spectacular growth in 2017, it was always going to be hard to match that extraordinary performance in 2018.

MSA continues to operate in two distinct market sectors, that of accrediting offshore auditors as part of the eCMID AVI scheme run on behalf of the International Marine Contractors Association and delivering the Registered Marine Coatings Inspector's (RMCI) standard for those operating in the superyacht sector. A third market, underwater pipe insulation inspectors, is starting to show signs of a renaissance.

The eCMID and RMCI standards are both maturing as schemes, which means the number coming forward to be accredited and recognised is reaching its capacity. With this in mind, the MSA Directors have spent much of 2018 looking for new opportunities in various marine sectors. Expect to see some important announcements in early 2019 as they look to roll out some exciting new projects.

In his introduction recently to the first newsletter released to the eCMID AVI community recently, Mike Schwarz wrote:

When I first discussed the idea of an accreditation scheme with IMCA colleagues back in early 2014 for those carrying out CMID inspections as they were then (eCMIDS as they are now), I had no idea that the scheme would flourish so positively in the subsequent years. Back then the clamour from vessel owners and operators in the offshore sector, before the collapse and downturn occurred, was reaching fever pitch. Clean up the sector so that those boarding a vessel to conduct an eCMID could prove their competency to do the inspection was their implicit message. So, as I look back now as we recently celebrated the third anniversary of the eCMID AVI scheme, I feel a sense of pride and satisfaction, but not complacency! Developing a world-class accreditation scheme that remains fit for purpose, capable of withstanding the test of time, is flexible, yet has a robustness to it has been no easy task. Initial scepticism has long gone, yet the learnings along the way have been both steep and challenging at times. IMCA has made significant changes to the eCMID process too and we have adapted to accommodate those where necessary.

At the time of writing I can confirm that we have now accredited over 440 AVIs. In total, over 520 inspectors have come forward to be recognised. Some have failed, but that is as it should be with a scheme such as this. Only those who have been able to provide objective evidence to satisfy the peer group assessors have gained the badge. I believe this is one of the main reasons why major vessel owners and operators, including Ørsted Energy, Siemens and Swedish energy giant, Vattenfall, have all publicly stated that they will always seek to use accredited AVIs.

Nearly 400 inspectors have been trained at one of over 30 worldwide courses we have run under the guidance of lead trainer, Ian Coates. Surprisingly, around 100 have taken the training but have yet to formalise their accreditation application.

I would also like to record my thanks to my colleagues, who work tirelessly on your behalf, to administer and manage the scheme. They are Hilary Excell, MSA Director and Business Manager, who is ably supported by Pui Si Chung and Sharon Holland.

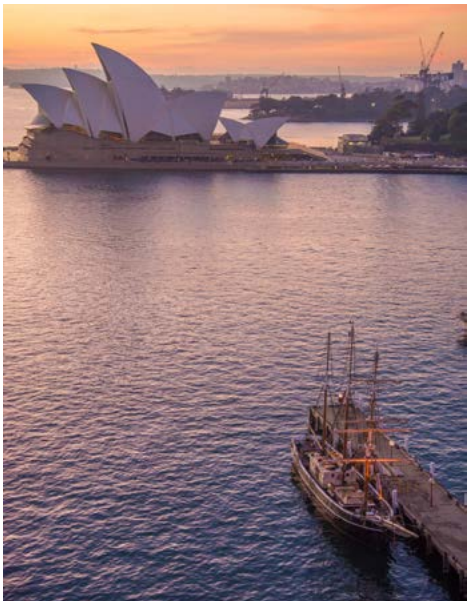
This year we have run two successful AVI seminars in London and Singapore that have been well attended. We will continue this theme next year, so watch out for details. We are also committed to further building and developing the eCMID AVI community for your benefit too.

IIMS AUSTRALIA TRAINING DAY REPORT

IIMS held its first one day seminar in Australia for some while, which was well attended. The venue was special too - the Sydney Heritage Fleet.

Adam Brancher, (IIMS Immediate Past President), welcomed delegates to the event. A series of presentations and discussions ensued over the course of the day, including an introduction to the Sydney Heritage Fleet and some of the challenges of surveying heritage vessels. The subject of lightship measurement was presented followed by an open panel discussion surrounding general surveying matters.

Following lunch, those in attendance were treated to further presentation on safety management, corrosion and electrical surveys. Adam gave a refresher on report writing techniques.



Recent new IIMS members

Full members

Andy Binder	*MIIMS*	Curacao
Darren Lack	*MIIMS*	Australia
Fares Fraih	*MIIMS*	UAE
Gerard Duggan	*MIIMS*	South Korea
Jamie Morrison	*MIIMS*	Singapore
Lance Grindley	*MIIMS*	UK
Mark Duthie	*MIIMS*	UK
Prasad Hettiarachchige	*MIIMS*	Sri Lanka
Samson Fawale	*MIIMS*	Nigeria
Simone Curti	*MIIMS*	Italy
Xavier-Francois De Meulder	*MIIMS*	Finland

Technician members

Matthew Lane	*TechIIMS*	UK
Rafiu Aliu	*TechIIMS*	Nigeria

Associate members

Ahmed Mohamed Esmaeel Osman	*AssocIIMS*	Qatar
Ali Dincer	*AssocIIMS*	Turkey
Allan Cameron	*AssocIIMS*	UK
Barney Sollars	*AssocIIMS*	UK
Danilo Frulla	*AssocIIMS*	Italy
Hendrickus Verboon	*AssocIIMS*	Australia
James Hale	*AssocIIMS*	UK
Juan Cichero	*AssocIIMS*	Italy
Ramon Tuburan	*AssocIIMS*	Philippines
Scott Fraser	*AssocIIMS*	UK

Affiliate members

Chiara Luoni	*AffilIIMS*	Italy
Kevin Van Cleemput	*AffilIIMS*	Canada
Snigdhajyoti Kar	*AffilIIMS*	India

Corporate members

Broadreach Marine	*CorpIIMS*	South Korea
Oceanskies	*CorpIIMS*	Guernsey
Viking Marine Services	*CorpIIMS*	UAE

Graduate members

Alan Hyne-Jones	*GradIIMS*	UK
Dwight Organ	*GradIIMS*	Canada
Gabriel Ghiano	*GradIIMS*	Venezuela
Gavin Sharp	*GradIIMS*	UK
Giles Innes	*GradIIMS*	UK
Giovanni Vanoso	*GradIIMS*	Italy
Graham Saward	*GradIIMS*	France
Hrvoje Marinovic	*GradIIMS*	Croatia
Marc Stanley	*GradIIMS*	Ireland
Michael Wilkinson	*GradIIMS*	UK
Tom Willis	*GradIIMS*	UK
Tom Crosby	*GradIIMS*	UK

IIMS congratulates those students who have completed their studies:

IIMS Professional Qualification in Marine Surveying

Gabriel Ghiano
Graham Saward
Hrvoje Marinovic
Michael Wilkinson
Tom Willis

HNC in Marine Surveying

Dwight Organ

HND in Marine Surveying

Giovani Vanoso

REPORT ON THE INTERNATIONAL INSTITUTE OF MARINE SURVEYING INDIA BRANCH MUMBAI SYMPOSIUM 2018

Offing
THINKING LIKE YOU

After the success of the 2016 seminar, Offing conceptualised and conducted the biennial conference of the International Institute of Marine Surveying once again. The knowledge rich event was held at the Courtyard Marriot Hotel in Mumbai on 10 Oct 2018.

A niche event with a niche audience included representation from leading Marine Surveying companies, P& I Clubs, H&M Underwriters, Marine Logistics companies, Correspondents, Insurance Brokers, OEM's, Law Firms, Design & Engineering Consultants, Aspiring Surveyors, the Indian Navy, Offshore EPC Contractors and of course, the London HQ of the IIMS made the event rather unique in content and nature.

Skeiron Logistics were the Marine Logistics Partner and Mar-Tech Insurance Surveyors & Loss Assessors were 3 Stripe Partner for the event.

DEPEND ON US
SKEIRON
LOGISTICS

OVER 2 DECADES IN SURVEY
SINCE 1989

It was the privilege of the Institute to have the honorable Director General of Shipping, Dr. Malini Shankar, grace the occasion as the Chief Guest.

The Guests of Honour were the veterans of the industry with such names as Capt. J.C. Anand, Capt. Kapil Dev Bahl & AWJ (Tony) Fernandez.

The CEO of the IIMS, Mike Schwarz, and President, Capt. Zarir Irani, also took the occasion to award fellowships to AWJ (Tony) Fernandez, Milind Tambe and Capt. Ruchin Dayal who have been longstanding members of the esteemed Institute and offered unparalleled services to the Surveying Industry


International Institute of Marine Surveying

Institute President

On behalf of the IIMS Management Board

Membership Number: 292

Institute Register Number: 40/28

Dr. Malini Shankar inaugurated the day with a crisp speech on the importance of accurate surveying, the role of the regulator, emphasis on well being of crew and most importantly extended support of her offices for matters related to surveying that may be required.

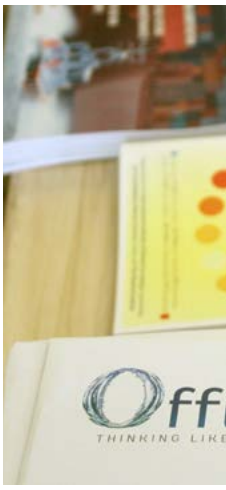
Crew Health & Wellbeing was the ice breaker session, aptly presented by Bhaskar Nigam from the Loss Prevention Department of the Ship Owners Club. It was indeed an eye opener to note the rise in Crew Health related claims and matters which also drove the point of the importance of better food, lifestyle and leisure for Mariners. The session soon turned to be a highly interactive one, thus setting the tone for the rest of the day.

The end of a survey or submission of a report is pretty much the beginning of things, rather than the end. Taking cue from this introduction, Zarir Bharucha (ZBA), a seasoned lawyer, took the floor and educated the audience on the legal liabilities of surveyors. Comments, questions and answers were an integral part of his presentation.

It was a rather humble approach and presentation by Mrs. Nalini Venugopal and her dynamic team from New India Assurance that got the surveyors (seasoned and fresh alike) to don their surveying hats and share opinions on case studies that were presented. The knowledge that was shared by the Claims department of the Underwriters was welcomed and applauded by all attendees.

In days where Augmented Reality and Virtual Reality are becoming a way of life, Mr Lalatendu Acharya from Vedam introduced rather new technology that would be developed for the Marine Surveying and Training Industry. From AR, VR to MR (Mixed Reality), the future surveyors need to belt up for an array of developments, was the message that came across. Mr. Acharya welcomed the challenges that any new technology would pose, with a promise to keep working and sharpening the axe.

The simplest, grounded and yet dynamic presentation of the day, interestingly came post lunch when Gautam Rekhi from Skeiron Logistics took the floor with a workshop style session titled 'It Hurts'. Breaking myths such as 'Insurance will pay' for all damages that a leading logistics provider such as Skeiron may face in case of an untoward incident, Gautam simply used two



real time cases and numbers that got the audience educated on matters of intangible losses. 'Loss of Reputation' being on the top of his lis, the presentation got surveyors to literally debate on technical matters, including, provision of securing plans, allocation of appropriate surveyors and execution of the survey.

Demurrage was another interesting topic presented by Capt. Vikrant Jain of Watertight Marine & Energy Consultants. Starting from the basics of demurrage, leading to the nuances of computing the same and finally leading to the expertise required in these matters, Vikrant was pretty much on the ball when it came to this subject.

Capt. Zarir Irani, President of the IIMS, gave a sharp presentation on the 'Milestones between a good marine surveyor and a recognized, accredited and reputed marine surveyor'. The presentation was pretty much aimed at the importance of 'separating the wheat from the chaff'.

'Mike on the mike' was the icing in the cake when the CEO of IIMS presented '19 Tips for Business Success'. Word of wisdom that were truly noteworthy. He also took the opportunity to share the benefits of being an IIMS Member and initiatives taken by the Institute.

Capt. Pervez Kaikobad, the Regional Director of IIMS India concluded the day with a vote of thanks to all attendees, sponsors, advertisers and Offing.

The day concluded with a 'Soiree' that was attended by the IIMS Members at a swanky eatery in the vicinity of the venue.

Capt. Purnendu Shorey of Offing Group hosted the event with panache!

Are you making the most of your IIMS membership?

It became clear from the membership survey carried out earlier this year that many members were unsure of the benefits of membership and in some cases had no idea at all. Apart from being a member of the leading worldwide professional body for marine surveyors, here are some of the benefits you are entitled to take advantage of.

- **RECOGNITION**
  As a Full, Technician or Associate Member you are entitled to use the appropriate designatory letters after your name to show your professional commitment and membership of the Institute.

- **USE OF INSTITUTE LOGO**
  Certain grades of IIMS membership are entitled to use the Institute's logo for marketing purposes, subject to adherence to the rules.

- **MEMBERSHIP TRAVEL SCHEME**
  IIMS has appointed Norad Travel Group to run its Membership Travel Service scheme. The scheme offers a range of exclusive benefits for IIMS members only.

- **NETWORKING OPPORTUNITIES**
  From time to time, you will be invited to attend seminars and forums, which will increase your knowledge in specific areas of marine surveying. It will allow you the opportunity to network with other members from different parts of the world as we are a truly international organisation.

- **MEMBERSHIP IDENTITY CARD**
  IIMS members receive a membership card once their subscription is paid. It is renewed each year. The card carries the necessary details about each member and can be used to help gain access to marinas, ports, harbours and other marine establishments, or simply to prove your identity.

- **ONLINE TRAINING SEMINARS**
  You will be invited to participate in a series of increasingly popular online training seminars delivered at different time points throughout the year by video conferencing covering a variety of marine surveying topics by industry experts. These seminars are charged at a modest sum. You receive a recording of the seminar for future reference and supporting presentation after the event.

- **WEBSITE MEMBER LOGIN AREA**
  All members are given access to a password protected members' only area on this website. Here you can manage your account and pay invoices for membership and other services online. Head Office can also post messages to your personal inbox for you to read.

- **IIMS WEBSITE**
  Access to the IIMS website at www.iims.org.uk, the most comprehensive marine surveying website in the world. It is a mine of information with over one thousand relevant news stories and features to search and read. Fresh news content is published most days.

- **MEMBERSHIP NEWS BULLETIN**
  Distributed electronically each month in pdf format, the news bulletin aims to keep members up to date with head office news, as well as what's happening internationally around the IIMS world and forthcoming events.

- **MEMBERSHIP MAGAZINE**
  As a member, you will receive an electronic copy, readable as a pdf or in e-reader format, of the Institute's quarterly magazine The Report. Each issue is full of topical articles, case studies

and membership news, much of it unique and commissioned only for the Institute. Members and non-members are invited to submit articles for the magazine. Printed copies of the magazine are available at a cost by contacting Head Office.

- **SURVEYOR SEARCH**
  All active surveying members are granted entry into the searchable online directory of surveyors. Members often say how valuable this listing is as a source of business; so if you are a member, please make sure the information published about you is accurate and current.

- **GEOGRAPHIC MAP SEARCH**
  All active surveying members are plotted on a map with a unique pin so that they can easily be found by location.

- **PROFESSIONAL QUALIFICATIONS**
  IIMS members are entitled to a discount of 10% off the published cost of studying one of the two IIMS Professional Qualifications and Diplomas.

- **EVENTS & CONFERENCES**
  The Institute organises a range of events around the world both via Head Office and at a local branch level too. Additionally, Conferences, the AGM and Institute Dinner are held annually in the UK.

- **LARGE YACHT & SMALL CRAFT WORKING GROUP TRAINING WORKSHOPS**
  There are regular large yacht and small craft working group gatherings, featuring technical seminars held at various locations each year around the UK and Europe to which you will be invited. A modest charge applies to attend these one-day training days.

- **CONTINUING PROFESSIONAL DEVELOPMENT APP**
  All professional bodies expect their members to be responsible for maintaining their continuing professional development (CPD). Based on the requirement to acquire 10 points per calendar year, IIMS has made this very easy to do through the use of a specially developed App. The App is free for members to download and use – available in Android and IoS formats, there is a web-based version too.

- **NOTIFICATION OF SAFETY BRIEFINGS**
  Dozens of safety briefings following incidents and accidents have been collated, categorised and published on this website and members are notified when new content is added. Easy access to full reports is available.

- **COPYRIGHT FREE PHOTO BANK**
  Free access to hundreds of copyright free images that can be used in marketing material, websites and anywhere else, all available via a password protected page on the website.

- **WEB DESIGN SERVICE**
  Steve Welsh of Lahive Creative Design, a specialist website WordPress developer (who was heavily involved in creating the IIMS website) is able to offer IIMS members web design services at a specially negotiated and substantially discounted rate.

- **EASY ACCESS TO IIMS SOCIAL MEDIA PLATFORMS**
  IIMS is active on social media and maintains LinkedIn, Facebook and Twitter accounts, all of which are updated regularly. Check out the IIMS Twitter feed @IIMSmarine. Join the IIMS LinkedIn group and keep abreast of the exchange of views and ideas from surveyors around the world.

- **ACCESS TO ORIGINAL VIDEO CONTENT**
  Members are notified when new video content is added to the IIMS YouTube channel called Marine Surveying IIMS and are free to watch the content at their leisure. There are well over 100 videos featuring original content made by the Institute to watch.

Contact Camella Robertson, Membership Secretary, by email at membership@iims.org.uk or by telephone on +44 23 9238 5223 for more details on any of the membership benefits.

2018

A YEAR OF PEAKS AND TROUGHS

BY **MIKE SCHWARZ**
IIMS CHIEF EXECUTIVE OFFICER

As the Chief Executive Officer, Mike Schwarz, approaches five years at the IIMS helm, he reflects on 2018, a year full of welcome peaks and unpleasant troughs.

2018

It is hard for me to imagine that I have been at IIMS for five years this coming January. So much has happened in that time. Good friendships have been made, first class business relationships forged, new suppliers and service providers engaged; and the Institute has gone from strength to strength financially. The organisation I took over in 2014 is now almost unrecognisable from what it has become. In truth I have no idea where the past five years have gone. They have flown by. But what I do know is that I have thoroughly enjoyed the challenges of my role (and still do). Apparently I have a few years left in me still! Given the many training events, seminars and conferences I have personally attended, I must surely qualify as the most knowledgeable man never to have completed a marine survey? As I start to look forward to the next five years, it is safe in the knowledge that what I have learnt in the past will stand me in good stead for the considerable and varied challenges and opportunities that lie ahead.

But lest I forget, this is a review of the past year so let me refocus my mind on what has happened during the last twelve months; and the answer put simply is a considerable amount.

For me personally and the Institute, 2018 started on a low note. Following a desperately sad fatality late last year, the result of a racing incident west of Australia in the Clipper Ventures round the world race fleet, (the fleet being coded by the IIMS certifying authority), it was inevitable that an investigation would follow. And so it was. The Marine Accident Investigation Branch (MAIB) were the first to come knocking in early 2018, soon to be followed by the Maritime & Coastguard Agency's investigation team. If you have never been on the receiving end of such an MCA investigation - (and why would you) – let me tell you that it is not a pleasant experience, nor one I am keen to repeat any time soon. This meant that the first three months of the year were something of a blur and, guilty or not guilty, it makes one question a lot of things, sometimes irrationally, not least as a breach of the Merchant Shipping Act (if proven) can carry harsh penalties. A hastily arranged meeting at MCA headquarters resulted, followed by the need to send one of our most senior surveyors to check, inspect and ratify the condition of the fleet when they put in for a routine stop at China. The final outcome remains unknown as the MAIB report is yet to be published and the MCA's investigation remains open as far as I know. I say all of this, because sometimes IIMS members are totally unaware of what goes on at HQ behind the scenes and the important issues we have to deal with. I am most grateful to Fraser Noble, IIMS Certifying Authority Chairman, for his unstinting support over that period and also Tania Bernice, Certifying Authority Administrator, for her immense secretarial assistance.

EDUCATION, TRAINING AND EVENTS

Having weathered the storm of the first three months, we moved into calmer waters. A number of

successful training events were delivered in the first half of the year, many of them very well attended. Most notable in terms of volume of attendance was the British Stainless Steel Association one day corrosion seminar that attracted fifty plus delegates. The sheer size of the course manual was, according to one member, 'worth the day's seminar fee alone'. Our annual Western Med training event in April was a great success. We spent time looking at a couple of facilities on the island of Majorca covering topics as diverse as propeller repairs, fire equipment and life raft servicing and testing. And IIMS formed a UK based inland waterways working group, which has now met twice. During recent months, we have delivered another round of successful training in various locations.

The Institute remains active with its overseas training opportunities and seminars too. The annual two day event in Baltimore was curtailed by heavy snowfall in the area, but that did not prevent some excellent speakers making it to the venue to present to those who managed to get there also. My thanks to James 'Randy' Renn for organising. Another highlight was undoubtedly the India Branch Symposium held in Mumbai in October. An illustrious group of surveyors and others from the maritime world came together for a thoroughly thought provoking day.

After some inactivity, it is good to see IIMS members in Australia having the opportunity to meet for a day's seminar in Sydney early in November. My thanks to Adam Brancher and Mick Umberti for facilitating locally.

My second visit to Singapore for a combined IIMS and eCMID AVI seminar and training event once again proved to be a success. We attracted some excellent speakers from the region and my thanks to MatthewsDaniel for their financial support.

Planning these events is never easy, although fun to do. Finding original speakers who can talk knowledgeably about not the same old subjects is never straight forward. On balance, I believe we have got it about right in 2018. I am grateful to the many speakers who have generously given their time freely to help to educate surveyors in the UK, Europe and around the world.

Much of this content is now recorded and ends up on the IIMS YouTube channel eventually and is available to members and the wider maritime community. It is a wonderful resource of fresh and unique content and free to access. I should also mention that after a one year absence, the IIMS London Conference is back in 2019. The dates to put into your diary are 17 and 18 June at Regent's University in central London. The conference dinner will be on Monday 17 June. More details will be available early in the New Year.

Our Professional Qualifications in marine surveying have had a very strong year. Currently there are over 160 students enrolled with the IIMS distance learning programme, managed and expertly administrated by Cathryn Ward. Our relationship with edexcel formally comes to an end on 31 December.

One of our most innovative and rewarding knowledge sharing initiatives took place in the form of the Marine Surveying International Fest 2018, a live 24 hour online marathon that happened in early November. One new presentation was delivered on the hour every hour for 24 hours by an expert presenter somewhere in the world. This was no easy feat to coordinate and contributions came from as far afield as Singapore, New Zealand, Australia, Thailand, South Korea, Dubai, India, USA, UK and Europe. Yes, there were a handful of minor technology glitches during the event, but all the presenters turned up at their allocated time and it was great fun too. Judging by the positive feedback from those who participated, we hit the mark spot on. The Fest also gave us the chance to gain some very valuable PR in high profile shipping and boating media. So if we have achieved nothing else, we have certainly raised the profile of IIMS to the wider maritime industry. My thanks also to Camella, Cathryn, David and Craig who supported me throughout the day (and more importantly) through the night session.

The Marine Surveying International Fest 2019 has already been given a scheduled date of 19/20 November. This year's Fest schedule can still be seen here at **https://bit.ly/2OlrP2T**. I very much enjoyed chatting with Capt John Lloyd, CEO of the Nautical Institute to open the event. And the 'closing ceremony' was fun too. My panel consisted of a handful of veteran surveyors with a combined age of 400!

2018 ANNUAL GENERAL MEETING

The AGM was held at a hotel by Heathrow Airport on a sweltering British summer's day. The changing of the guard took place as Adam Brancher, now your immediate Past President, handed the presidential baton on to Capt Zarir Irani, who took it up with great enthusiasm.

I am particularly grateful to Adam, who has helped me this year in ways no former President has been required to do before. In this case, he became involved in the disciplinary process of a member. It has subsequently come as a surprise to some members that IIMS can and does occasionally discipline a member. I would call it the darker side of the work that the Institute has to do, but nevertheless essential at times.

Although not well attended in person, a good number joined the AGM online, the first time we have made it available this way. Future AGMs will also be offered online too. There were two key proposals that the membership was invited to vote on and a number of proxy votes were submitted prior to the AGM.

The first item was to ask for approval for the Institute to purchase an office on a business mortgage once the lease expires on Murrills House in February 2020. Those who cast a vote were all in favour. To give a quick update, we are working closely with a financial planner and now have a clearer understanding how much we can borrow and on what terms. We need to build our deposit account

and are about half way towards what we need, so there is work to do. I am on a soft search with various local property agents, but finding the right place in the right area that sits within our financial constraints and the location of the IIMS head office staff is not going to be straightforward.

The second item was to seek approval for IIMS to develop a non-mandatory, objectively based international standard for marine surveying leading to formal accreditation. All bar one (an abstention) were in favour of advancing the scheme. In the intervening months, Hilary Excell and I have opened dialogue, not only with some of the surveyors who are likely to want to become accredited, but also and perhaps equally importantly with organisations who use and commission the services of surveyors and others who touch the surveying profession. It should be noted that two other UK based surveying membership organisations have expressed a desire to work with us on this initiative, which adds further clout to the scheme. The IIMS management board still has to ratify the final proposals. If and when that is done, more information will be forthcoming.

HEAD OFFICE MATTERS

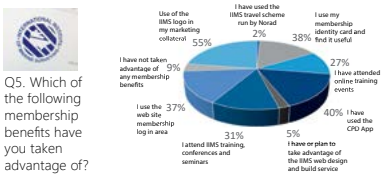
The IIMS HQ team has been stable throughout the year. Kate Davey, Management Accountant, left the business to be replaced by Jen Argent (an excellent surname for an accountant as our French Past President Capt Bertrand Apperry duly pointed out). Jen has settled in very well. I take this opportunity to thank my colleagues at head office for their amazing efforts over the past year to maintain an effective and fully functioning secretariat for our members.

Membership has continued to climb, albeit at a slow rate, but nevertheless we are bigger than we were this time last year! Our innovative digitally targeted promotion to attract new members is paying dividends. My thanks to Camella Robertson for her work in this area.

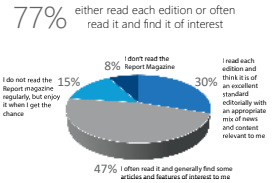
It is also most appropriate that I extend my personal thanks to the many others who give their time freely to help make IIMS what it is. I won't name them individually, but the President and management board, various committees, Regional Directors, local branch committees, the many speakers who support IIMS all deserve recognition and your appreciation.

MEMBERSHIP SURVEY

We undertook a major survey amongst our members for the first time in four years. I am grateful to those who took part - almost 300 completed the questionnaire anonymously. It is clear that there is a lot of love for IIMS, which is gratifying to see. I personally found the many verbatim comments that were made, both positive and negative, to be hugely beneficial. Already I have been able to react with my colleagues to some of the suggestions that were made.



Q5. Which of the following membership benefits have you taken advantage of?



Q6. How do you rate the quarterly Report Magazine?

MEMBERSHIP BENEFITS

One of the findings that surprised me most from the membership survey was the lack of knowledge, in some cases of the full range of member benefits that IIMS offers and which are freely available. I understand that for any membership organisation, engagement is always a key challenge. After all, I want to play tennis once a week at my club without any other involvement and what goes on behind the scenes is less important to me; so I get it. And it is fine that some members choose not to engage with their Institute. There is a raft of information, knowledge and surveying resources at your fingertips. I could start with the IIMS web site, for example, which boasts 1,500 searchable news stories and features, or the LinkedIn channel now 2,500 strong, or perhaps the recently launched copyright free image bank with 400 plus photographs available to download; or what about the IIMS YouTube channel now featuring over 130 videos free to watch at your leisure? And of course there is this very magazine, The Report, which you are reading, so beautifully presented and designed by Craig Williams. These days the articles are increasingly commissioned for your benefit to ensure they are pertinent to you. You will not find much of the content in this magazine elsewhere. In conclusion, it is your Institute. Do make use of what's on offer.

CPD AND APP DEVELOPMENT

IIMS is due to launch its third App in early 2019, something of a key membership benefit, to be known as the Marine Surveyor Search App, but more on that shortly. It will soon be two years since the Continuing Professional Development (CPD) App was launched. This easy way to maintain annual CPD points has been welcomed by many members, misunderstood by some and totally ignored by others. In a way that's fine as CPD is not mandatory. But I struggle to understand why any member would not want the CPD approval roundel proudly displayed on their web page listing to show they are CPD compliant to the outside world. For those who have misunderstood the App, or found it hard to use, please just email the IIMS office. Help is at hand and readily available.

Following the success of the first App, a clone was developed and launched to enable the four hundred plus eCMID Accredited Vessel Inspectors to keep their CPD up to date.

This brings me to the Marine Surveyor Search App, due for launch in early 2019. It is vital to be abreast of the latest technology and I am delighted that IIMS is leading the way amongst the other surveying organisations worldwide. Available in iOS and Android versions, all IIMS members will be featured on this new platform for free. If you prefer not to be listed, just let the office

know and we will remove you. It works in conjunction with the web site search engine of course, but provides a different avenue and will appeal to a different audience who is seeking the services of a surveyor. The App will be promoted to the wider maritime world, particularly to those who engage marine surveyors or who touch the profession too.

The new App, which has taken most of this year to architect and construct, is a collaboration between IIMS and FIIMS member, Ruchin Dayal's eDOT Solutions business in Goa. A sophisticated search function will be the key feature of the App.

EXTERNAL ACTIVITIES

IIMS is active in several sectors which are not directly related to the Institute that many members will be unaware of.

One of the new initiatives that has been started this year is to develop a UK based apprenticeship scheme for marine surveyors and we have a seat at the project planning table. Several meetings have been held with interested parties and a further one is scheduled later this month. It appears there is UK government funding and IIMS is keen to position itself as a potential education content provider for those who choose to come through the scheme.

I have continued my work as Chairman of the MCA's Certifying Authority Professional Standards Working Group and we are now finalising a proposal document that will bind the various UK coding authorities together, ultimately leading to ever higher, common surveying standards. IIMS is set to play a leading role in this area it seems.

We have a seat at the MCA's Technical Interpretation Forum, which meets infrequently. This influential group is involved in an important piece of work to try and agree on common interpretations of wording and phraseology that appear in some of the various regulatory documents.

DO CONTACT ME

At the start of my review, I had said 2018 has been a year of welcome peaks and unpleasant troughs and I have tried to reflect that in this article. Ultimately it has been a satisfying and rewarding year. Is IIMS making a difference out there? You bet we are (in my humble opinion)!

I always welcome contact from members no matter where in the world they are, or which branch of surveying they are engaged with. IIMS is and will always be dedicated to excellence in marine surveying.

Good luck for 2019.

Jason Wee

Jason Wee is Claims Director at Charles Taylor Mutual Management (Asia) Pte. Limited, managers of The Standard Club Asia Ltd.

Jason has an impressive background and CV prior to joining Charles Taylor in 2010. He can boast:

- *LL.B (Hons), University College London, 1999*
- *Barrister (Lincoln's Inn), 2000*
- *Advocate & Solicitor, High Court of Malaya, 2001 and a shipping and commercial barrister for 9 years and appointed junior partner at Tommy Thomas, Kuala Lumpur*

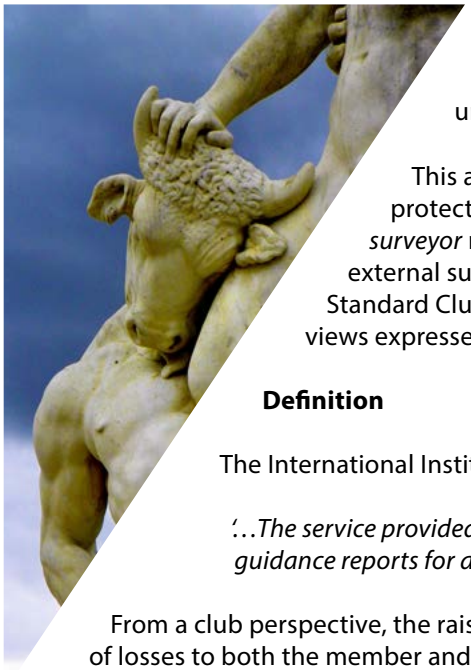
Jason presented a paper on the same topic as this article at a recent IIMS Conference in Singapore, where it was well received and the Institute invited him to put his presentation into words for The Report Magazine.

The role of the marine surveyor – a P&I club's perspective[1]

BY **JASON WEE**

'…The ship wherein Theseus[2] and the youth of Athens returned had 30 oars, and was preserved by the Athenians down even to the time of Demetrius Phalereus for they took away the old planks as they decayed, putting in new and stronger timber in their place...'

per Plutarch[3] in *Life of Theseus*



Like their predecessors of ancient times, the marine surveyors of today inspect and make recommendations in respect of the state of seaworthiness (or lack thereof) of a vessel. Unlike their predecessors, and unsurprisingly, their role has expanded.

This article discusses the role of the marine surveyor from the perspective of a protection and indemnity ('P&I') club. Save where expressly stated, the term *marine surveyor* refers to both the club's loss prevention team (or internal surveyors) and external surveyors, wheresoever located. Whilst examples refer to the practices of the Standard Club UK Ltd and Standard Club Asia Ltd (collectively, 'the Standard Club'), the views expressed herein remain solely those of the author.

Definition

The International Institute of Marine Surveying (IIMS) defines 'marine surveying' as:

'…The service provided to maritime and transport organizations in general and the production of guidance reports for all other bodies connected with maritime operations or maritime trade…'

From a club perspective, the raison d'être of the marine surveyor is the timely and cost-effective prevention of losses to both the member and to the mutual. The role of the marine surveyor in preventing losses is for convenience, discussed under three sub-headings below:-

i) Ship's standards and risk reviews.
Ensuring that the club continues to underwrite ships and members of appropriate quality and at the appropriate rating;

ii) Operations and claims handling support.
Where required and in the event of an incident, to provide expert loss prevention assistance including the gathering of evidence and provision of technical opinion and other guidance to the membership of the club and the club's claims team;

iii) Promoting loss prevention and raising safety standards.
Identifying risk triggers, providing guidance in respect of loss prevention, raising safety standards and promoting a culture of safety and loss prevention amongst the membership and the wider shipping industry.

I. Ship's standards & risk reviews

The fate that befell the hull clubs, forerunners of the modern P&I clubs, approximately two centuries ago, was recorded thus:-

'…The hull clubs developed into notorious "rust bucket clubs" where poor hulls presented more claims on ever decreasing funds. Many hull clubs closed in the … early and mid - 19th century…'[4].

To ensure that the P&I club underwrites ships and members of appropriate quality (and presumably to avoid the fate of the hull clubs), the entered vessels and their members are subject to a system of surveys and inspections which must be satisfied or they risk their covers becoming compromised. At the Standard Club, these surveys include the class survey, flag state inspections, ship risk review (SRR)/ loss prevention survey as well as the member risk review (MRR).

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1 This article is a summary of a presentation delivered by the author at the International Institute Maritime Surveyors Conference (IIMS) in Singapore on 2 August 2018

2 Theseus was the mythical king and hero of Athens who slayed the Minotaur – a creature which was half-bull and half-man - which lived in a labyrinth in Crete - and to whom 7 young men and 7 young maidens from Athens were sacrificed annually that is until it was slayed by Theseus. The tale continues that the ship which Theseus used on his victorious mission to Crete was preserved in the Athenian harbour as a memorial for several centuries after. She had to be maintained in a seaworthy state, for, in return for Theseus' successful mission, the Athenians pledged to honour the god Apollos each year thereafter by sending a religious mission to the temple of Apollos on the island of Delos using the ship of Theseus. She was accordingly surveyed regularly and any wood that wore out or rotted was replaced. It became unclear as to how much of the original ship remained over the centuries, giving rise to the existential conundrum referred to as the Ship of Theseus Paradox whether after the effluxion of time, she should be considered 'the same' ship of Theseus.: https://en.wikipedia.org/wiki/Theseus

3 Greek- Roman essayist (45- 127 AD)

4 Hazelwood and Semark, *P&I Clubs Law and Practice, 4th edition, 2010 para.1.19 at p.5*

a) Class surveys

It is a condition of P&I cover that a vessel remains in class throughout the period of its entry. To that end, classification society surveyors are key to ascertaining whether vessels to be entered with the club are and remain, respectively, approved by class[5]. Members of the Standard Club are obliged to report recommendations by class promptly[6]; comply timeously with the rules, requirements and recommendations of class[7]; permit inspection and provide information on class to the club[8], failing which club cover may be compromised.

b) Flag state inspections

Flag states possess powers to inspect and audit a vessel on its register[10]. It is also a condition of P&I cover that the member complies with all statutory requirement of the ship's flag state relating to the construction, adaptation, condition, fitment, equipment, manning and operation of the ship and must at all times maintain the validity of such statutory certificates as are required or issued by or on behalf of the ship's flag state, including in respect of the ISM and ISPS Codes[11].

c) SRR

In accordance with guidelines issued by the International Group of P&I Clubs (IG), most clubs require new vessels to be entered with the club or vessels meeting certain criteria (e.g. sea-going vessels aged 12 years or more) to undergo a Loss Prevention Review or SRR, as they are referred to at the Standard Club.

SRR's may be undertaken by the internal or external surveyors. It involves amongst others inspections of the hull, ship structure, maintenance, navigation procedures and records as well as the ship and safety management systems onboard[12]. Where an external surveyor is appointed, the criteria for selection of surveyors include their experience with the ship type, location, availability and pricing.

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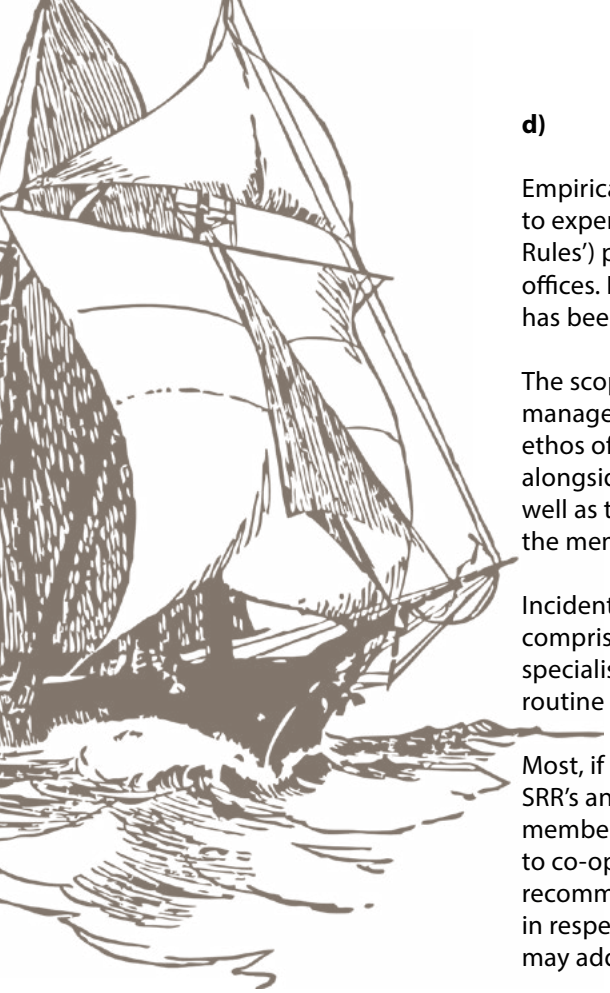
5 e.g. see rule15.1(1) *P&I Rules of the Standard P&I Club 2018/2019* http://www.standard-club.com/media/2663541/pi-and-defence-rules-and-correspondents-201819pdf.pdf
6 *supra* r.15.1(2)
7 *supra* r.15.1(3)
8 *supra* r.15.1(4)
9 *supra* r.15.2
10 e.g. In Singapore, for instance, these powers are provided by the Section 206 of the Merchant Shipping Act and Section 22 of the Prevention of Pollution of the Sea Act: https://www.mpa.gov.sg/web/portal/home/singapore-registry-of-ships/flag-state-control/flag-state-control-inspections
11 *supra* Proviso (5) r.15.1
12 Includes inspections over the hull, structure, lifting appliances, ballast tanks, cargo spaces, cargo operations, navigation procedures, engine room operations, maintenance, environmental compliance, Safety Management System, personal safety, safety equipment, accommodation and manning, security



d) MRR

Empirical evidence suggests that members with better quality of operations tend to experience fewer claims. Additional to SRR's, the Standard Club P&I Rules ('the Rules') provide for MRR's[13] to be carried out over the member's operations at their offices. In practice, MRR's tend to be carried out on new members or where there has been a significant change in operations of the member.

The scope of the MRR includes a review of the member's safety and environmental management systems. In concept and in practice the MRR is truly reflective of the ethos of the club as a mutual. It involves the club's loss prevention team coming alongside the member, understanding its business, its decision-making processes as well as the challenges faced and having done so, providing appropriate support to the member to improve loss prevention.

Incidentally, the Standard Club's loss prevention team is multi-disciplinary. They comprise master mariners, naval architects, ship production engineers and specialist surveyors. This unique blend of expertise enables the team to meet the routine needs of the club as well as the more bespoke needs of individual members.

Most, if not all clubs subscribe to the belief that ship and operations surveys such as SRR's and MRR's surveys are in the collective interests of the member and the wider membership. Accordingly, cover may be compromised in the event a member fails to co-operate to allow for an SRR or MRR[14] or if the member fails to comply with the recommendations made by the club following a SRR or MRR[15]. In the case of a SRR in respect of new ships or renewal, where there is an infraction of the Rules, the club may additionally decline an application, impose conditions or refuse renewal[16].

Club surveyors and underwriting

At the Standard Club, its loss prevention and underwriting teams work closely together. The club's surveyors analyse and evaluate claims trends and risk triggers year-round. Their findings are fed back to the underwriters who are thus equipped to finesse the rating and assess the club's risk appetite. Over the years, the Standard Club's team of surveyors and underwriters have internally developed an effective desk top pricing tool for this purpose[17].

13 *n.4* r.15.4 supra
14 r.15.3.2; 15.4 the Rules
15 r.15.7 the Rules
16 r.15.13.1 the Rules
17 The Desktop Risks Assessment Tool (DRAT) is an easy-to-use and quick and preliminary desktop assessment application which provides for an overall assessment of a risk object and the member.

II. Operations and claims handling support

From time to time, the clubs through their extensive network of correspondents are called upon to assist their members in appointing external surveyors to assist with operational matters (e.g. pre-load steel surveys).

More frequently however, marine surveyors provide claims handling support to the clubs and their members following an incident and a claim. The role of the marine surveyor in this respect is to safeguard the interests of the member and/or to minimise post-incident exposure.

To that end, the club's loss prevention and claims team work closely. The club's surveyors are the first port of call for members and the claims team who seek technical and/or loss prevention advice. In turn, the claims team alerts the club surveyors in respect of any trends of incidents which may amount to a 'risk trigger'. Where appropriate, the club's loss prevention team investigates, analyses and reports their findings in respect of these trends to the club and membership and make appropriate recommendations completing a virtuous cycle of effective loss prevention.

Apart from club surveyors, following an incident and/or claim, the club may appoint external surveyors (anywhere in the world depending on the location of the incident) to assist with investigations, fact-gathering, to advise and where appropriate, to testify as witnesses of fact and/or as expert witnesses.

Due to space constraints it is not possible to list all the attributes of the ideal marine surveyor to assist with operations and claims handling. Suffice to select three below.

a) Competence

Despite its antiquity, the marine surveying profession lacks an established and universal system of accreditation, certification and/or qualification. In appointing external surveyors to assist in an incident or a claim, the Standard Club for instance largely (although not exclusively) relies upon recommendations from its global network of 650 correspondents located and spread in over 130 countries who effectively function as its hands, ears and eyes on site.

It goes without saying that the club expects surveyors to be honest and candid about their qualifications and experience. P&I claims can and do involve high stakes. Cases have been known to collapse due to expert witnesses overstating their competence. Some eventually prove incapable of withstanding the rigours of cross-examination. It is imperative that the club and member are assured that their appointed surveyor is the right person for the job.

Accordingly, if a surveyor considers the scope of his instructions to exceed his competence, the club must be able to expect frank disclosure from the outset. The same goes for any potential conflict of interest.

Often overlooked but of equal importance are 'house-keeping' competencies on the part of the surveyor. At first blush, these competencies may seem unimportant but the price for giving scant regard to them can be far-reaching with irreversible and adverse consequences for the member and the club. A sample of these 'skills' includes the following:

i) Clarity as to the precise scope of one's instructions e.g.; whether one is appointed as a gatherer of fact or provider of expert opinion or both;
ii) Good co-ordination with other service providers;
iii) Clarity as to the identity of the appointing principal;
iv) Regular updates to the appropriate person at the principal's office;
v) Diplomacy and not jumping to conclusions;
vi) Not handing over documents or granting access of key information and documents to the opponent surveyors without prior permission of the principal and club; and
vii) Prompt, clear and relevant reports including provision of estimates of exposure at the earliest possible opportunity albeit provisional with periodic reviews, as appropriate and as matters develop.

b) Cross disciplines

The extent of P&I cover is wide-ranging and often involves marine claims which are multi-disciplinary in nature. Ideally, the appointed surveying firm possesses competent multi-disciplinary expertise to attend to all aspects of a P&I claim. The reality however, is that there exist few such one-stop shop surveying firms. The chances are even more remote that any one surveyor possesses all the required expertise to investigate the full range of P&I claims. It is therefore reasonable to expect a surveyor to know and be able to provide recommendations to the club of specialists in their locality (e.g. cargo, chemical, fire or metallurgy experts).

More importantly, a surveyor ought to be able to work well with other professionals across-disciplines, be they on the same or opposing sides of a claim. Many a dispute can and has been amicably and efficiently settled with the assistance of surveyors and experts agreeing on the parameters of the issues and working in tandem to narrow the competing interests of the parties involved.

c) Independence

It is the duty of the surveyor to assist the member and club so that they are best-placed to advance their claims or to meet the claims against them. At the same time, the surveyor has an overarching duty to remain independent and objective.

For instance, where the facts and evidence are plain, the surveyor should have the fortitude and diplomacy to timeously advise the club and member that upon a true assessment of the evidence, the technical position of the member may or may not be as robust as initially anticipated. This would provide the member and the club with an opportunity to review their posture and the strategy with legal advisors.

In cases where the surveyor is appointed as an expert witness, his obligation to be independent is even more pronounced[18], and is regardless of the party who appointed him.

18 *per* Lord Wilberforce in Whitehouse v Jordan [1981] House of Lords: *'…Whilst some degree of consultation between experts and legal adviser is entirely proper, it is necessary that expert evidence presented to the court should be, and should be seen to be, the independent product of the expert, uninfluenced as to form or content by the exigencies of litigation. To the extent that it is not, the evidence is likely to be not only incorrect but self-defeating…'*

III. Promoting loss prevention and raising standards

That marine surveyors play an important role in raising safety standards and promoting a culture of safety and loss prevention in shipping cannot be overstated.

For example, a unique feature of The Standard Club is its 'Safety and Loss Advisory Committees' ('SLAC's') of which there are three: Asia, Europe and London Class[19].

The SLAC's are managed by the club's Loss Prevention team and the members are drawn from senior technical and marine managers from amongst the club's global membership, who possess the requisite experience and expertise to grapple with complex issues and who have sufficient authority to act on the findings within their own organisation.

The SLAC's have proven successful in their 22 years of existence. They examine both individual claims and claims trends as means to determine the root causes and recommend preventative measures as well as discuss the implications of new regulations, review loss prevention initiatives and other topical subjects affecting the maritime industry and provide direction for the Standard Club's loss prevention initiatives.

Additionally, the club devotes significant resources to publishing articles, guidance notes and web alerts to increase awareness of loss prevention and safety issues within the membership and in the wider shipping community[20]. The club remains constantly live to current risks whether they arise from new technologies[21] or ancient threats[22].

All year round and around the world, the clubs conduct and participate in seminars and provide training for their members at seminars and conferences, sharing freely of their experiences and the lessons gleaned over the course of many years of experience in loss prevention.

The clubs collaborate with other organizations to improve safety and loss prevention. Two examples from the Standard Club include the *"Be Cyber Aware At Sea"* and the *"Human Element"* initiatives, both of which produced various publications and films to raise awareness in respect of precautions to be taken to prevent cyber-attacks at sea and to reducing incidents at sea caused by human lapses, respectively.

Conclusion

From a club perspective, the role of the marine surveyor today to make shipping safer and more efficient is wide, varied and indispensable to the shipping industry. As to the qualities of the ideal marine surveyor, it is appropriate to consider the description well-encapsulated by the International Association of Classification Societies (IACS) as below:

> *'…The utmost care and discrimination have been exercised by the Committee in the selection of men [and women] of talent, integrity, and firmness as Surveyors, on whom the practical efficacy of the system and the contemplated advantages must so materially depend; the Committee have in their judgement appointed those persons only…who appeared to them to be most competent to discharge the important duties of their situations with fidelity and ability, and to ensure strict and impartial justice to all parties whose property shall come under their supervision…'*
>
> *-Classification societies – their key role – IACS, 2012*

The author gratefully acknowledges the input from Capt. Akshat Arora, Senior Surveyor, Charles Taylor Mutual Management (Asia) Pte. Limited, managers of The Standard Club Asia Ltd in the preparation of this article.

19 The London Class SLAC focuses on inland waterways' claims, whilst the Asia and Europe SLACs examine the claims generated by the Standard Club's 'blue water' business. All divisions meet twice a year.
20 See **http://www.standard-club.com/loss-prevention/about-loss-prevention.aspx** and **http://www.standard-club.com/news-and-knowledge**
21 See e.g. Technology Bulletin, September 2018 **http://www.standard-club.com/news-and-knowledge/news/2018/09/technology-bulletin-september-2018.aspx**
22 Web Alert: BMP5 and Global Counter Piracy Guidance **http://www.standard-club.com/news-and-knowledge/news/2018/09/web-alert-bmp5-and-global-counter-piracy-guidance-printed-copies-out-now.aspx**

TWENTY YEARS OF THE ISM CODE SO WHAT NEXT?

The International Maritime Organization (IMO) International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM code) first became mandatory in 1998. Twenty years and five amendments later, we reflect on how the code is doing and what still needs to be done.

BY **CAPT YVES VANDENBORN**

BACKGROUND

The ISM code was born out of a series of serious shipping accidents in the 1980s, the worst of which was the roll-on roll-off ferry Herald of Free Enterprise that capsized at Zeebrugge in March 1987, killing 193 of its 539 passengers and crew. The cause of these accidents was a combination of human error on board and management failings on shore.

What followed was a much-needed change in maritime safety administration. In October 1989, the IMO adopted new Guidelines on Management for the Safe Operation of Ships and for Pollution Prevention giving operators a, 'framework for the proper development, implementation and assessment of safety and pollution prevention management in accordance with good practice'. Following industry feedback, the guidelines became the ISM code in November 1993 and were incorporated in a new chapter IX of the IMO's 1974 International Convention for the Safety of Life at Sea (SOLAS) in May 1994 and became mandatory for companies operating certain types of ships, as from 1 July 1998.

Meeting the requirements of the code is evidenced by ships' flag states in five-year 'documents of compliance' for ship operators and five-year 'safety management certificates' for ships, all subject to regular audits.

INDUSTRY IMPACT

The ISM code requires nearly all the world's ship operators to write and implement on-board safety management systems (SMS) for their ships and make 'designated persons' ashore responsible for every ship's safe operation. For many ship operators, ISM was simply a new legal framework for the safety systems they already had, but for others it led to major and much-needed changes in operating culture and organisation. It forced companies with poor or weak management systems to create a formal, structured safety management process for the first time, even if they only saw it as just more 'red tape'.

Certainly, the ISM code has made shipping safer and cleaner over the past two decades. In 2005, an international group of experts, on behalf of the IMO concluded that: 'where the code is embraced as a positive step toward efficiency through a safety culture, tangible positive benefits are evident'.

The Standard Club has been assessing members' management systems since 1993 through our member risk review programme. Linked to our ship risk review programme, the review was formally based on our 'minimum operating standards' but, since 1998, it focuses (among other things) on how ISM requirements are being met from the perspective of a liability insurer.

As such we have seen at first hand the many positive changes the ISM code has brought to the marine industry. Most of our members are now using ISM effectively to increase safety on board their ships. This includes creating safe working practices and working environments, making suitable safeguards against potential risks and continuously improving safety management skills of personnel.

ROOM FOR IMPROVEMENT...
But despite its success to date, we believe there is still scope to improve the effectiveness of ISM.

PRODUCING MORE EFFECTIVE SMS DOCUMENTATION

One issue we have noticed is the tendency for SMS documentation to be bulky and difficult to read, defeating its purpose – it should be short, simple and easily understood. Addressing this concern, we have witnessed several of our larger members carrying out major reviews of their systems to reduce the volume of text dramatically and replacing it with flow charts, diagrams and other visual signs to assist quick reference.

SMS documentation needs to be readily accessible to both office staff and crew members on board. Crew members should know exactly where the documentation is on a ship and how they can quickly find the procedures and checklists they need. Digitalising the SMS will assist the crew in easily finding relevant procedures when required.

SMS documentation should also be unique to the ship, even if it started life as a standard 'off-the-shelf' manual. There is no point, for example, in having tanker procedures in an SMS for a dry bulk cargo ship, or having checks for bow thrusters where none exists.

A key point to note in drafting SMS checklists is that they should balance the need to remind crew members what to do and instruct them step-by-step on what to do. Crew members are qualified and experienced to carry out their duties on board, that is why ship owners employ them, right? So, they will know how to do their job and the checklist is available to remind them, not to give them step-by-step instructions. The longer the checklists, the less likely they will be followed properly and the more likely they become just a paper exercise.

Finally, new procedures and checklists should not be added to an existing SMS without properly reviewing older procedures – and removing or consolidating them as necessary. This will ensure there is no duplication or contradiction. Sadly enough we frequently find this to be the case when we carry out our reviews either on board or in the ship manager's office.

TAKE A SENSIBLE APPROACH TO NEAR-MISS REPORTING

We are aware that ISM has prompted some shipowners to encourage an over-the-top approach to reporting near-misses and non-conformities in the mistaken belief this alone will improve safety. This method has also been encouraged by major charterers in the wet and dry trades.

There should however be no minimum target set for the number of near-miss reports. The focus should be on learning from genuine near-misses and non-conformities. Creating paperwork for these occasions for the sake of pleasing major charterers is of little value if the incidents are not genuine or if the lessons learnt are not built into training programmes and new safety projects.

Near-miss reports should be analysed and categorised so they can be combined with reports from other ships in the fleet. They should also be cross-referenced with similar statistics and categories from port state control (PSC) inspections, oil major inspections (SIRE) and Rightship inspections.

Any category standing out in key performance indicators (KPIs) needs further analysis and lessons learnt should be incorporated into the next training programme or safety project. A real incident in this category is more likely if such steps are not taken.

VALUE ISM REVIEW REPORTS

We also believe shipowners and operators should pay more attention to their masters' SMS review reports. The 2008 update to the ISM Code made masters responsible for, 'periodically reviewing the SMS and reporting deficiencies to shore-based management'. In our experience these vital reports are very often incomplete (or say everything is satisfactory) and are certainly not dealt with properly.

Masters should be encouraged to discuss the SMS reviews with crew members as they are the key users of the documentation and should have the biggest input into any proposed changes. The reports should be a priority for senior management, as failure to act on what their masters tell them could lead to a major casualty or major ISM non-conformance.

Senior management should give similar attention to ship safety committee meeting reports (SCMR), which are a requirement under the International Labour Convention. These too are often not filled in properly, particularly if the meetings focus on welfare issues rather than safety.

Internal auditors visiting ships for the annual ISM audit should be properly qualified to do so and should focus solely on carrying out the ISM audit. We have noticed that these visits are often combined with a technical superintendent inspection which will result in the auditor focusing more on his expertise, the technical visit, and be less focused on the ISM review. This will ultimately lead to a non-effective ISM audit report which, on paper will satisfy the requirements, but in reality will not benefit the crew or safety.

ENSURE DRILLS ARE CARRIED OUT REALISTICALLY

Frequently, when the club surveys its entered tonnage, we find fire fighting or enclosed space or even abandon ship drill reports to be forged or the drill scenarios to be repetitive. In order for crew to be properly prepared in the unlikely event of an emergency, the drill scenarios should be realistic and regularly change. A properly trained and experienced crew can make the difference between life and death in an emergency.

In summary, yes, the implementation of the ISM code has brought with it a long list of improvements to the maritime industry and the safety of ships at sea. But only when implemented correctly and there are still ways to further improve the effectiveness of the ISM code. SMS manuals and checklists need to be concise, specific and easy to read in order for crew to use properly. Near-miss reports and non-conformities need to be reviewed and analysed properly with resulting actions directing the training given to crew. Masters and crew need to be educated in what the SMS reviews and SCMR are for and how best to conduct discussions and meetings prior to writing their reports. Equally, shore-based managers and staff need to know how to review the reports properly and, more importantly, how to improve the safety of their ships as a result.

"...the implementation of the ISM code has brought with it a long list of improvements to the maritime industry and the safety of ships at sea. But only when implemented correctly..."

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ABOUT THE AUTHOR

Yves Vandenborn is a master mariner and sailed with Exmar Nv. Belgium on chemical/product, LNG and LPG tankers. Since coming ashore in 2003, Yves has worked as a marine superintendent with a Singapore/Indonesian shipowner. He set up the ISM system and assisted the company in obtaining TMSA and Oil Major approval for the fleet.

Yves worked as an independent marine surveyor from 2006 until 2010 undertaking numerous P&I condition surveys, oil major SIRE pre-vettings, TMSA audits, pre-purchase surveys, bulk carrier hatch cover ultra-sonic tests and so on.

Yves joined Charles Taylor in February 2010 as an in-house marine surveyor for the Singapore office of The Standard Club. In July 2013 he took over as Director of Loss Prevention for The Standard Club. As the director he is responsible for the risk assessment programme for the club's worldwide membership. He is further responsible for the loss prevention initiatives, the club's loss prevention publications and provision of technical advice to the membership, as well as to the underwriting and claims departments.

Load measurement for validation and data collection

BY **CHARLIE CARTER**

No need to be self-obsessed when cold and damp on the rail… become an active member of your boat's data acquisition and management group.

Load sensors and data gathering have been a familiar part of the sport going back to the late era of IOR – in particular the final generation of IOR supermaxis like Bill Koch's data-muncher Matador3. Today the technology is prevalent from the America's Cup to big offshore trimarans to IMOCA, VO65s and including most of the modern superyacht fleet. The demand for data from raceboats is continually increasing – but it's a form of technology that to date has been relatively inaccessible to the mainstream sailor, not to mention many designers and builders.

However, for some time Spinlock has been working on developing load-sensing technology that is accessible to the wider world of sailing, as the company's marketing manager James Hall explains: 'Spinlock has been measuring load on ropes and rigging for 20 years, but recently more and more people in the sport have acquired an appetite for data and the performance benefits data can bring to a team if used correctly.'

The benefits are many and varied, including:

- validating design loads, static and dynamic
- validating line choices
- validating winch and block sizes
- adding in or taking out purchase
- as an accurate and repeatable trimming aid

'We're finding it's not just sailors who are interested in the data,' says Hall, 'it's also boatbuilders and designers looking to validate actual loads against design predictions. The same is true for spar-builders while sail designers want to understand more about the loadings on their sails and modify their designs accordingly.'

Spinlock offers two ranges of Sense products – Digital and Wireless – with several models working through the tonnage spectrum: 5, 10, 20, and 50T. The units are simple to attach into a system using soft loops, so can be moved around the boat and installed or removed in seconds.

A feature of Sense load cells is Bluetooth connectivity, allowing data capture to phones and tablets via the Spinlock app.

According to Rán project manager Jan Klingmüller, this opened up their data to the whole sailing team. 'With your iPhone in your pocket it's picking up data all the time, giving you backstay tension and mainsheet loads etc.' Klingmüller admits he finds it all a bit addictive. 'The more you use it the more ways you find of using it. We now use it to weigh our motorbikes…'

'America's Cup world has always been good at data capture,' continues Hall, 'and also the Mini Maxi fleet and the TP52s. Teams realise this kind of data capture offers the incremental gains that can make a massive difference in a tightly contested fleet.'

The Sense tools have also proved important to the rapid development of the M32 catamaran on the World Match Racing Tour. 'The builders of the M32 used Sense load cells to validate loads during development and then better tailor their deck equipment to the live loads encountered.'

If there's one part of the sailing world that needs no persuading of the importance of measuring and limiting load, it's the superyacht race circuit. With owners commissioning yachts for cruising but then catching the racing bug, it's easy for design loads to be exceeded. This makes it vital to know how highly you can load up sheets and running backstays, for example, before fittings start to rip out of the deck with potentially catastrophic consequences. 'With larger yachts and superyachts in particular,' says Hall, 'insurance liability is becoming ever more onerous. If a rigger has made a soft loop for attaching a block, they need to prove it is properly tested and that the recognised certificate has been issued. More and more we are seeing riggers turn to load sensors to validate their work.'

According to Andrew Martin, product development manager at Oyster Yachts, Spinlock's Sense products have become integral to the testing process at Oyster. 'We use Spinlock products for weighing spars, for running winch load tests and for halyard and sheet load tests to build up empirical data.'

Alex Thomson's Hugo Boss team have been using Spinlock equipment for load testing their Imoca 60 leading up to the Vendée Globe. 'In a development class like the Imoca 60, everything needs to be as light as possible while being strong enough to do the job all the way around the world – so using the Sense load cells has been a vital part of the testing process for Hugo Boss,' says Hall.

Comanche is another state-of-the-art campaign that tests the edges. Every element of this super powerful 100-footer has been designed around achieving the perfect compromise between weight and strength. Project manager Tim Hackett says: 'We used a 5T Spinlock load cell for Puma in the Volvo, which we used for checking sheet loading, load testing at the dock and so forth. On Comanche our maximum sheet load is around 9 tons – we've used the Spinlock gear for testing winch pods, leads to the primary winch pods and setting up configurations.

'It's an easy tool to set up, so sometimes we'll have the load pins in the winches and runners during a big manoeuvre, using it as a check-in to make sure the boat's permanent gauges are giving us the correct information…'

The thirst for data in the wider market has led Spinlock towards investing further in the technology sector, in particular in the data acquisition field, to the point where they have positioned their growing 'Sense' range of products alongside the established ranges of personal protective equipment and deck hardware, now respectively labelled as the 'Protect' and 'Control' sectors of the business in a recent re-branding exercise.

Charlie Carter, Product Manager at Spinlock explains the new direction for the company "In the technology era, information and numerical data on just about anything is available instantly in the palm of your hand. Driving this is the public need for instant access to previously hard-to-find facts and figures, and also the appetite in society for metrics to quantify performance on a huge range of everyday activities, from knowing your ETA on a car journey, to predicting the value of your house. The marine industry can adopt available technologies and Spinlock recognise the opportunity in developing products tailored to meet the wider sailing markets appetite for measuring, analysing and responding to new information streams."

A new product launched at METS in 2018 is the Spinlock Sail-Sense. This revolutionary new electronic device will record and share the sails flogging and UV exposure levels experienced by the sail, to be stored

in the cloud via an app on iOS or Android mobiles or tablets. The virtually invisible electronic device simply sewn onto a sail above the clew patch. It is completely sealed, the sensors, battery and all electronic components potted in resin to ensure the harsh marine environment cannot affect its function.

The device shares data via Bluetooth, to an app on a iOS or Android device, which uses a data connection to store the accumulating data in the cloud. At its most basic functional level, the device is a tool for managing a sail inventory, storing the vital statistics of sails, with NFC chip to quickly identify a sail and view this information, then augmenting this info with GPS position of the mobile device to log the sails geographical location. An annual subscription service will make the sail usage data available to the owner, and this can be shared to other specified parties, which could be the sailmaker, the boat captain or the crewmember responsible for the sails, for example.

Spinlock hopes that the product will eventually be commonplace on sails of all types, becoming a 'passport' for the sail, recording all the manufacturing information and the sails usage over its lifetime. Providing a usage profile of a sail will provide a clear picture and some valuable data to a spectrum of interested parties.

First and foremost, the information will be used by the owner or manager of a boat to manage and monitor the use of sails, in particular to create an accurate record of use which may potentially extend the life of some sails, by providing a better view on the sails actual use, in comparison to its age. At the performance end of the market, analysis of exported data will provide insight into the efficiency of tacks and also, when integrated with high end performance analysis software, will greatly increase the validity of the multitude of data streams that are being analysed, because it will pinpoint the precise moment a sail was 'in-use' eradicating the need to piece together and fill in the gaps from systems which currently rely on user input (usually buy the navigator) to specify what sails are being used and when, which in a race situation can be delayed.

But the manufacturers, Spinlock, are aiming firmly at the wider market, and not just the high-end superyacht or bg budget race campaigns. This is reflected in the development brief of the inventors, a tech company called SmartSail, which specifies that the device to be affordable for a much wider chunk of the market, and with a retail price of £150, which is a magnitude of 10 cheaper than the expectation of some prospective customers asked what they thought the cost might be.

Accumulated data could eventually provide valuable information to the designers and builders of the sails themselves, who have welcomed this technology. Deeper learning about the effects of use on the shape and condition of sails, across the range of fabric technologies used in sail making, will allow sailmakers to refine their products and offer a more accurate prediction of the lifecycle of a sail. Actual flogging and UV exposure data, and accurately recorded time that a sail has been flown, acquired from a Sail-Sense device, can be analysed alongside draft stripe analysis and hi-tech photographic sail-shape analysis methods, to

provide detail on the relationship between these factors – both known to degrade considerably integrity of sail fabrics – and hence the lifetime of a sail - but which up to this point have not been able to measured effectively in the marine environment. Furthermore, the data will provide insight to sailmakers to profile of the types of customer they are selling to and their typical sailing behaviours, to help build the right product for each user's specific needs.

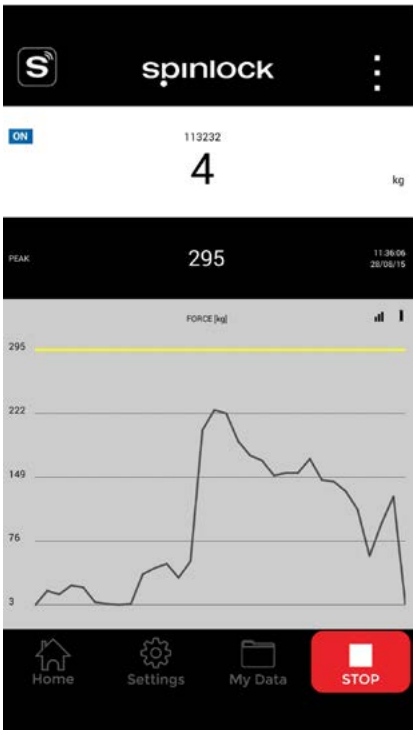
The real benefits to the marine industry will take time to crystallise, as any new technology comes with the challenge of educating the industry and consumers in its potential. If it becomes widely adopted, a reasonable period of use to accumulate periodic data to account for seasonal trends will be required to make a big impact to the industry. But some might argue that some data is always better than no data, if the context is appreciated, and appropriate caveats applied. Even before use of the device has grown to the scale where reasonable conclusions can be drawn from the data sampled, sailmakers could immediately use the data source to verify warranty claims.

Insurers are another group who are enthused by the prospect of a completely new source of data. Alongside other information feeds, it could be conceivable that data collected in a 'black-box' style recorder, recording a range of feeds from GPS location to wind conditions and including the sails being used at any one time, from the Sail-Sense (though perhaps stopping short of aviation style cockpit recorders!). The fact that data being recorded could be used by insurers to build safe parameters of operation would certainly by some leisure marine users as a compromise of their freedom, but if such a system could help to improve overall marine safety (and with it insurance payouts), and reduce premiums for those who choose to adopt it, it could gain traction.

In time, the device could be adopted widely enough in the sailing fraternity to be an able to offer a surveyor or prospective buyer of a second-hand yacht a clear picture of its sails condition, and if Spinlock can turn this huge slice of the market on to the concept, it will really be able to live up to the 'passport for sails' moniker.

Charlie Carter continues "Part of the challenge to reach the wider market is making the information palatable for those regular sailors who are interested and see the value in data acquisition and data analysis tools for performance reasons, or otherwise, but who aren't professionals running performance programmes for the top race teams. Automating the processing of data to present results in a clear and useful, often graphical way, requires bridging the gap between having highly technical capability to record and manage big data, and distilling exactly the benefits or outcomes the mainstream customer wants to quickly draw from that information, while dealing with a range of technical ability in the end-user. At Spinlock we often refer to what we call 'the Strava effect' - where the sports market is fascinated with the report on their running or cycling activities, regardless of whether they are seeking performance gain or just through intrigue. What Strava and many other apps do brilliantly is pitch the complexity of use perfectly at the mass market – simple enough for an average person learning the ropes to manage and enjoy, but with enough depth of complexity to engage the professional sportsman."

The sailing world is ready for the technology revolution, and with high tech data acquisition systems becoming more affordable, more compatible with existing systems and more user friendly in their implementation and use, expect to see some exiting new products reaching the market in the coming years as start-ups and established names recognise the potential for transferring technology into the leisure marine world.



how to survey wooden boats

Mike Andrews, based on the UK south coast has been involved in building, repairing and inspecting wooden boats for many years and is regarded as something of a specialist and expert in this area of surveying. Additionally, he has served a term as a member of the IIMS education committee. Whilst many surveyors in the UK are wary of wood and its importance has increasingly diminished in the UK in favour of GRP, it remains an essential construction material in many parts of the world. In this feature length article, Mike shares his passion for wooden boats and his extensive knowledge as he presents a step by step masterclass about the things a surveyor should know when surveying wooden boats.

BY **MIKE ANDREWS**

INTRODUCTION

Whether you have been involved in the marine industry all your life or you have come to marine surveying through a career-change having completed and passed the IIMS Diploma Course, perhaps, you are now considering specialising in wooden boat surveying? If so, you should be prepared to engross yourself in the technology and language of wooden boat construction and timber technology. There are several ways in which you are able to achieve this. If you have not been involved in building wooden boats before becoming a surveyor, one option for learning the required practical skills and complex terminology is to enrol on one of the excellent courses at various centres which have been established around the UK.

In addition to a course, during which you may also have the opportunity of building your own boat, research will be required in the subject. The internet is one obvious and valuable resource for the research of specific types of yacht construction and their designers, but specialist books are also useful to identify specific changes and periods in yacht design and construction.

Extensive study and research of yacht designers and their designs, which may span periods from the late 1800s to today, should always be ongoing, not least because of the ever changing and rapid advances in boatbuilding technology through the decades. It is important to be familiar with all construction types and have the widest possible knowledge of the marine industry.

If you need help or advice regarding any issues related to a vessel's construction or condition, don't be too proud to contact a senior surveyor at the IIMS for advice and support.

THE SURVEYOR

The marine surveyor who chooses to specialise in wooden boat surveys will ideally already posses a great deal of experience and extensive knowledge of all the various designs and construction methods available to the wooden boatbuilder. A sound understanding of the different nuances of individual designers, both past and present, is also an essential requirement because construction techniques may vary greatly from one designer to another.

When considering the survey, quite a different approach is needed when assessing either an old workboat, a cruising yacht, a famous Traditional Classic yacht or a Modern Classic yacht in the new Spirit of Tradition class.

In today's modern and often "high-tech" marine industry, the Wooden Boatbuilder and Wooden Boat Surveyor are very much specialists in their field. In fact, very often marine surveyors specialising in wooden boat surveys would probably have started their careers as traditional wooden boatbuilders and progressed through the industry to become qualified surveyors. Many, if not all of the Institute's senior surveyors fall into this category and are therefore well placed to offer you support if requested.

THE SURVEY

During the last twenty-five to thirty years, the marine industry has seen a huge resurgence worldwide in new wooden boat building and traditional classic yacht restoration. Visiting an International Wooden Boat Show and regatta, or flicking through the pages of Classic Boat magazines indicates that the current trend of traditional and modern wood construction in the UK and abroad seems set to continue for some years. Many of the new boats being built in Europe and the USA are often based on or are exact replicas of classic yacht designs and most likely will be constructed using traditional plank-on-frame methods.

There are many other craft both large and small being built today that reflect modern trends in design and construction. The most notable of this type are the Cedar Strip-Plank and West Epoxy system and whilst the majority of vessels being built this way would be in the 30 to 50 feet range, it is not uncommon now to come across larger yachts of between 70 and 150 feet. In fact, the demand for larger, custom-built yachts of around 80 to over 100 feet has been steadily increasing globally.

Classic yacht restoration has also been a steadily growing area of the industry during the last three decades, especially in England, the United States and Scandinavia. There are many well-known UK wooden yacht designs from all over the country still sailing and more being salvaged from muddy creeks, old sheds and boatyards, bound for restoration. Interestingly, many designs of early wooden cruising yachts would have been based on the lines of robust and seaworthy regional fishing or pilot boats. The Itchen Ferry, Falmouth Quay Punts and West Country Pilot Cutters are typical of these and many examples of this type survive to this day as well as a variety of new-build replicas.

THE CONTRACT

Your first point of contact for a survey will of course be from a client requesting that you inspect his vessel for condition in order for him to obtain insurance, or to carry out a pre-purchase survey. Subsequently, you will ask him to send you details of the vessel via email with the type of survey he requires, along with his contact details and postal address. You will then send him your Terms of Business (TOB) with the costs of your fee and explain the limitations of your survey.

Another possible scenario is that an owner's vessel requires repairs to be carried out and he is contacting you for advice which will necessitate you visiting the vessel for an inspection before agreeing the way forward. Either way, the owner will be looking to you for your 'expert' advice on every aspect of his boat and how you operate your business. This is a crucial stage in any potential business arrangement where you are able to demonstrate your professional skills so that the owner gains confidence in your abilities and track record.

The initial survey may well lead to you overseeing the repairs based on whatever recommendations you have made in your report.

On completion of the work, you will then need to carry out a final inspection in order for you to update your report to confirm that all repairs were carried out to an acceptable standard and then signed-off by you.

Most boatyards these days are able to project-manage their own work although in some smaller boatyards, an owner may prefer you to project-manage the work if the yard agrees to this arrangement. In my experience most boatyards are happy for you to be there providing your presence does not impact too much on their schedule.

To summarise, your role as a surveyor will usually end when you present your survey report to an owner. It may then continue with you overseeing repairs, or as the project manager responsible for scheduling the work and the budget.

SURVEY FEES

At the last Large Yacht & Small Craft Working Group seminar, those present were asked whether they invoiced their fees before or after the survey. Surprisingly, most surveyors indicated that they invoiced after the survey. I wonder how many of them have had disagreements with an owner regarding the content of the report they received where the owner had asked for a reduction in the fee or refused to pay at all? Personally, I always send the invoice out beforehand which has to be paid before the agreed date of the survey and, this condition is part of my TOB and I have never had a refusal.

Several years ago, I surveyed a yacht before sending the invoice to the owner and regretted it. Before the survey, the owner claimed that his vessel was in excellent condition and that I would not find 'very much' to report. In fact my inspections found several major structural issues which, in the event, he did not agree with even though he shadowed me around the boat all day. He refused to pay my standard fee and insisted on a large reduction. Lesson learnt, hence my upfront payment terms.

You will also need to bear in mind that, if you have been asked to project manage yacht repairs, you must establish whether your PI insurance policy actually covers you for this. Many policies do not so you must check with your insurance provider before agreeing to manage a project for which terms may be agreed separately.

PREPARING FOR THE SURVEY

Having received details of a vessel for survey, research the designer, the builder and the type and age of the craft to be surveyed. You will then form an early mental picture of your project and save valuable time before carrying out your inspections. Many owners like to be present during the survey, which is fine, but they do tend to chat about the boat rather than allowing you to progress unhindered.

There are several types of survey depending on the owner's requirements. If the survey is to assess the structural condition in order to insure the vessel, the Insurer will usually insist on an out-of-water survey. They will also require the surveyor to provide a valuation and, in this regard, you will need to know the market value of specific vessel designs and types as well as making allowances for the condition and any historical value. One-off designs are much more difficult to value and can be a very subjective issue. However, if the designer is well known, that is a good starting point in pinning down information.

For a pre-purchase survey, recommend to the owner that the craft should be hauled-ashore, pressure-washed and chocked up in a boatyard for at least a week to allow for some flexibility with timing. Generally, the surveyor should expect that a thirty foot traditionally-built yacht in reasonable condition could take up to two days to carry out a full condition survey of the hull, deck and rig with possibly a return visit to the boat to clarify a particular detail.

Most importantly, the surveyor should not be too hasty to carry out the survey as wooden boats can have many hidden defects which may take time to discover. The surveyor should discuss the schedule with the owner and will also need to consider the time factor when quoting his fee for the Survey Contract.

At first sight of the vessel, try to form an immediate impression of the general condition. Has it been well built and maintained and does the hull planking "look" fair? Walk around the boat several times sighting along its length from different angles. Any apparent unfairness could indicate a bad repair or worse, could be an indication of a structural problem warranting further internal inspection. Check the plank seams. Do they appear regular and tight? Pay particular attention to the bilge and keel areas and note if anything is weeping from the seams. If there are leaks from inside the bilge, such as oil from the engine, this could be serious and has to be inspected further and reported.

Plank ends, known as 'Hood-Ends' at the stem and transom or "Horn Timber", in the case of a vessel with a counter-stern, should be "sounded" with a soft-faced mallet. Dull thuds or bouncing planks are a possible indication of the existence of corroded fastenings or rot and this area should be investigated further with a fine sharp spike both externally and internally. Note all obvious defects and notify the owner that you need to do further exploratory investigations which may include removing external plank fastenings and internal panelling and hull or deck linings.

NB: Always remember that you cannot carry out any destructive testing or inspections without the owner's written consent. If any suspected structural issues require the removal of extensive interior panelling or the removal of hull fastenings, you must report this and ask the owner to instruct the boatyard to carry out the work. Do not do it yourself.

Take a close look at the stem and especially the underside of the keel. Any visible damage here could indicate a grounding at some time and warrant further structural examination of the interior framework for damage or structural movement, especially around the mast-step and partners.

Look closely at the rudder blade for splits, including the fittings for signs of wear and corrosion. Move the rudder from side to side and try lifting it to judge the amount of play in the top and bottom bearings. Closely inspect the rudder-stock aperture through the horn-timber. This is often a weak area in some designs and the existence of hidden rot damage or split timber is not uncommon.

Move to the deck of the vessel and examine the coach roof and deck for fairness, especially around the sheer. The sheer rubbing-strakes should be fair and closely fitted to the hull as should any cap-rails, toe-rails or bulwarks around the perimeter of the deck. There are many structural weak points around a deck especially at the joins between deck planking and covering-boards and at the bases of bulwark frames where they protrude above the sheer.

If the coach roof is painted are there any signs of blistered paint indicating a moisture problem under the coatings? And if varnished, is the timber beneath the clear finish blackened by the presence of moisture which has most likely caused rot damage? On older boats, polyester resin which has been used for sheathing decks and coach roofs is porous and will absorb moisture which, in time, will damage the plywood deck it is attached to. Carefully sound the decks all over with a soft-faced mallet and light hammer searching for areas of sheathing detachment.

Closely inspect for leaks around portlights, windows, deck-hatches and flush deck-lockers and check inside the vessel for staining of the headliner panels, sideliners or ceiling battens which will be sure indications of deck leaks. Cracks in the lenses of portlights, windows and deck hatches should also be reported.

Inspect stanchion, pulpit and pushpit security and the condition of guard wires and attachments.

In a perfect world, inspect mast and spars off the boat on trestles, but if this is not possible, inspect the condition of wooden spars from deck level using a pair of binoculars if necessary and pay particular attention to the heel of the mast, whether it is deck or keel-stepped. Keel-stepped wooden masts are very prone to rot damage especially if the bilges are allowed to stay wet. Prod the mast heel with a sharp spike to test for softness. Inspect all standing and running rigging for damage and general condition, including the condition of the chain-plates and bolts. If you discover any issues with the rig and do not feel qualified to make

recommendations for servicing or repairs, your report should always recommend that the owner has the rigging inspected by an experienced and competent rigger. Many insurers insist that stainless standing rigging is replaced every ten to twelve years and you will need to check the owner's boat-file records for when this vessel's rigging was replaced. A word of warning. If the mast is stepped with the vessel ashore, do not be tempted to go up the mast for inspections. If you are on your own, this advice should be obvious and many insurers will not cover you anyway if you have an accident.

During the interior survey, thoroughly inspect the hull planking and frames, the bilges around frames and deep-floors for cracks or breakages and pay close attention to the condition of all visible fastenings especially the keel bolts. Inspect all metal floors and knees for corrosion and thoroughly examine engine beds and longitudinals.

Examine and test all through-hull fittings, seacocks, hoses and clamps. Hose connections to thru-hull fittings below the waterline should always be double-clamped. Double-check anti-syphon valves in heads inlet and discharge hose loops as the valves in some patterns often stick or clog.

Inspect the engine, engine mounts and check for leaks from fuel or water tanks and plumbing.

Inspect the electrical systems including navigation lights, battery installation, charging systems including shore-power and battery management system.

Inspect all safety equipment including anchors, the windlass for security of installation, ground-tackle, lifejackets, liferaft and distress flares for condition and inspection dates.

Regarding keel bolts, most wooden sailing vessels have external ballast bolted to the hull which may have been cast from iron or lead. Typically, cast-iron keels have wrought-iron or stainless bolts and cast lead keels more often than not have bronze bolts. Check with the owner when the bolts were last inspected or replaced and if this information is not available, then, depending on the size of the vessel, recommend that two or more bolts are withdrawn for you to inspect. Only when you are satisfied that the bolts are in a sound condition should you sign off the report.

Some of the tools you will need are listed below:

- A digital camera, measuring tapes, soft-faced mallet, bradawls and a long fine pointed spike.
- Small hammer and scraper and a good torch.
- A good moisture meter is useful as long as you understand what it is for. If a deck is sheathed with porous polyester resin, the meter can highlight a problem with the plywood deck. Or, if you are checking planking to determine the moisture content with a view to splining the seams it is an essential piece of equipment. If not, then leave the meter at home.

Words of caution when going to a lonely marina in the winter to carry out a survey.

1. Always check-in at the marina office and tell them where you will be.

2. You will most likely have taken your own boarding-ladder to access the vessel. Make sure that you lash the ladder to a winch or cleat because you would be surprised how many owners will simply walk off with your ladder to access their own boat.

THE REPORT

This is probably the most important thing you will ever write in your surveying career. It is a legal document that not only describes the condition of the vessel you have recently surveyed, but it will be an indication to the reader that you actually know what you are talking about. At best, it will make your client happy and, at worst, it could land you in court if you get it wrong.

Report only the FACTS of what you have inspected and discovered during your inspections and NEVER assume any aspect as to the causes of damage or degradation without having sound evidence to support your findings. A picture really is worth a thousand words but only if it is relevant to demonstrate a point and is supported by your detailed explanations of a problem and 'likely' causes. The IIMS runs excellent seminars on report writing and has published a handy guide on the subject.

DUTY OF CARE

Your first duty of care is to your client. He must be kept informed of every aspect of what you are doing and will expect you to advise him on remedies for whatever issues you discover. Therefore, whatever recommendations you make in your report for repairs or servicing in your report must only be made on the basis of factual and sound advice.

...for the love of wooden boats

COMMON TYPES OF CONSTRUCTION

Carvel Plank-on-Frame
This is an all timber construction where the outer skin of individual planks, or shell of the hull, is attached to a timber framework with either bronze screws, copper boat-nails or a combination of both types of fastenings. The frames may be constructed from either 'green-oak' or 'rock-elm' which, when steamed, are bent into the shape of the vessel whilst still hot around a temporary building jig set-up to the internal profile of the vessel. The frames may also be cut from solid oak to form 'sawn-frames'. On larger vessels and typically found in large fishing boats and work boats, the sawn-frames, due to their large dimensions and extreme shapes, may be cut in sections called 'futtocks' with each section overlapping the next and bolted together inside the hull to form a complete frame.

A less common method of making frames was by laminating them on jigs shaped from patterns taken at various stations within the hull. Laminated frames are commonly found in boats that have been repaired following collision damage or where rot degradation of some of the frames has been discovered where it was only necessary to replace sections of the existing frames. During a restoration where the deck has been removed, it is common to fit full-length steam-bent or laminated frames directly into the hull and wedged into place whilst they are fastened to the planking.

Traditional carvel planking is typically fitted neatly 'edge to edge' with a small bevel added to one edge which creates a seam that will be caulked with boat-cotton and filled flush with stopper before being primed and painted. Alternatively, the planks may be tight edge-fitted to the adjacent planks and glued with either resorcinol or epoxy adhesives.

Many classic yachts now have their topside plank seams splined in order to stabilise the planks which also helps to stiffen the hull. Below the waterline, the planks seams are usually caulked in the traditional way. The sloop in the views below is 'Roamer of Lochaber' and is only one of three boats known to have been built to this design in 1937. She has pitch-pine planking on rock-elm frames and now has splined seams along the topsides and a traditionally caulked bottom. The secret of successful splining is to make sure the planking is of the correct moisture content before beginning the process.

Above, the start of a two-year restoration of Roamer, a 28 foot LOD Alfred Westmacott designed and built double-ended sloop and, the best day ever for sailing trials following completion of the project this summer. I carried out a survey of the vessel shortly after she arrived from the Clyde in 2016 and wrote a schedule of repairs for the boatyard. I then oversaw the whole project and, since she was minus a rig, the project included liaising with spar makers Collars Masts and sailmakers James Lawrence to design and supply a completely new rig which was based around the original sail-plan drawings.

The boat above is a condition survey for insurance of the 40 foot Boston Smack 'Rhoda Gostelow' at anchor in Antigua. She was built in 1937 of Russian Red Pine on sawn-oak frames.

The boat below is a pre-purchase survey in Barcelona of a 50 foot German Frers designed ketch built in 1977 at the Sarmiento Shipyard in Argentina of Uruguayan Cedar planking on laminated mahogany frames.

Clinker or Lapstrake

For this method of construction, think Viking longships. The method of construction may well be over a thousand years old but is still as relevant today as it was during 'Eric the Red's' day. The term 'Lapstrake' is derived from the process of overlapping individual planks so that the lower edge of the upper plank fits on a bevelled edge, called the 'land', on the top edge of the plank below it.

One of the most common types of modern yacht built in this style is the ever popular Nordic Folkboat and there are many dozens of original wooden clinker boats still sailing around our coasts. So popular were the clinker boats that when the Scandinavian builders made the transition to moulding them in GRP, the clinker planking appearance was retained and simulated inside the two-part female mould to maintain the completely traditional look.

In addition to the Folkboat, this method of construction was also very common for the building of Royal Navy whalers and Cornish Pilot Gigs as the boats were relatively light for any given size and immensely strong. The secret of this type of constructions success was the overlapping plank edges which, when fastened along the edges and to the steam-bent frames, made a strong and watertight plank seam without the need for gluing or caulking.

You will probably not be surveying too many vessels like the original, restored and preserved 75 foot Gokstad Viking ship (pictured), although there are still many replicas in Europe sailing today. We know of at least eight longships in the UK, the largest of which is around 40 feet in length. Four boats are based in Kent, one of which has recently be repaired and refitted by a local boatyard in Birdham and, as far as we are aware, the other four boats are still based in the Orkney and Shetland Islands.

The Cornish Pilot Gig was, as its name suggests, built as a Pilot boat to guide sailing ships into harbour during the late 1800s and early 1900s. They now race each other from the dozens of Gig clubs around our coasts.

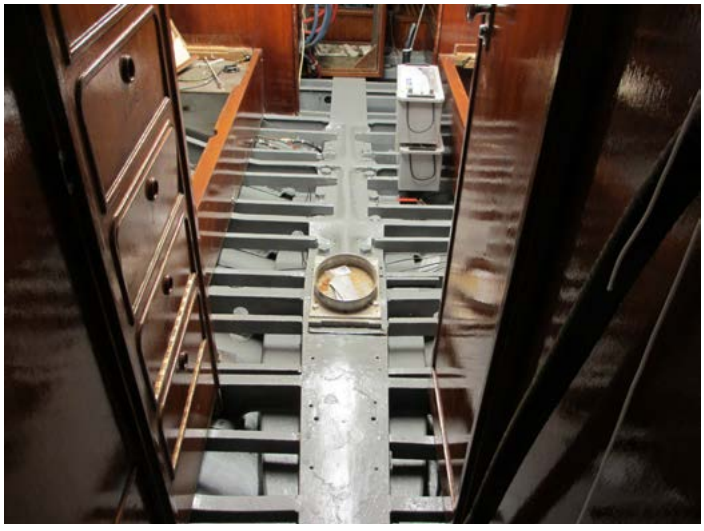
Composite

During the mid-nineteenth century, many shipbuilders around the country were experimenting with new ways of designing and building faster ships in order to take advantage of opportunities in the rapidly growing global trade in various products including wool, tea and spices from the Far East. One such very lucrative opportunity was in the wool trade between the UK and Australia and later in the tea trade with China. It therefore became imperative that sailing ships of the time were built lighter, stronger and faster than their competitors so that they were able to command higher prices for their cargoes if they were able to significantly reduce delivery times between ports to be the first ship home. Two sailing ships at that time became famous in their quest for speed and were able to reduce sea-times between ports by many weeks. The stories of Thermopylae and Cutty Sark are well known but what is probably less well known is that both Clipper ships were composite-built. Cutty Sark was built with a completely rivetted wrought-iron backbone, frames and deck beams with timber only used for the cladding of hull planking and deck. The topside planking and deck were constructed from teak and the bottom planking of rock-elm bolted to the iron framework. The inner hull planking or 'ceiling', was constructed of red pine, the main purpose of which was to protect the valuable cargo of Australian wool or China tea.

In the latter years of the nineteenth and early twentieth centuries, racing yacht designers turned their attention to the benefits of building composite vessels and many large and famous yachts were successfully developed using this method. There were many big racing yachts built in the USA, the UK and Europe vying with each other to build and race the biggest and fastest yachts of the time and not least of these was the big 'J'

boats racing for the America's Cup. This trend continues to this day and very often, we become involved in surveying and overseeing repairs and rebuilds of some famous racing yachts built during the twentieth century. Many of the composite boats we visit now have welded steel or aluminium frames and backbones which are planked in various ways. Perhaps the most common method of planking these hulls is by using several layers of planking with typically two layers fitted diagonally at 45 degrees to the vertical in opposite directions known as 'double-diagonal' and a third layer fitted horizontally to simulate traditional planking. All layers of planking are normally fitted close-seamed and bolted to the metal framework with the bolt heads then plugged.

The ocean racing yacht shown below was designed by Sparkman & Stephens and was one of several composite boats built by Lallows of Cowes to the same design known as the S&S 41s. The first and most well-known boat of this class was the yacht built for the late Edward Heath in 1970 named 'Morning Cloud 2' and now renamed 'Opposition'. We surveyed her sister ship, which was built in 1972 and, in 2016, went on to oversee her two-year rebuild which included a new deck structure of mahogany beam-shelves, over forty laminated mahogany deck beams, new carlins, epoxied marine plywood sub-deck, new teak laid decks, hatches, cockpit coamings and a complete upgrading of all the yacht's systems. The hull was constructed with a laminated mahogany stem, keel and horn timber with welded aluminium ring-frames and an aluminium grid of frames and floors below the waterline welded to a deep aluminium 'I'-beam girder thru-bolted to the timber keel structure. The 'I'-beam also incorporates a mast-step to spread the loads from the 60-foot mast as well as being part of the main structure for attaching the external lead ballast-keel with ten one-inch stainless keel-bolts.



^ *The new deck beams being fitted into the new beam-shelf and showing the two aluminium ring-frames.*

< *A view of the 'I'-beam keel-girder with mast-step and recessed thru-fastened keel-bolts.*

Double-Diagonal

This construction method has been around for many decades and can trace its origins back to the late nineteenth and early twentieth centuries with many well documented early examples still in existence today. Perhaps the very first vessels to be built this way were high performance motor boats that were being used during the period as chase-boats for the testing and development of seaplanes and flying-boats. Many high-speed tenders were also built for the many large Victorian racing yachts of the day including steam-yacht tenders for European Royalty. Before the First World War stopped the production of private vessels, water-speed records were also being set and the majority of these lightweight hulls were built using double-diagonal planking mounted on light timber frames.

During the war years, production in most boatyards around the country was switched to producing fast patrol boats and air-sea rescue launches for the Royal Navy and Airforce. The construction method is relatively quick and produces a light and strong hull structure which is ideal for fast vessels. Often the high-speed planing hull is of hard-chine design with double-diagonal planking on the topsides and bottom of the vessel. In between the two layers of diagonal planking, a calico membrane soaked in linseed oil would have been attached to the first layer to ensure that the finished hull remained watertight.

The motor vessel in the view above is a 75-foot launch named 'Interceptor' and she was built by J.I. Thornycroft on the Thames and launched in 1965 for the Ford Motor Company as an executive launch. I served part of my boatbuilding apprenticeship with my mentors building this lovely vessel and I was delighted to see her at the Queen's Jubilee celebrations in 2012. She had recently had a major structural overhaul by Tough's boatyard in Teddington and looked as good as the day we launched her.

She has double-diagonal mahogany planking fastened to mahogany frames and laminated mahogany chines. The bottom was sheathed with a new product at the time called Cascover which was a fine nylon fabric bonded to the hull using cascophen adhesive. The deck and superstructure are constructed from solid Burma teak and the interior joinery constructed of Rosewood. She is fitted with a pair of Ford Interceptor engines driving two bronze propellers through 'V' drive gearboxes.

Hot & Cold-Moulded Construction

Another construction method which has also been around for many decades, the process for either method is virtually the same except that for hot-moulding, a hull is placed in a large autoclave to cure the resins used to bond the wood veneers at very high temperatures. Fairey Marine Ltd on the Hamble pioneered the system during the late 1950s and early 1960s for building a new design of fast offshore cruising and racing boats and many of the latter were highly successful during the early Cowes to Torquay powerboat races.

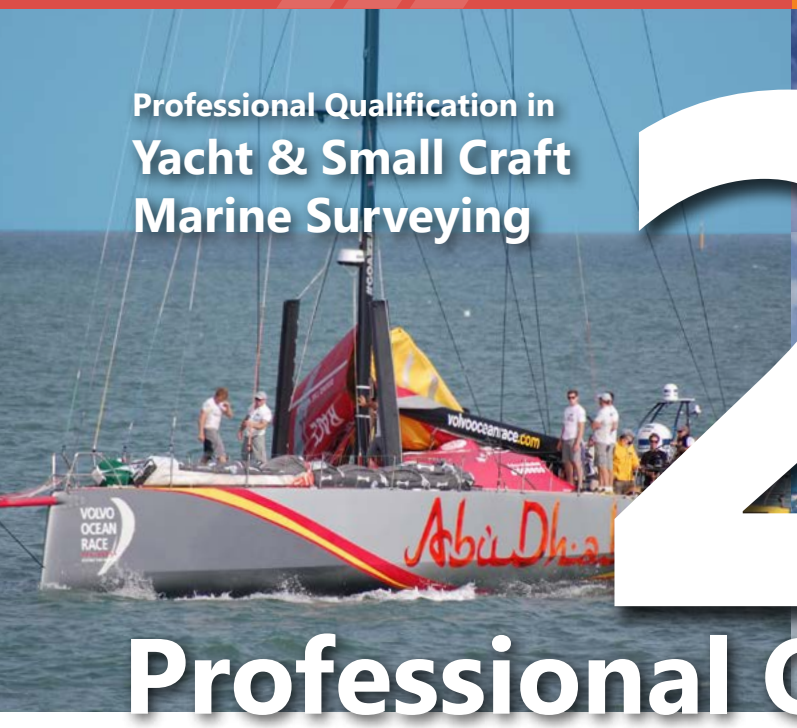
Two of Fairey Marine's designs that were very popular were the 23-foot Fairey Huntress and the 28-foot Huntsman. Many examples of both boats are still around and much sought after. I have surveyed six boats this year alone and have overseen the restoration of three of the six.

The Fairey Huntress in particular was favoured by the Royal Navy as a ship's Captain's pinnace and many were kept onboard Frigates and Destroyers for this purpose and launched when the need arose.

An original Royal Navy Huntress above being restored and in commission during the 1960s or 70s. The construction of the hulls was quite a complex procedure as a male mould had to be built to the inner profile of the design to which the mahogany veneers were attached and held in place by a large rubber bag designed to withstand the extreme temperatures. The specification for the Navy's Huntresses was higher than those sold to the general public with five mahogany veneers fitted to the topsides and six veneers added to the bottom. After the hull was cured in the autoclave, it was wheeled out of the oven and, after a period left for cooling, the completed shell of the hull was removed from the mould and righted in order to fit bulkheads, frames, stringers and engine bearers. The external hull was fitted with four spray rails on each side and chine-rails to deflect spray and for protection of the chine.

There are of course many other types of construction used in wooden boatbuilding around the world but the list written in these pages are by far the most common you are likely to come across.

Strip-plank construction is a growing method and Spirit Yachts in Ipswich have had great success over the last twenty five years with their designs which are now becoming even larger. The latest yacht from Spirit which is currently in-build is a 111-footer and it is well worth you having a look at the yacht being built on their website.



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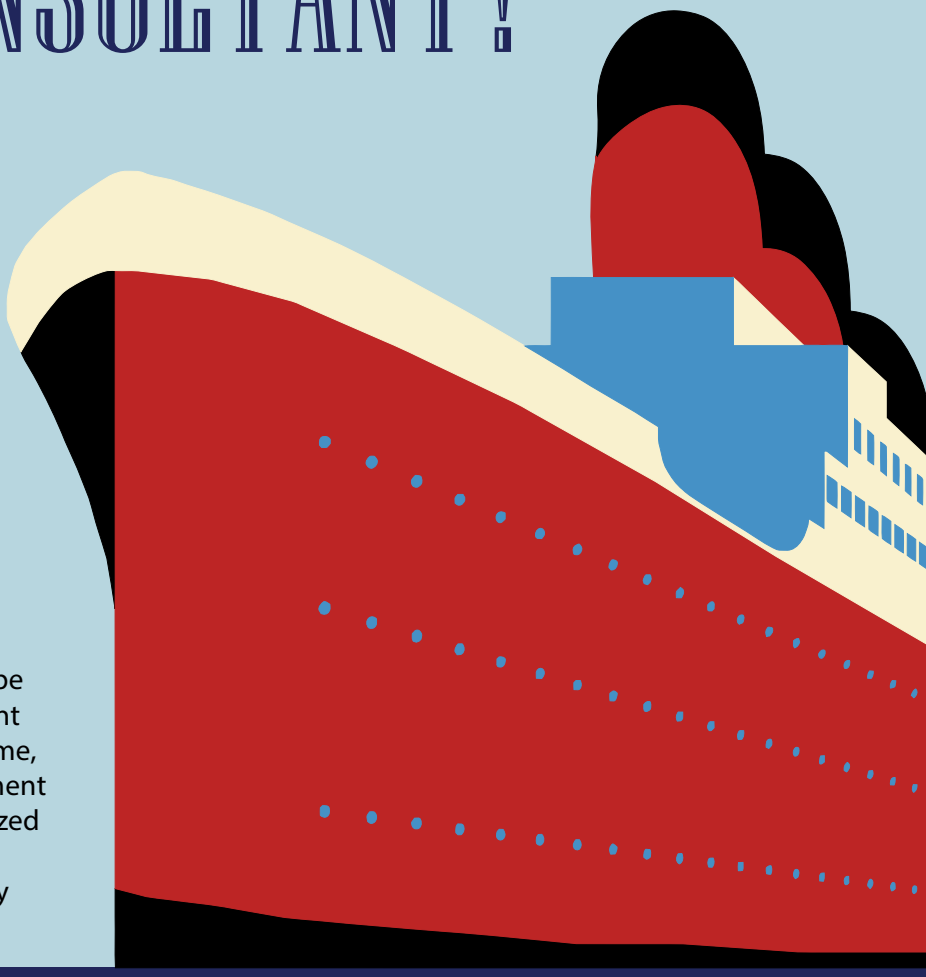
AFTER A CAREER AT SEA, WHY NOT WORK AS A MARINE CONSULTANT?

BY **CAPT BERTRAND APPERRY**



FOREWORD

The International Safety Management (ISM) code was born in the 90s and can therefore be considered as a recent maritime management tool. Inspired by the norm ISO 9002 at the time, it was specifically intended for the management of shipping companies and their ships. Realized in general terms, the code was prepared to be widely applied without a plethoric literary application like ISO standards.

The first guidelines which could help us were the ISF/ICS guidelines in1993 when the flag authorities tried somehow to make their troops aware of a new way to control many of us. The classification societies were immediately interested because there was a business opportunity involving giving advice and the certification on behalf of the flag. Good idea, because many "Flag Authorities" today delegate their full ISM flag certification to them!

PHOTOS:

1 Aban Abraham in DWDS transformation (deep water drilling ship) in SINGAPORE
2 Training at the National Marine Officers School of CALLAO (PERU)
3 « Billionaires yacht wharf » at ANTIBES (France)
4 Training in CONSTANTA
5 Safety drill at ANTSIRANANA (Mogadiscio)
6 Welcome to a « winter » security audit at GUIRGULESTI (MOLDOVA)…just after a blizzard !

But what about consultancy?
Ethically unable to provide both advice and certification at the same time, members of IACS (International Association of Classification Societies) tried by different schemes and methods to ensure either through a "sister company" system in charge of the consultancy and the class itself in charge of certification for example, but indeed this did not go down well at all with IMO!

As a result, a need for consultants to help companies and crews to apply the ISM code became necessary.
I admit it was a classification society (and not the worst) that introduced me at the time to this new job. Having tried all types of transport or maritime operations over the years (including passenger transport and offshore oil activities), I find myself tacking stock of a career which will be soon coming to an end. It is far from easy to predict who will be our successors, but I think (I hope) I have done the necessary for that!

An article such as this begins with the job title itself:
What is an ISM consultant?

With the code as a reference and a great experience of 22 years behind me, I can try to summarise this job.

It's all about...

1) Auditing
This means measuring discrepancies between the standardised reference (ISM code) and the practices of the company. The ISM consultant therefore proposes an internal audit carried out in the form of a conformity and/or operational diagnosis.

And if at the beginning we start with a blank page including for the old companies, we are called in to update a safety management system (SMS) that has already

been certified as compliant, but which functions more or less yet sometimes drifts at the discretion of successive managers. So, we sometimes have to go back to basics and take the code, chapter by chapter, to ensure that compliance does still exist!

2) Expertise
The company calls us because we are "experts" ie with « experience » in the field of auditing. ISM experience nowadays means practicing the code in almost all areas. This is by no means easy, but a very solid knowledge of the code and its requirements should help to get you started.

3) Propose
In your contract there is a diagnosis of conformity of the application of ISM procedures but also a component to propose « corrective actions ». Sometimes we propose a global solution. It is often during the establishment of a safety management system that we intervene, We might propose an original SMS that has proved itself and adapt it to the company based on its initial safety culture in the type of marine activities concerned.

4) Training
Initial and continuous training is increasingly seen as the key to improving the safety culture; we therefore integrate it systematically into our propositions. It was so obvious that it was forgotten at the birth of the ISM Code. When I say forgotten, I mean "shunted" because it was not made obligatory!
William O'neil, IMO's former Secretary General "Emeritus" remained so traumatized by this that he reminded us in his order - *Please avoid the same oversight* - in the prologue when we were working on the text of the ISPS code.

ISM and ISPS training is our expertise.

It is important to note that when the amendments to STCW 95 came into force, it became apparent that special training (Rule V) also required some expertise. The training centres naturally turned to us, particularly for the training of personnel (other than seafarers) of passenger ships.

Today, where there is a screaming need especially after the results of the investigation into the sinking of the COSTA CONCORDIA. We are in the market with solid references, and above all, a reputation for credibility that not all training centres have despite their respectable flag approval. It's amazing, these special training courses are oddly the unpopular ones in a profession that nevertheless still prefers specialisation to polyvalency ... again a paradox. Even well-known maritime reviews often forget them in their annual special training issue!

By the way, we are specialists in internal auditing.

But what about the external audit? Do not hide it ... behind the external audit, there is still something of a scam! The principle of auditing was invented by the ISO standard - you are compliant with the standard or you are not, but please find the solution by yourself to conform! This philosophy of external compliance auditing allows auditors who are not familiar with the job at all, to conduct an external audit that is often traumatic for the auditee because there is a tremendous need for the necessary certification (ISM and ISPS). Finally there is no need for a university diploma to follow a checklist like they do. The results are often a discussion between « carpet traders » on the number and level of nonconformities that often boils down to inaccuracies in a text or procedure (in our jargon this is also called « misplaced comma syndrome »). This does not help the shipping company despite the pre-audit formal statements meeting, but just a question of results! In the marine industry, the ISM or ISPS external auditors are trained as ISO auditors and the result is just as uncertain.

Seafarers, who are generally very practical people, consider these external audits as end-of-year exams to be passed - we pass or we don't pass ; so they treat these audits with suspicion. They wonder how this « land lubber » thinks he can teach me my job. To solve this problem, we therefore "invented" the business of the ISM consultant which, even if he comes from outside the company, can carry out an internal audit of compliance with the reference to the ISM code and the joint IMO guidelines (like an external auditor) ; but in addition he will propose corrective actions resulting from his own experience as well as improvement actions adapted to the Company. In addition, the consultant cannot ignore the transmission of knowledge, so we conduct our consultancy within the framework of a continuous training of the auditees according to their responsibilities in safety at the company level and on board its ships. To conclude, our contracts are roughly 50% audit and recommendations, and 50% training of staff, designated persons and managers.

Of course in the case of training the CEO, we must not speak about training. Rather we phrase it as information or coaching ... it's the same thing but it's more politically correct! Finally in this job, very little is practiced finally. The term diagnosis is not often used. We offer both the diagnosis and the treatment more like a visit to the "ISM doctor".

Finally, it is actually very simple: a specialised auditor comes from outside the company to carry out an internal audit ... which will be recorded as a company internal audit (ref : as you know, this is an obligation from §12 of the ISM code and § 9.8 / 16.13 of the ISPS code).

Yes the key is written in that statement. Whether it is in safety, in security, in environmental practices or in quality (customer satisfaction) our actions as a consultant are to initiate and put in place the tools of evolution of an internal culture within the company so that the staff can even transpose it to their personal lives! Yes, all of this is ideal but the reality is not quite so cosy. Always I hear from the managers « too expensive ».

Indeed the everyday battle on the funds allocated to safety within the company falls also hard on the shoulders of the consultant! In this business there are unfortunately still "gangsters" who operate poor ships under exotic flags with crews with limited skills ; but obviously having at the same time all the necessary certificates from the biggest certification companies or flags that are clearly on the IMO white list and still pass from one port to another without too much trouble! Except that one day when the troubles accumulate and the ship is retained at berth to the despair of the Port Captain, the shipowner cannot be found or does not care and the flag Administration is never sued. So then what can we do?

INNOVATION

The last indispensable quality for the ISM consultant is innovation. High level experts in a specific field, we innovate constantly. In safety management and

training there are certainly many opportunities for improvement but some are real innovations.

Largely to our credit, here are the improvements of the application of the ISM code with their dates of creation and which are in use all around the world today:

- Original SMS for a shipping company and easily adaptable to the Offshore industry (1996)
- Logical increase of the requirements of the code one by one (since 2000)
- Determining procedure of "critical equipment and systems" (2000) used with our agreement by the OCIMF training working group
- Procedure : "feedback" and Continuous Improvement (1997)
- Integrated System of Contingency Plans (1997)
- Integration in the SMS of the ship's operation procedure in degraded mode (2000)
- Fatigue measurement in the marine survey (2000). NB: following our participation in an IMO study
- Combined Safety and Security drills and exercises Process (2003)
- Adaptation of Passenger Vessel Evacuation Signalisation process to other Vessels such as the offshore industry and quickly set up by TRANSOCEAN one of the major offshore companies (2000)
- Criteria for evaluation of an SMS (KPI) and the safety culture with a dashboard to follow up (2006 improved in 2016)
- Creation of 'an Integrated System E3S (Environment, Safety, Security and Customer Satisfaction 2005)
- ISM and ISPS original training courses through the IMO TCP program: Morocco, Algeria, Tunisia, Mauritania, Cameroon, Republic of Congo
- Creation of an "ISM port" ® (IMO motivated): application of the ISM philosophy in a port
- ISM / ISPS documentation greatly reduced thanks to the use of logigrams (2009)
- 3 x ISM level training courses for all personnel of shipping companies: from the CEO to the AB (DPA-Officers – internal auditors - Crew members awareness)
- Training of experts and ISM consultant (since 2000 in France and especially in UK via the IIMS course - nearly 200 experts trained and certified in 15 years - recognized as a university degree)
- Training of Maritime insurers and lawyers (2002 improved 2012)
- Intelligent integration of ISM criteria into inspections of offshore internal associations (2005)
- Simultaneous bilingual ISM and ISPS training courses in Eastern Europe (2012) on behalf the European Commission .
- Original training courses for STCW V / 2 § 1 to 5 (in french and english)
- Creation of an original PSO training course (Port Security Officer) in addition to other training and teaching in Eastern Europe (Ukraine, Moldova, Kazakhstan, Georgia)

All these innovations are now well used in shipping companies or ports and we are proud of that.

IN CONCLUSION

The mandatory ISM certification was made to counter, or try to, the « bad » shipowners which was necessary, but the rest of our industry is starting to understand that just average is no longer enough (sometimes they are under average). The quality culture that begins with the respect of standards and regulations will eventually be the solution. The expert who audits, advises, trains and innovates is the key element for success in the future.

Today, our industry is beginning to consider that management and resulting audits form an entirety and therefore we need to integrate conventional inspections with audits carried out under the ISM and not to maintain periodic visits apart from the intermediate audits.

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BY **NICK PARKYN**

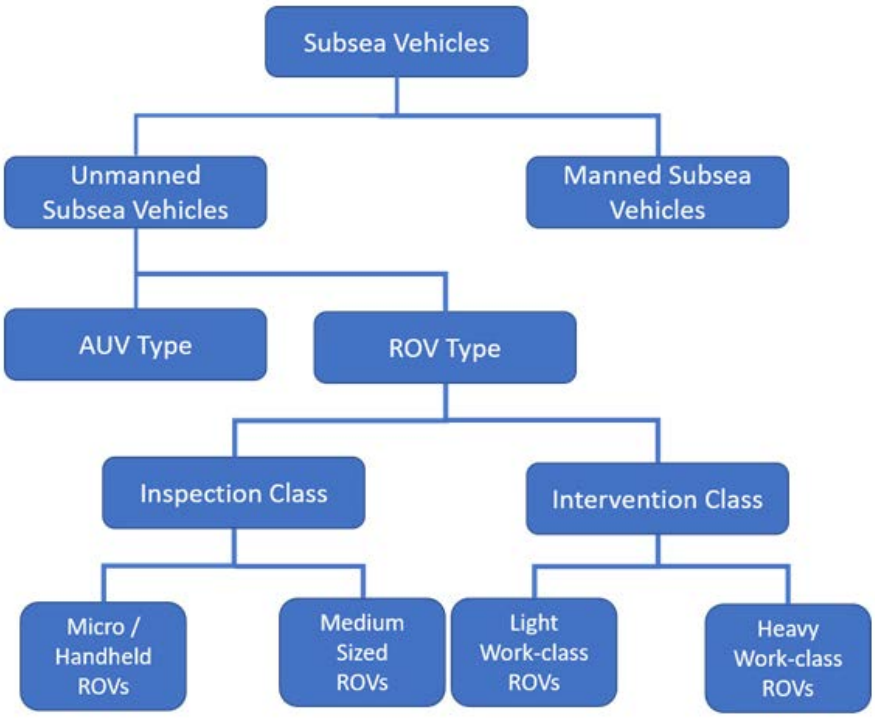
Micro ROVs enablers for Marine Surveyors

Evolution of flying drone technology fuelled by microprocessor, video and communication technology has been a great enabler for Marine Surveyors. These same advances in microprocessor, video and communications has enabled **remotely operated subsea vehicle** technology which can be utilised in marine surveying and further enable the capability of the Marine Surveyor.

An **Autonomous Underwater Vehicle (AUV)** operates independently from the ship and has no connecting cables while ROVs are connected to an operator on the surface host ship by a load-carrying umbilical cable which provides communication and control.

A **Remotely Operated underwater Vehicle (ROV)** is a tethered underwater mobile device. ROVs are unoccupied, highly maneuverable, and operated by a crew either aboard a vessel/floating platform or on proximate land. They are linked to a host ship by a neutrally buoyant tether, a load-carrying umbilical cable which provides communication and control.

Submersible ROVs are normally classified into categories based on their size, weight, ability or power.



(Diagram adapted by the author from reference 1)

Classification of subsea Vehicles

More detailed common ratings are:

- Micro - typically Micro-class ROVs are very small in size and weight. Today's Micro-Class ROVs typically weigh less than 3 kg. These ROVs are used as an alternative to a diver. They can also be referred to as "underwater drones"
- Mini - typically Mini-Class ROVs weigh in around 15 kg. Mini-Class ROVs are also used as a diver alternative. One person may be able to transport the complete ROV system out with them on a small boat, deploy it and complete the job without outside help. Some Micro and Mini classes are referred to as "eyeball"-class to differentiate them from ROVs that may be able to perform intervention tasks.
- General - typically less than 5 HP (propulsion); occasionally small three finger manipulators grippers have been installed, such as on the very early RCV 225. These ROVs may be able to carry a sonar unit and are usually used on light survey applications. Typically the maximum working depth is less than 1,000 metres though one has been developed to go as deep as 7,000 m.
- Inspection Class - these are typically rugged commercial or industrial use observation and data gathering ROVs - typically equipped with live-feed video, still photography, sonar, and other data collection sensors. Inspection Class ROVs can also have manipulator arms for light work and object manipulation.
- Light Work-class - typically less than 50 hp (propulsion). These ROVs may be able to carry some manipulators. Their chassis may be made from polymers such as polyethylene rather than the conventional stainless steel or aluminium alloys. They typically have a maximum working depth less than 2000 m.
- Heavy Work-class - typically less than 220 hp (propulsion) with an ability to carry at least two manipulators. They have a working depth up to 3500 m.
- Trenching & Burial - typically more than 200 hp (propulsion) and not usually greater than 500 hp (while some do exceed that) with an ability to carry a cable laying sled and work at depths up to 6000 m in some cases.

Submersible ROVs may be "free swimming" where they operate neutrally buoyant on a tether from the launch ship or platform, or they may be "garaged" where they operate from a submersible "garage" or "tophat" on a tether attached to the heavy garage that is lowered from the ship or platform. Both techniques have their pros and cons; however very deep work is normally done with a garage.

Background picture courtesy OpenROV Micro Class ROV being used for inspection.

The shapes and form factors of inspection-class ROV shapes are varied and individual. The most common design for medium sized ROVs is an open frame design, while shapes of ROVs in the micro range, are varied and typically focused on the hydrodynamics of the vehicle.

The Micro Class of ROV can be a valuable tool for the marine surveyor to enable under-water inspection and survey operations.

OpenROV has made ROV technology available at prices which put ownership of a Micro Class ROV within the reach of most marine surveyors.

Their offering currently includes two Micro Class ROVs:

1. **The OpenROV and open source hardware ROV that can be built from individual parts or purchasing a kit of parts for you to assemble (starting at around USD $900)**
2. **The Trident as fully assembled ROV (starting at around USD $1500)**

Evolution of the OpenROV

The idea to build OpenROV was pioneered by Eric Stackpole, an engineer at NASA at the time, to discover whether the legend about the hidden treasure of the Hall City Cave was true.

According to the legend, a few renegade Native Americans stole ~100 pounds of gold nuggets from miners in the 1800s, but were chased. To escape from the pursuit, the renegades had to bury the nuggets in deep waters of the nearby Hall City Cave to lighten their load, but could not retrieve the gold, because they were soon caught and hanged. Even though many have tried to find the gold, nobody has been able to get to the bottom of the narrow and deep well of the cave.

"Necessity is the mother of invention"

David Lang, a self-taught sailor from Minnesota, heard about Stackpole building a small, cheap, and robust submarine in his garage to search for the gold and became inspired to join. Matteo Borri designed and built the electronics, software and motor system for a prototype presented at the World Maker Faire in 2011. Lang and Stackpole co-founded OpenROV as an open-source hardware project as a start-up company, and a DIY community.

OpenROV

The OpenROV (figure 1) with a weight of 2.6 kilograms is an example of a Micro Class ROV which is an affordable ROV available assembled or in kit form

The submarine is controlled from a laptop computer connected to the submarine via a tether and is equipped with on-board Light Emitting Diodes (LEDs) and a camera. OpenROV is an open-source hardware project. By providing the list of the submarine parts and instructions on how to assemble them, the developers aim to democratize underwater exploration.

OpenROV connects to your computer via the tether and uses an Ethernet protocol. You can access the ROV cockpit via web browser software (Google Chrome). Flight controls are also simple. You can use either your computer's keyboard or a gamepad controller to pilot the vehicle during a dive. You can document all your dives by recording the video stream.

***OpenROV specifications** (for full details see reference 3)*

- Maximum depth of 100m (328ft)
- Maximum forward speed of 2 knots
- Live HD video is streamed to the surface control unit over an ultra-thin two-wire tether
- Internal LED Lighting with a brightness of 200 Lumens
- External LED Lighting with a maximum brightness of 1400 lumens
- Water Temperature operational capability is between -10C to 50C
- Software controlled camera tilt (+/- 60 deg from center)
- Tether neutrally buoyant in fresh water

Instrumentation

- Camera supporting HD live video stream in-browser recording of video
- IMU / Depth Sensor for navigation telemetry such as depth, heading, pitch and roll
- Microprocessors for a flexible and powerful developer platform with dozens of input/output channels and plenty of computing power for user-designed features and experiments
- Scaling lasers for size reference during a dive (parallel, 10 cm separation)
- Current and voltage protection with feedback to ensure proper system function
- Communications channel and power for external instrumentation
- Payload area for mounting additional hardware or equipment (170g max payload without adding floatation).

Picture courtesy OpenROV

Figure 1: Micro Class OpenROV

The Trident Micro ROV
(for full details see reference 3)

The Trident ROV (figures 2 & 3) also referred to as an underwater drone is a fully assembled product from OpenROV.

Picture courtesy OpenROV

Figure 2: Micro Class Trident ROV (underwater drone)

Trident ROV specifications

- Maximum depth of 100m (328ft)
- Maximum forward speed of 3.89 knots
- Live HD video 1080p @ 30 fps, using h.264 compression
- 3 forward facing LEDs on each side with total of 360 lumens
- Water Temperature operational capability is between - 0C to 50C
- Interface & communications WiFi 802.11 b/g/n, user interaction using a modern Android (minimum 5.1) device through the OpenROV Application
- Tether neutrally buoyant in fresh water
- 3-axis magnetometer, 3-axis gyro, 3-axis accelerometer, centimetre-resolution depth sensor

Affordable Micro-Class ROV technology is within the reach of all marine surveyors and can be utilised in many aspects of marine surveying to further enable the capability of the Marine Surveyor.

Picture courtesy OpenROV

Figure 3: Micro Class Trident ROV "underwater drone"

References & Resources

1. *Inspection-Class Remotely Operated Vehicles — A Review Romano* Capocci, Gerard Dooly, Edin Omerdić, Joseph Coleman, Thomas Newe and Daniel Toal, Journal of Marine Science & Engineering, published 16 March 2017
2. Wikipedia: **https://en.wikipedia.org/wiki/Remotely_operated_underwater_vehicle**
3. OpenROV website **https://www.openrov.com/**

Cargo Integrity the need for a UNIFIED APPROACH

Peregrine Storrs-Fox is the Risk Management Director of the leading international freight and logistics insurer, TT Club. Along with others in the cargo handling and container transport industry, he is spearheading a campaign to bring awareness to issues that undermine safety in the intermodal supply chain and to improve the safety for people, ships and the environment.

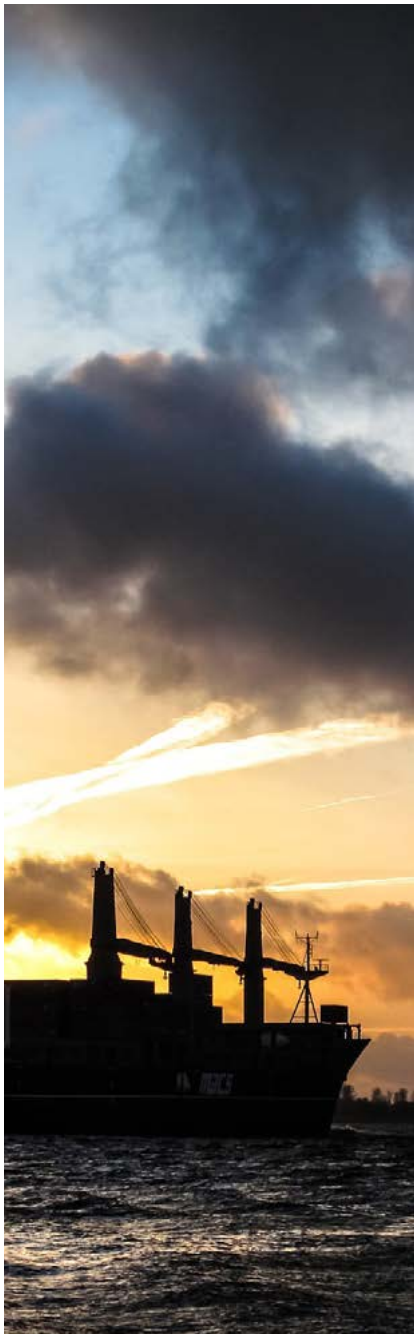
BY **PEREGRINE STORRS-FOX**

The physical integrity of the shipping container is, of course the primary reason why it has such a dominant position in transporting general cargo around the world. What many called a revolution in global trade was initiated in the late 1950s and 60s when the introduction of metal containers, later standardised to twenty and forty feet in length, challenged the traditional 'break bulk' methods of cargo handling. At once these relatively simple metal boxes improved security, speeded-up port operations and ship turn-around times, and crucially, allowed the integrity of the load to be maintained intact from the shipper's premises to those of the consignee, utilising modes of land transport as well as ships.

Some sixty years on we face a lack of a quite different sort of integrity – the integrity of knowledge, information flow and data transfer, as well as the correct care for the cargo inside the container. The speed of cargo transport around the world and the complexity of supply chains, both in terms for geographical diversity and the myriad of 'hands' through which cargo may pass, is the container's achievement but also a cause of considerable risk.

Defining the problem

TT Club records indicate that as much as 66% of incidents related to cargo damage in the intermodal supply chain can be attributed in part to poor practice in the overall packing process, including not just load distribution and cargo securing, but also the workflow from classification and documentation through to declaration and effective data transfer. Critically, many of these attritional incidents could be avoided; these are estimated to cost MAT[1] insurers in excess of USD500 million each year.



In the maritime segment of such global chains, sources suggest that container fires may occur on a weekly basis and statistics indicate there is a major container cargo fire at sea roughly every 60 days. There have been several well publicised ship-board explosions and fires involving laden containers over the past few years. The tragedies of 'MSC Flaminia' in July 2012 and 'Maersk Honam' in March 2018 both sadly cost multiple lives, likely resulting in insured losses in the hundreds of millions of dollars and overall economic loss to the industry of multiples of the insured element.

As the size of container ships increases, so does the potential risk and consequence of a large explosion or fire incident. Despite certain regulatory and technical advances, there is little doubt that the capability to respond to a cargo-related fire at sea has not progressed in proportion to ship capacities and the variety of commodities being carried.

This burden of loss has been tolerated in part because fragmentation in each stakeholder segment means that most entities bear a portion of their own losses within risk appetite, but also because the global intermodal supply chain has developed complex practices, some of which detract from safety and certainty of outcome.

All types of cargo can be mishandled. However, wrongly classified, declared or labelled dangerous goods (DG) are seen as the primary hazard. The representative body of cargo handling and container terminal operators, ICHCA International, has extrapolated statistical evidence of the extent of the problem. It calculates that of an estimated 60 million packed containers moved around the globe each year, 10% are declared to contain DG; that is 6 million containers that need varying degrees of special handling, positioning in terminals and stowage on-board ships.

Information from government inspections, which are biased towards declared DG shipments, suggests that more than 20% to be poorly packed or incorrectly identified in some way. That ratio converts to 1.3 million potentially unstable declared DG loads per year.

And that's just declared dangerous cargoes. It is more challenging to estimate the amount of DG cargo that goes undeclared. An initiative by Hapag-Lloyd and more lately by IBM, has seen the development of a detection system, Cargo Patrol, which attempts to identify cargoes that may be undeclared DG at the time a shipper books the move with a shipping line, leading to more detailed investigation before acceptance. From the 'potential hits' thrown up by the system it would seem that between two and five percent transpire to be more than likely undeclared DG cargoes. Extrapolating these findings across the total annual global container trade, it might be reasonable to estimate that there are some 150,000 ticking container time-bombs each year carrying potentially volatile mis-declared cargo.

Solutions

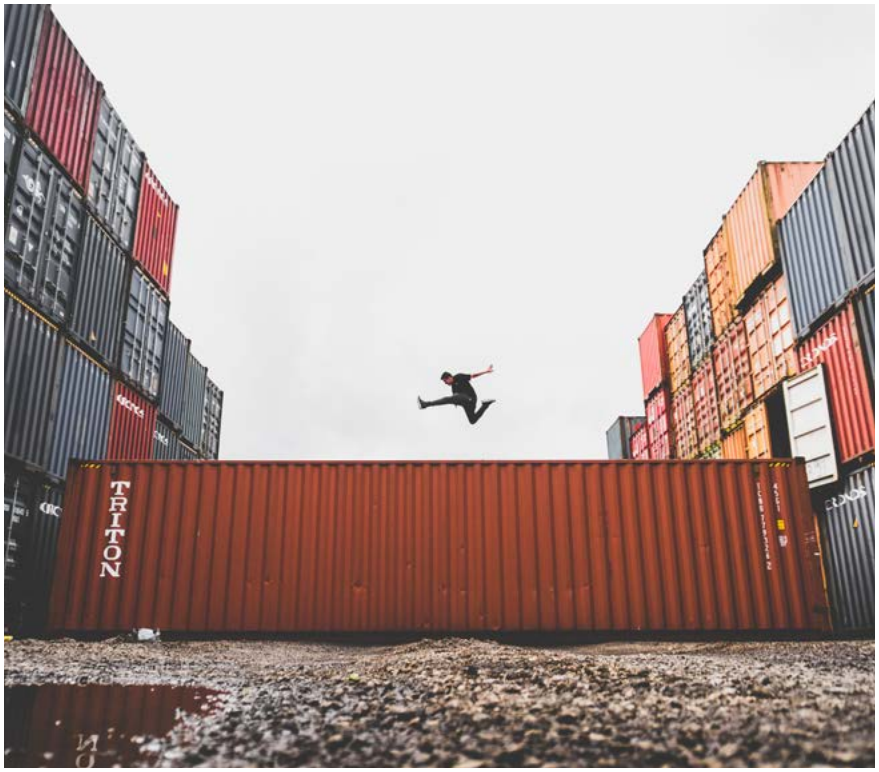
The Cargo Patrol initiative and the efforts of IBM to make it accessible to all lines is an example of a communal approach to improving safety surrounding the transport of containers both on land and at sea. This sort of cooperation amongst the shipping lines and others (including TT Club) began some seven years ago with the founding, by five of the top liner operators of an organisation aiming to capture key incident data in order to provide an early warning of worrying trends, whether relating to cargoes that display dangerous characteristics or unsafe practices in the container supply chain. The Cargo Incident Notification System or CINS (**www.cinsnet.com**) now has a membership that

includes some 16 liner operators, representing over 70% of container slot capacity.

CINS facilitates the capture by liner operators of structured key causal information in connection with cargo and container related incidents. This information capture explicitly excludes any shipper data in order to preclude any anti-trust concerns. The objective of the organisation is to highlight the risks posed by certain cargoes and/or packing failures in order to improve safety through the supply chain and specifically on board ships. The aspiration is that all significant incidents caused by the cargo itself or the container equipment relating to injury or loss of life, environmental concerns, or damage to cargo and assets should be reported, together with investigation conclusions that identify causation.

Nor is the need for more transparency limited to shipping lines; many other actors in the supply chain, most notably shippers and forwarders who are responsible for packing of the containers and the crucial initial declarations of what they contain, as well as ports and terminals, must become more knowledgeable about safety procedures and more vigilant in minimising errors. Procedures governing DG handling around the world, for instance are complex. Each carrier has its own restrictions in relation to house policies, ship owner policies, ship constraints and restrictions applied at ports/terminals of loading, transit, transhipment and discharge. The complexity and lack of standardisation can, of course be bewildering even to the most experienced of shipping clerk or warehouse operative, and exacerbates the possibility for error or failure to update. It is also intensely inefficient and hugely burdensome.

In order to help clarify the situation, Exis Technologies, with the support of TT Club and its sister insurance mutual, UK P&I Club, has developed a portal integrating information on such restrictions. The Hazcheck Restrictions Portal[2] is designed to simplify the end-to-end management of DG booking processes, taking account of port, terminal carrier, ship and partner line restrictions. Once more cooperation is urged; ports/terminals and liner operators can upload their DG handling policies and restrictions into the portal free of charge, allowing use by shippers, forwarders and others involved in the movement of such goods.



Regulation and best-practice

There are two internationally recognised codes, regulated by the UN's International Maritime Organization (IMO) that guide, instruct and govern the safe transport of cargoes in containers; the mandatory International Maritime Dangerous Goods Code[3] (IMDG) and the Code of Practice for Packing of Cargo Transport Units[4] (CTU Code).

Under the terms of the IMDG Code it is mandatory for all shore-based personnel involved in dangerous goods transport by sea to have training. While there are numerous national trade bodies providing appropriate and compliant dangerous goods courses, the challenge remains to reach those who currently slip through the net.

IMDG clarifies the population of 'shore-based personnel' as all who are involved in the shipment of dangerous goods and mandates that they receive training 'commensurate with their responsibilities' (before they undertake them). Clearly this definition encompasses a large group of people not immediately identified with the maritime industry, but connected by reason of initiating or packing an intermodal consignment.

Once more, the need to deliver the message of Cargo Integrity throughout the supply chain is clearly evidenced. For its part, TT Club has joined forces with UK P&I Club to update and revise the 'Book it right and pack it tight' publication, which provides a thorough introduction and guidance on the provisions of the IMDG Code. This is freely available in PDF and paperback form at (**www.ttclub.com**).

However, apart from reiterating the need for training and awareness, TT Club emphasizes that trust through the supply chain requires more. Due to the complexity of the international supply chain, the entity identified as the 'consignor' on the dangerous goods document may not have direct or physical control over key elements of the end-to-end process, but needs to be aware that legal liability rests with the 'consignor' and ensure that arrangements are in place to be in compliance with these international and national regulations. Not all 'consignors' will be conversant with such responsibilities with the result that counterparties should take additional actions. Thus, there are three steps inherent in achieving compliance and assurance throughout the supply chain:

1. Ensure that your own relevant employees are competent;
2. Inform all your customers, contractors and suppliers of their obligations to train to an appropriate level of competence; and
3. Obtain documentary evidence that all relevant employees of your customers, contractors and suppliers are trained to an appropriate level of competence.

While training to achieve 'competence' – or the ability to do a job properly – is critical and required by law, it needs to be followed through. This means that the training records not only should be maintained but also available. It is clear that the system has yet to work effectively.

The importance of carrying out due diligence was set out in relation to the CTU Code in the IMO Circular MSC.1/Circ.1531. Interestingly, that document envisages the checks being addressed to those who seek to select a 'provider of CTU-related services'. In an age where looking counter-parties in the eye is rare, this provides a good model in both directions; it is as important for the 'provider' (forwarder, logistics operator or carrier) to 'know your customer' as for the customer to seek assurance in relation to the contractor.

Reality triggers should be applied to consider the risk of dangerous goods. A quick internet search can identify key characteristics of a shipper or consignor – and consignee. A chemical factory is more than likely to need to demonstrate compliance with the training requirement. Equally, recognise that a garden centre consignee may just as validly seek shipment of pesticides or fertilisers as tools and wheelbarrows.

The CTU Code is now a non-mandatory Code of Practice adopted by the IMO. While certain jurisdictions may or may not implement the code into national legislation, the entire freight industry must recognise that this detailed guidance may now be used in any litigation as demonstrating good industry practice. The TT Club cannot stress enough that all parties need to become familiar with the contents and develop ways to implement and encourage compliance with the CTU Code.

Having repeatedly drawn attention to the consequences of inappropriate load distribution and badly secured cargo within CTUs (including shipping containers), including bodily injury. An increased level of training of those employed by shippers, consolidators, warehouses and depots to pack containers and other transport units is now essential. As a result, TT Club commissioned Exis Technologies to develop e-learning training courses for the transport industry; CTUpack e-learning™ (**www.ctupack.com**).

While the IMDG Code is mandatory and all IMO member states are required to incorporate its requirements in national law, enforcement is little known and inspections (on which evidence of transgression is reliant) are few and far between.

On analysing reports submitted to IMO in the past, TT Club has established that the number of member states reporting on their inspections, in comparison with those in membership of IMO, has always been less than 10% and currently stands at about 2.5%; on average only 4 or 5 of the 170 member states regularly report. Of the inspections that are carried out as many as 75% are usually in the US. Obviously this is a woefully low rate of inspection and next to useless in order to enforce the regulations, derive change requirements or provide evidence of frequent transgressors in terms of shippers and commodities.

TT Club working with partners will continue to put pressure on IMO delegates and participate, through its association with ICHCA, in preparing relevant evidential submissions to the organization's sub-committees dealing with the safety in container transport. However it is clear that the effectiveness of its call for Cargo Integrity, must take a broad approach, not relying on the power of regulation or the vigilance and discipline of carriers or port operators, but carrying the message to the whole spectrum of industry stakeholders with a commitment to reduce uncertainty of outcome and improve safety for people, ships and the environment. Those involved in inspections, surveys and advice to the packing industry globally are amongst key potential agents of the significant culture change that is required

[1] Marine Aviation and Transport
[2] http://hazcheck.existec.com/hazcheck-systems/hazcheck-restrictions
[3] http://www.imo.org/en/Publications/IMDGCode/Pages/Default.aspx
[4] http://www.unece.org/trans/wp24/guidelinespackingctus/intro.html

SHIPPING FEARS ENGINE FAILURES AS INDUSTRY SWITCHES TO LOW SULPHUR FUEL

BY **ELLEN MILLIGAN,** BLOOMBERG

Add oil tankers breaking down at sea to the list of things shipping companies are worrying about as they brace for a once-in-a-generation overhaul to the kind of fuel the industry must consume.

From Jan. 1, 2020, the vast majority of the world's merchant fleet will have to use fuel containing no more than 0.5 percent sulfur, down from 3.5 percent in most parts of the world today. The change is expected to upend both shipping and refining industries, with analysts forecasting higher oil prices, slower-sailing ships, and some observers even warning of risks to world trade.

Now more and more of the world's largest shipping companies and trade groups, already mindful of spiraling costs, are saying there's a safety risk too. Their primary worry is the lack of a single fuel type that complies with the rules. Since refineries across the world are coming up with different solutions to meet the sulfur-reduction target, owners say their ships' engines could be damaged by inadvertently mixing incompatible products.

"This is of course a concern, and the marine fuels that can be used when the 2020 regulation is implemented are believed to be more unstable and contain other compounds than what is the case today," said Harald Fotland, Chief Operating Officer at Odfjell SE, one of the world's largest shippers of chemicals. "Therefore, we have to be even more cautious in selecting fuels."

After years of deliberating, the 2020 start date for the new rules was set in October 2016 by the International Maritime Organization, the United Nations' shipping agency. Vessels must lower sulfur emissions. Those with exhaust-gas cleaning systems that remove the pollutant will be able to keep burning existing products that are cheaper, but the equipment is expensive and takes up cargo space.

Dangerous Mix

The International Association of Independent Tanker Owners, the largest trade group for operators of ships moving everything from oil to gas to chemicals, is among those concerned.

While individual fuels may not be problematic, mixes could be dangerous, according to Dragos Rauta, technical director at the trade group better known as Intertanko.

"The way the different products work together can produce instability of fuel which can create sediments that can damage the pumps and engines eventually," he said.

The issues could ultimately stop a ship's engine, something that would be particularly dangerous in bad weather in busy shipping lanes close to land, according to Rauta.

Shipowners say extensive — and more frequent — testing will need to take place to ensure fuels are trusted, but that would take time and money at a time when fuel bills may well be rising anyway.

"This fuel oil will be sold under a specification which in theory should be okay but it appears there may be impurities in them, and these are damaging to our engines," said Flemming Carlsen, Chief Operating Officer of d'Amico International Shipping SA, which runs a fleet of 57 vessels. "We would need to be content that the analysis has proven that this bunker fuel is okay to burn in the main engine."

Supply Doubts

There's also uncertainty about whether there will be enough blended fuel to go round. Some smaller ports may not have access to it, meaning companies including d'Amico will have to use a combination of diesel-like products and low-sulfur fuel oil on their journeys, taking care to ensure the two aren't mixed.

The IMO's rules are meant to curb a pollutant that has been linked to environmental issues like acid rain and health concerns including asthma. Shipping groups already complained about the non-standard nature of fuels, and their costs are expected to spiral. A.P. Moller-Maersk A/S, the worlds biggest container shipping line, anticipates a $2 billion increase in its annual fuel bill.

The IMO is in the process of producing guidelines to help the shipping industry with risk assessment and mitigation as well as procurement of compliant fuel, a spokesman said. There should be no risk from compliant fuels, he said.

The shipping industry got a taste of what the future might look like this year — albeit for unrelated reasons.

Hundreds of tankers in Houston, Malaysia and Singapore suffered damage since March as tainted fuel clogged filters and jammed injection pumps, Intertanko reported in August. Both Odfjell and Ardmore Shipping Corp. say they were affected.

In two cases, Odfjell had to remove the fuel on its ships, due to the impact the sludge had on their ability to inject fuel into the engines. The filters and purifiers became clogged on two of Ardmore's vessels, one in Singapore and one off the U.S. Gulf. No material damage was done to the ships. Ardmore said it has stepped up testing as a result.

Cause for Concern

"This particular case does raise questions and concern towards the 0.5 percent quality discussion come 2020," said Robert Hvide Macleod, chief executive officer at Frontline Management AS, the oil tanker business of Norway-born billionaire John Fredriksen. Frontline has been exposed to current contamination issues to a "minimal degree so far."

The cause of this year's issues was the combination of phenol and styrene contaminants which cause a very sticky form of deposit that can damage purifiers, heaters, filters, fuel pumps and injectors, according to the Standard Club, a provider of insurance. This can ultimately cause the main propulsion systems to stop.

Contamination issues which could happen with blending would likely be caused in a different way, with incompatible fuels mixing to become hazardous. But both are dangerous.

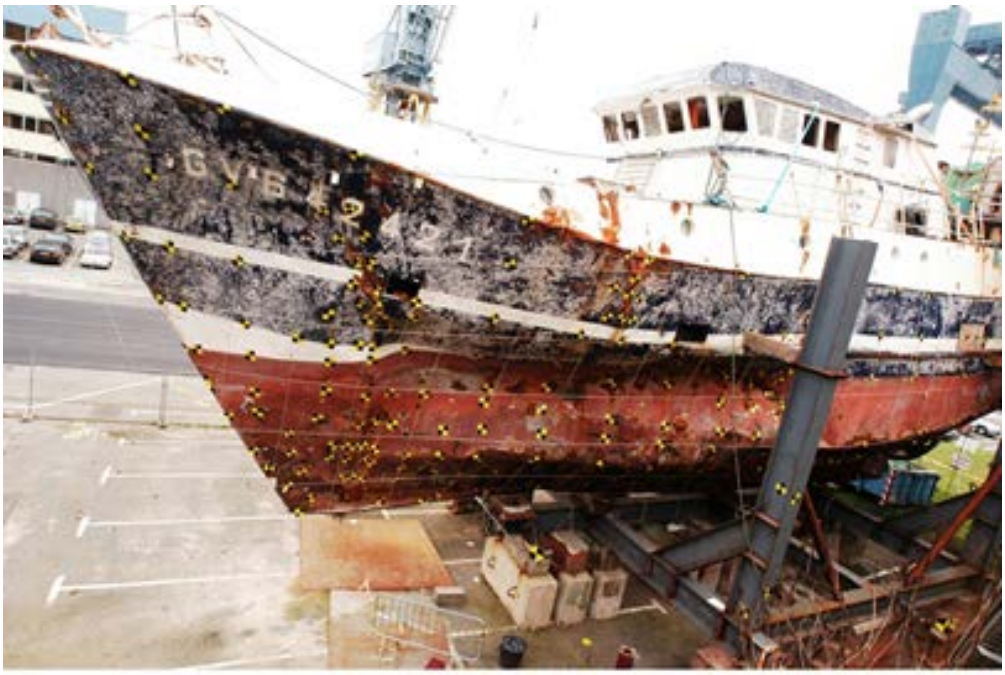
Paul Dean, a lawyer who specializes in marine issues at Holman Fenwick Willan in London, says the fuel-related damage this year shows there are vulnerabilities in fuel-testing systems, and that those issues will become more acute when refineries are selling new products in 2020.

"With the fuel that is available at the moment, and the problems which have come out of places like Singapore and Houston, there is concern about the expected increase in blending that's due to take place and its increased potential for contaminated fuel to be imported," said Dean.

The Case for Photogrammetry in Maritime Surveys

An Interview with Experts-Yachts' Jean Sans

BY **JEAN SANS**



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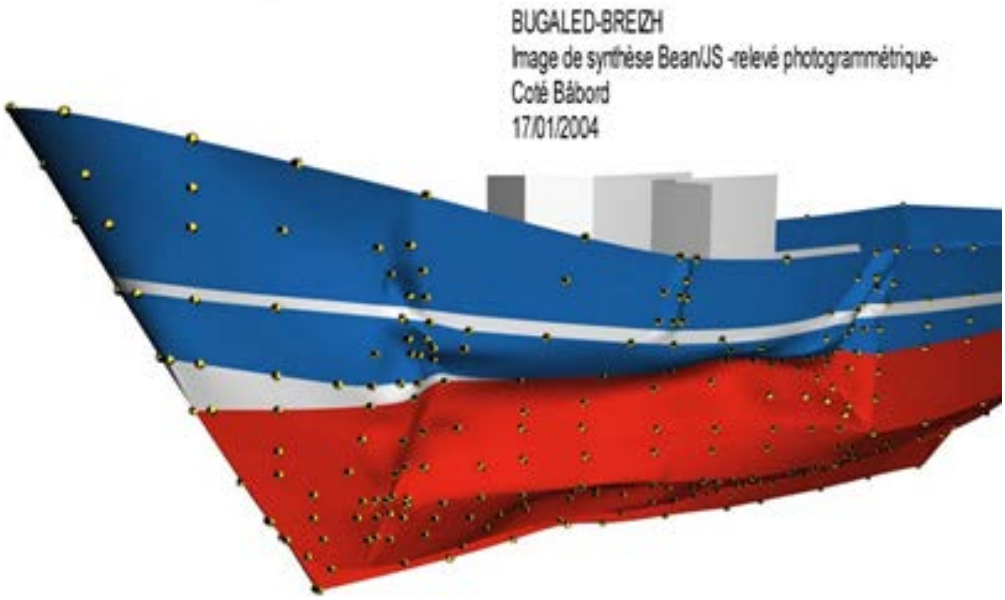


In this interview, we talk to Jean Sans of Experts-Yachts about the uses of photogrammetry in maritime surveys. An early adopter of the technology, Jean has been employing photogrammetry in his practice since 1983.

Could you tell us a bit about your work, and who your typical clients are?

My client base is very diverse, and includes people from a variety of different fields.

One week, I might be surveying the hull of a commercial craft to perform stability calculations. The following week, I could be assessing the maximum speed potential of a racing yacht, or identifying deformities in a fishing vessel.

I am also often called as an expert witness in maritime court cases, where I am required to evaluate the condition of boats after accidents at sea.

The variety of my work is what has kept this job interesting for me for over 30 years!

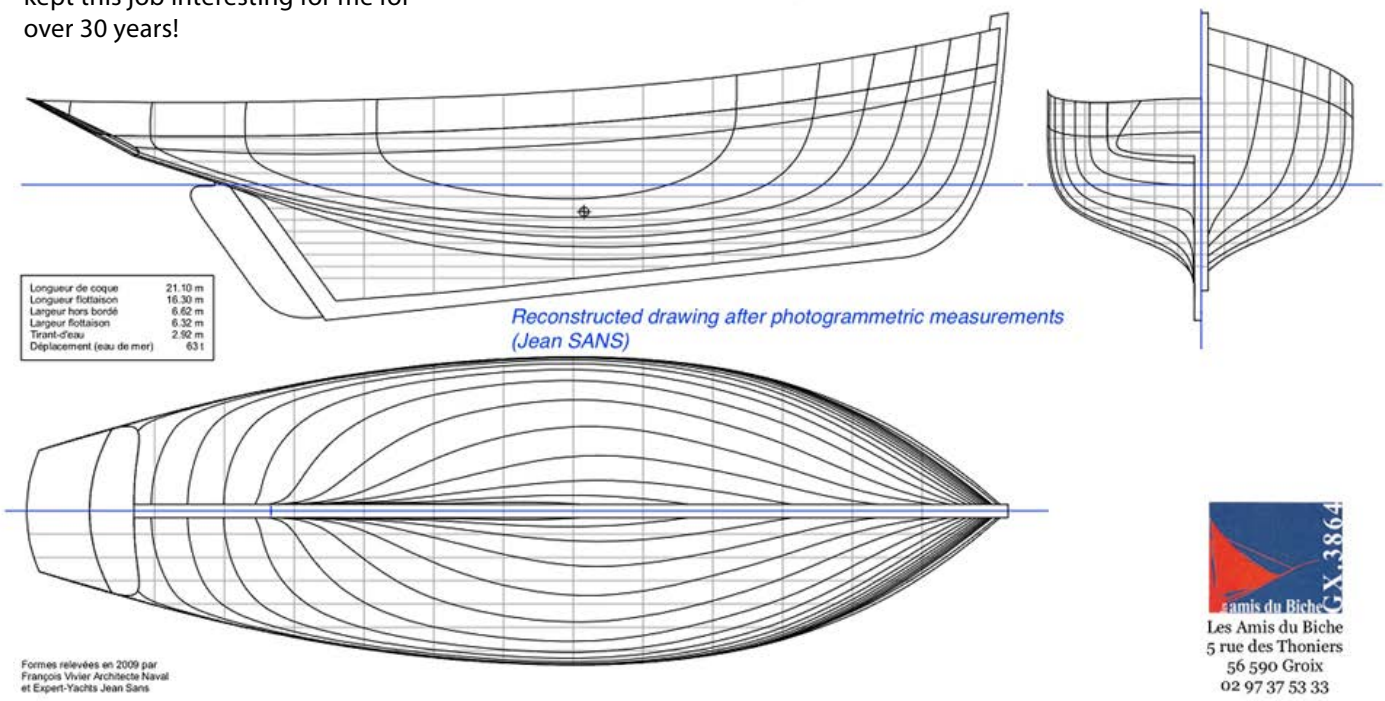
How did you first learn about photogrammetry?

I first discovered photogrammetry in 1983, when the Offshore Racing Council (ORC) began calculating the handicaps of offshore racing yachts with a Velocity Prediction Program (VPP).

In simple terms, a VPP is a software program that calculates the performance of yachts in various wind conditions by balancing hull and sail forces. To do this, the system first requires a 3D virtual model of the yacht – and my friends at the ORC wanted me to help them create these models.

At first, we designed and built specialized measuring machines to complete this task, and that worked pretty well for a time. But one day I read an article in a technical journal describing a stereoscopic process for reproducing these 3D models with standard photographs – what we now know as photogrammetry. I quickly realized this was the perfect method for the ORC's needs.

At the time, photogrammetry was much more complex than it is today. We had to use a Rolleiflex SLX 6X6 silver process camera to take analog photos. Then, we used a digitizing tablet and some custom software written in GW BASIC to process these photos into digital form. It was practically prehistoric!



That's a really interesting historical perspective. As one of the early photogrammetry adopters, would you say the technology has progressed since then?

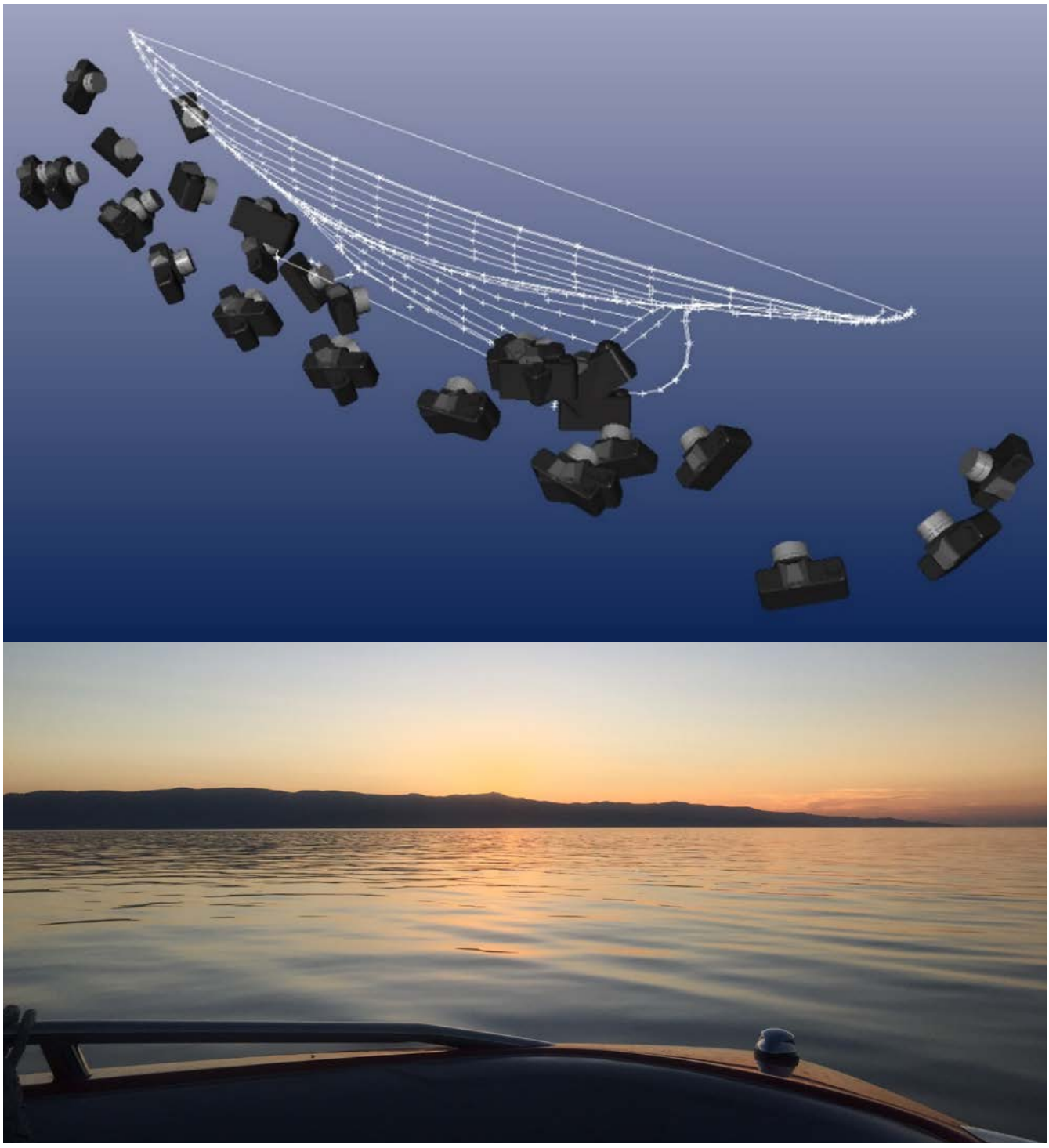
Absolutely.

Photogrammetry has come a long way in the past three decades, and modern, high-resolution digital cameras have transformed the field. On the software side, affordable and user-friendly tools like PhotoModeler have made the process very accessible for a wide range of applications.

I actually met a professor of topography in 1998, and he told me he had been using a commercial software suite designed for photogrammetry. At the time, this was quite cutting-edge, as only the military had access to such software.

The name of that software suite was PhotoModeler. I bought a copy of the software from a PhotoModeler rep in Germany and have never looked back since.

Today, I use photogrammetry as my primary 3D boat survey method – using PhotoModeler and a NIKON D2X with a 14mm aspherical lens.



Quite an upgrade. What made you decide to adopt photogrammetry as your main survey method, and would you recommend it to others in your field?

I find that photogrammetry is sufficiently accurate for the types of calculations you would need to do in a boat survey – such as identifying deformities, assessing stability and determining speed potential. At the same time, it's a very versatile, convenient and adaptable method.

The most common alternative in my field is laser-based surveying, which requires the use of theodolites and specialized scanners. But not only is this a lot more expensive, it can also be impractical in many real-life maritime settings.

For example, a laser-based system requires the boat to be stationary, and for multiple pieces of equipment to be precisely repositioned each time you "capture" the boat from another angle. This is often impossible in a busy port.

With photogrammetry, I can simply move around the boat with a portable digital camera and take pictures of the boat from any angle I want. This is especially helpful for surveying the inside of the boat, such as when I am doing a piping survey.

Another important benefit of photogrammetry is that it leaves behind a repository of photos. This makes it possible to verify the results with other photogrammetry software in case of any disputes about my model.

All in all, I would definitely recommend photogrammetry to other maritime surveyors looking for a robust, flexible method for 3D surveys.

Jean Sans is a veteran maritime surveyor with over 30 years of experience. A Judicial Expert at the Court of Appeal of Rennes and member of the National Chamber of Maritime Experts Plaisance, he is widely recognized as an expert in his field. To contact Jean or learn more about his work, visit his website at **www.experts-yachts.com**.

NEW PRODUCTS

Each quarter The Report brings you an update on some of the new products and innovations to hit the boating, shipping and maritime industry.

Spinlock is adapting to new boat designs

One of Spinlock's biggest leaps forward in rope holding technology has been the introduction of a ceramic finish similar to the Keronite found originally on America's Cup boat winches.

Implementation of the technology at the smaller end is not just for production boats optimising for racing, explained James Hall, Spinlock sales and marketing manager.

"There are many advantages by using ceramic coated technology, including the improved 'clutching' performance which minimises the small but sometimes critical loss of tension inherent when load is transferred from the winch, whilst also being more resistant to wear and heat, making them ideal for high speed/high load lines," James added.

New innovation limits the risk of engine corrosion

Ship operators can proactively limit the risk of engine and machinery corrosion with a new water in oil sensor that continuously monitors dissolved water content in oil.

Rivertrace's new Smart WiO uses capacitive measurement of absorbed water in oil with continuous monitoring. The Smart WiO Sensor continuously monitors water content value as % humidity taking consideration of the oil temperature. The sensor also measures the saturation of the oil independently from the oil type and oil age.

The Smart WiO sensor is intended to be used for preventative maintenance protocols and condition-based monitoring for lubricating and hydraulic oil, detecting water presence to avoid costly damage and premature wear with early warnings from pre-set alarms.

At 50% humidity the WiO Sensor shows a pre-alarm allowing the crew to take preventative actions to reduce the water content. At 90% humidity the main alarm is triggered alerting crew before any free water is present in the oil.

Water in oil content has traditionally been measured by test kits which detect free water in lubricating oil or emulsion from 100.02% humidity. However, any water content values measured exceeding 100% humidity indicate that free water is already present and causing harm.

World's first inflatable emergency VHF antenna is launched

The GALAXY-INFL8 by antenna manufacturer Shakespeare Marine can be deployed via an embedded canister or manual tube and inflates to 1.6m to offer a full 3dB high visibility unit and a range of up to three times greater than a helical emergency antenna.

"In the past, emergency antenna have sacrificed length and range to be stowed easily," said Dave Manasseh, Shakespeare European sales manager. "We wanted to change that. The GALAXY-INFL8 is the culmination of years of hard work from our engineering and design specialists to produce a full 3dB emergency antenna that is 1.6m in length and can be stored in a 250mm space. It's a game-changer for emergency communications."

The product is supplied with a splice connector, enabling connection to existing radio cables to further improve radio transmission range.

The antenna is mounted with hook and loop straps and due to its inflatable design and manual valve can be deflated and stowed after use.

The Pontoon & Dock Company has a new option of boat lift storage systems, AirBerth

The AirBerth is dubbed the ultimate in boat storage protection for salt and fresh water moorings.

"The AirBerth system is a safe and stable method of storing your boat out of the water without the need for cranage or dry storage," explained business manager Chris Moss. "This key piece of marina equipment has been used around the world and is installed in marinas and private moorings throughout the UK."

And he added that reduced boat maintenance goes hand in hand with lifting boat storage as antifoul and its accompanying preparatory work is not necessary.

The design of an AirBerth, offers a quick and easy launch and receive process of approximately four minutes, while the design allows the boat's hull to be automatically positioned on the lift for maximum safety and ease-of-use.

In addition, the AirBerth has a built-in washing system, which will clean your hull as soon as it leaves the water.

The AirBerth is designed to be portable as it's not hard mounted to the pontoon or berth. There are nine different models which can accommodate boat weights up to 15 tonnes.

Sea Bubble hydrofoil prototype under test

Now being tested in the River Seine in Paris is the all-electric Sea Bubble, a 5 metre hydrofoil craft designed as the water taxi of the future. The designers claim that the craft can operate with zero waves, zero noise and zero emissions.

Designed by Alain Thébault, the Sea Bubble is powered by two electrically driven propellers. Power comes from two 10kW electric motors that are attached to the foil system and with two 10kWh batteries it is claimed that the craft can run for about three hours at moderate speeds and then it takes two hours to recharge. It is planned that when the water taxi is in operation the Sea Bubbles will be based at purpose built docks fitted with charging stations.

To add to the green credentials, these staging areas will have a mix of solar panels and wind turbines to charge the batteries. Another possibility for the electrical supply is to have water turbines powered by the river current. The Sea Bubble weighs about 1000kg and can carry five passengers. Up to about 7 knots the craft runs in displacement mode and then it rises out of the water onto the foils to give a hull clearance of about 40cms, allowing the Sea Bubble to fly over small waves. The craft has a cruising speed of 12 knots when in the foil borne state and the top speed is 15 knots.

Dry dock innovation uses inflatable buoyancy

Unique Group's Buoyancy & Ballast division has recently facilitated a high-profile dry dock project in Romania, involving the supply and operation of 840t of Seaflex inflatable buoyancy.

The hull and lower decks of the Australian Antarctic Division's (AAD) new icebreaker Nuyina were constructed in the dry dock at Damen's Galati Shipyard.

"Our Buoyancy & Ballast division is truly unique within the market and we consistently bring added value to our clients, working in partnership," said Chris Sparrow, global sales manager, Buoyancy & Ballast at Unique Group.

"We get right up to speed early on in a project during the initial engineering phase and give technical assistance to clients without cost or commitment at that point. We are then able to offer clients the option of renting or purchasing equipment, according to their preference and business needs."

Next steps

Detailed engineering discussions took place over 18 months ahead of the work to determine the sizing, positioning and securing of the buoyancy units to the hull, so as to ensure sufficient clearance between the sill of the dry dock and the keel of the vessel when the dry dock was flooded.

42 x 20t Seaflex Inflatable Buoyancy Units and a system of hoses and manifolds were supplied to Damen on a rental basis, and two Seaflex technicians were deployed to offer on-site support throughout the two-week operation which took place during the early autumn of 2018.

Raising and lowering a mast during cruising is now made easier by innovation from Balpha Mast and Barton Marine

The challenge of being able to lower the mast on a small yacht to get beneath bridges and access under other low obstacles is an age old problem. Addressing this matter, a new rigging programme allows the Balpha Mast to be lowered and raised during cruising easily and safely using a boom strut to hold the boom in place.

Working together, Balpha Mast and Barton Marine have made technical improvements and advancements to refine the core apparatus and the carbon fibre mast system now has UK and US patents in place.

"Our technical plan was to create the most simple and user-friendly rigging programme so that virtually anyone can swiftly lower and raise the mast to make sailing more of a joy for those restricted by bridges or transporting their sailing craft by trailer," explained Suzanne Blaustone, Barton Marine CEO. "We are proud that we accomplished this using Barton Marine equipment, including our new Barton block range, boom strut and deck gear to enhance the Balpha Mast design."

Nippon Paint Marine launches what it claims is the world's first biocide free SPC antifouling

Japan-headquartered Nippon Paint Marine has introduced what is thought the world's first biocide-free, low friction self-polishing copolymer (SPC) antifouling technology.

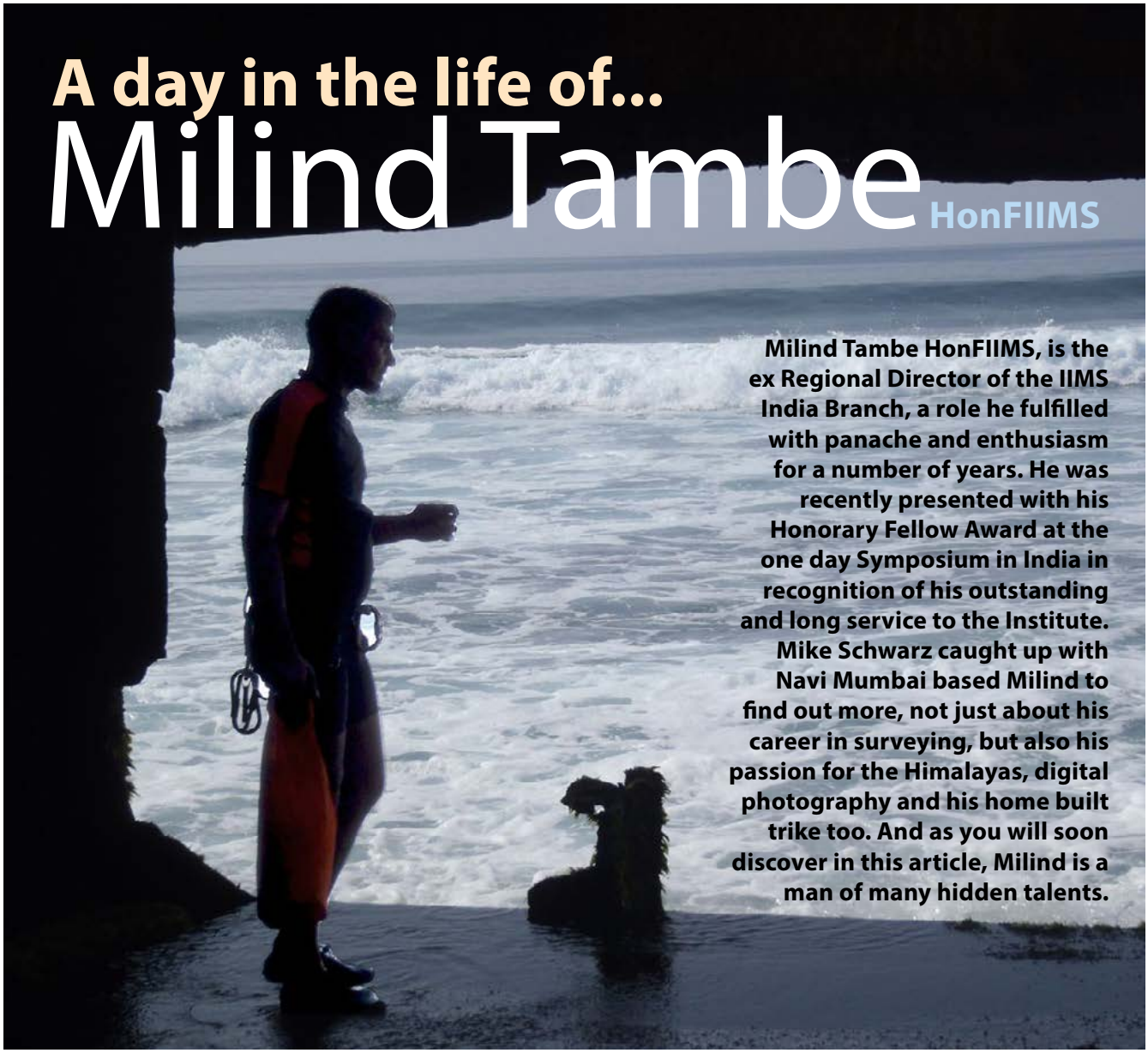
Aquaterras, a product name derived from the Japanese word for shining and the Latin for water – Shining Water – is an entirely new type of marine coating developed using neither biocide materials nor silicone.

Nippon Paint Marine Director John Drew said: "Typically ships' antifouling paints have contained some form of biocide – copper, tributyltin, co-biocides. But the use of biocides today is strictly controlled by both national and international regulations such as the BPR in the EU. And while there are no immediate plans to further regulate the use of approved biocides, we cannot rule out the possibility that copper in antifouling will be regulated in the near future.

"Nippon Paint Marine has always looked to develop systems that go beyond the regulations. And with Aquaterras our chemists have achieved the impossible – a truly effective and efficient long-life, self-polishing antifouling paint without the use of biocides."

A day in the life of...

Milind Tambe HonFIIMS



Milind Tambe HonFIIMS, is the ex Regional Director of the IIMS India Branch, a role he fulfilled with panache and enthusiasm for a number of years. He was recently presented with his Honorary Fellow Award at the one day Symposium in India in recognition of his outstanding and long service to the Institute. Mike Schwarz caught up with Navi Mumbai based Milind to find out more, not just about his career in surveying, but also his passion for the Himalayas, digital photography and his home built trike too. And as you will soon discover in this article, Milind is a man of many hidden talents.

Q1. How did you start your maritime career and what was your route into becoming a marine surveyor?

It wouldn't be wrong to say that ours is a marine related family, my father being the first of the seafarers in our family. It was not surprising that I followed his footsteps. My maritime career started with the Indian Navy way back in 1983, when I joined the Indian Naval Training Establishment "INS Shivaji" as an Artificer Apprentice. I went through the four year engineering course to gain my Diploma in Engineering with Ship Construction and Naval Architecture as my specialisation. After my passing out in 1987, I was posted onboard the Floating Dock of the Indian Navy at Andaman Islands, and it was there I met a senior Marine Warranty Surveyor who was then in charge of the towing and the mooring operations of the Floating Dock. Being the most junior in the team then, I was assigned to assist the Warranty Surveyor and I did that for almost the entire 60 days that the Warranty Surveyor was present there. It was here that the seeds of becoming a Marine Surveyor began to take root. Looking at the way the gentleman worked, I was quite intrigued and asked him what he was and how could I be like him. He just said "be on board the Floating Dock as long as you

can, serve on specialist ships and grasp all the knowledge that you can". And that was it. I went on to serve on the floating dock for the next five years. Thereafter, I was lucky once again to get a posting for another five years on an Indian Naval Salvage and Submarine Rescue vessel 'INS Matanga' where I learnt a lot about ocean Towage and Salvage.

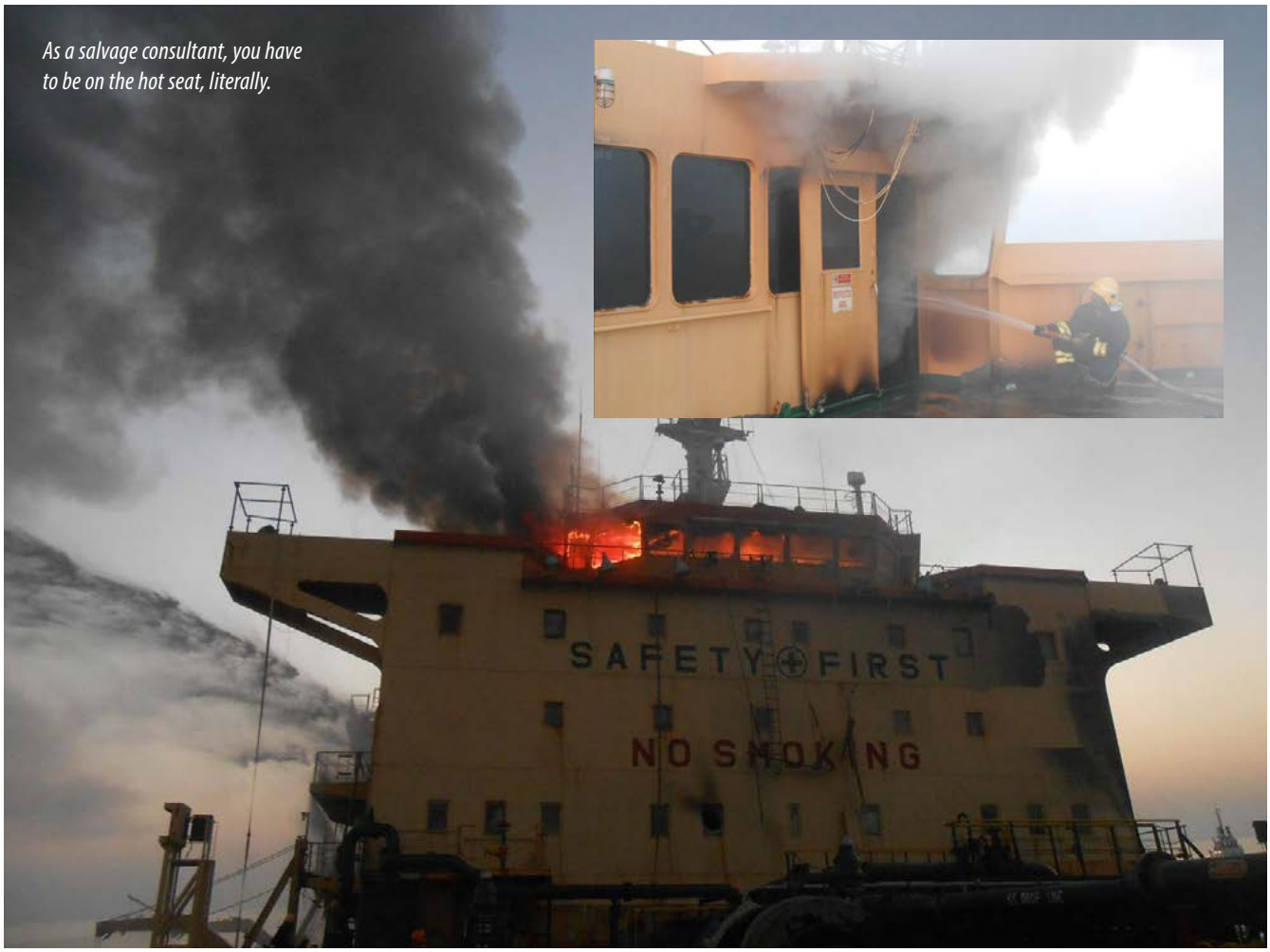
All those years that I was in the Indian Navy from 1987 to 1998, I would say I was blessed to have some really good mentors, in the form of my seniors and some very superior officers who were supportive of my dream of becoming a Marine Surveyor post my retirement. Invariably everyone always seemed to refer to one name, who even today is considered a Stalwart in the Marine Surveying industry. Time and again I was referred to meet Mr Tony Fernandes and to learn from him the nuances of Marine Surveying. It was not till 2010 that I got an opportunity to meet him. I already was a Marine Surveyor by then, but meeting him, I would say, made me gain further finer insights to become a better Surveyor than I already was. I am indebted to all those who guided me and of course Mr Tony Fernandes for who I am today.

Q2. What are your specialisms as a marine surveyor and which aspects of the job have given you most satisfaction over the years?

That is a difficult question Mike. I am still learning and there is a lot to learn yet. I wouldn't call myself a specialist, but yes if you ask me what type of surveys I like to perform amongst others, I would certainly put a hand on my heart and say any survey related to a maritime casualty, be it a grounding, stranding or refloating. I have undertaken several assignments on behalf of the P&I Clubs, Hull and Machinery Underwriters and Ship Owners and Managers for casualty matters either as a Surveyor or a Consultant, and these were the assignments that have given me the most satisfaction. The opportunity of being of assistance to an asset and its crew in times of distress is the most satisfying aspect of such assignments.

Q3. What one surveying assignment has challenged you more than any other?

I was called upon to inspect one particular casualty in the Maldives, where many of the local Surveyors had refused to board. That was one assignment that put everything I had learnt to test. When I mean all... literally all skills, right from surveying to diving, from life saving to safety and survival at sea - (I almost came back alive



As a salvage consultant, you have to be on the hot seat, literally.

Milind inspecting an abondoned derelict on the Namibian Coast

ashore from being swept away by rip currents) and not to forget reporting and human soft skills. I cannot go in the nitty gritty of that here owing to confidentiality reasons, but I can certainly tell you that it was one assignment when I realised, more than ever, that one can't say one knows it all. I learnt the importance of constantly upgrading your knowledge and skills, no matter how long you have been in the industry.

Q4. Which aspect of surveying and the reporting process have you found hardest to perfect over the years?

If I had to choose between surveying and reporting process, I would say mastering the report writing aspect is the hardest to perfect. One may perform very well at a survey, but if it is not reported well, the survey is incomplete and shoddy. A report is an end product of the survey assignment, and if that is bad, your reputation is at stake. You are only as good as your last report. Being able to describe the condition of the ships or boats that you surveyed in precise, clear and understandable words and in a time bound frame after the survey is as important as carrying out a good survey. This is one aspect of surveying many tend to overlook.

Q5. How high are the standards of marine surveying in general on the Indian continent would you say and what more, if anything, could IIMS do to help propel them higher?

I would vouch by the Standards of GOOD Marine Surveyors in India. We have had and still have some really good Marine Surveyors here in India. There are several Stalwarts who are well known in the Marine Survey field, indeed you have seen quite a few of them in Mumbai during this Symposium. It would be unfair on my part to name just a few of the good Surveyors and leave out others, so I won't go on naming them. Having said that, we also have our share of poor Surveyors. But again that is the same worldwide, when we talk of quality people, quality surveyors, there always are individuals at either end of the scale and we must acknowledge that. There is one thing that I would proudly say and that is with the Institute making inroads on the Indian Sub Continent since 2006, things have changed for better. That we are able to get such GOOD Surveyors in the folds of the Institute makes a difference. The numbers though slow are growing steadily. I am confident that with the Institute now coming forth with a proposed Surveyor Accreditation Scheme, these bars of quality would be raised further higher.

Q6. How important is it for surveyors to continue to develop new skills in today's fast changing, technologically driven world and to keep their CPD up to date?

Technology is changing at a faster pace today than it was a few decades ago. It is changing at an exponential pace. This is as much a challenge in Marine Surveying Field, as much as it is in any other business. We have been talking of Autonomous ships for some years now, In the recent Symposium at Mumbai we heard of AI (Artificial

Intelligence), VR (Virtual Reality), AR (Augmented Reality) and MR (Mixed Reality). These are all here, and we need to adapt them. As Marine Surveyors, our age old skills - though absolutely vital - may no longer be sufficient to carry out our assignments. We need to learn new skills to blend in with this technology. We need to have a good understanding of these new techniques and equipment that utilise this developing technology. The sheer kind and magnitude of technological change that is happening now, the rate at which it is happening - it is going to be like a roller coaster ride.

Upgrading one's skills and maintaining a Continuous Professional Development regime is now more important than it was ever before, and as Marine Surveyors, we must not undermine that ever!

Q7. What one piece of wisdom would you pass on to the next generation of surveyors?

I would keep that short and simple. "Be a Marine Surveyor only if you are willing to be a life-long learner."

Below: Milind inspecting some unmanned casualties

Q8. I understand your son is learning the trade to become a marine surveyor and he could not have a better mentor, but how much tougher is it for him in the modern age than it was for you given ever increasing red tape and regulation?

I am happy that my son is contemplating to be a Marine Surveyor in due course. He is working on his sea time and sea experience as we discuss this, sailing on charter yachts and catamarans as a Yacht Master. I am not much worried about Red Tapeism as I foresee that reducing with an increase in Regulations for Marine Surveyors. And I am happy that these regulations are fast coming in place, both locally and internationally. It would make separating the grain from chaff easy. It would be more level playing field with him having to pitch and compete with professionals rather than a mix of professionals and Mickey Mouse kinds. Having said that yes I would be more concerned of the technological advancements that he would have to keep up with when we discussed CPD.

Q 9. I know you have a keen interest in the shipbreaking process that takes places in Alang, for example, and other destinations too. Please tell me your thoughts on this topic in brief.

Yes I have been working with the Ship Recycling yards for some time now. A lot of debate has happened and is on going with the conditions of the Ship Recycling yards in our part of the world. Things are not as bleak as they are often portrayed to be. Neither do I claim all is good and safe - that would be an outrageous statement to make. There is a lot of hue and cry over this. What I personally feel is that there is a lack of a balanced view on this. What is normal and base line in the western world may not be so in the third world countries. The sheer reason being local demographics. We have safe recycling yards at

several locations around the world, in such a case why do shipowners choose to sell the ships to recycling yards that adopt beaching? I think the answer is straight forward and I need not specify that. We have been building and operating ships with all of these pollutants for decades now. It will take some time to see that these are safely recycled, it just will not happen overnight. I am not advocating the unsafe recycling methods, but all I am saying is it will happen and we need not get paranoid over it. Japan and India have been investing substantial amounts of funds on upgrading the Indian Recycling yards. Around 50 plus (and yet the number is growing) recycling yards of Alang - out of 120 odd, are now HKC standards compliant thanks to the various Hazmat Experts within the country and various Classification Societies working tirelessly to achieve this. The situation ahead is not bleak as many portray it to be, and I am optimistic about it. We just need to give it some time.

Q 10. You are well known for your love of digital photography and indeed have written books and given presentations on this subject. But what is it you love so much about digital photography?

I love photography, but not just Digital Photography, Analogue Photography too. That is how I started and at times I yet practice it as and when I can lay my hands on some good film stock, specially Ilford FP4 being my favourite for its fine grain, a good exposure latitude and contrast. I do love the digital medium as well, most notably for the price factor. It is much cheaper to go digital than conventional film. One can afford to do a lot of mistakes going digital than on film. One can experiment a lot with digital cameras. You need not worry about having lost a precious frame from the spool of 36 exposures. New learners can be shown results almost instantaneously and it makes the learning much easier.

Q 11. Many readers will be unaware that you devote time to trek and train others in the Himalayas. It is easy to understand why one might want to do that and get drawn back time and time again, but what is it about the Himalayas that keeps you going back?

Mountains teach you so much. These are the lessons I learnt and precisely the very reason why I trek so often:

Teamwork: You can't reach a mountain summit without teamwork.

Keep on moving: No matter what. Just take that one step at a time and you will reach your goal.

Hardwork pays off: You get the best of the views from the top and the best of the views come after the hardest climbs.

Be optimistic: Whoever said "I can't" never ever climbed a peak.

Milind doing what he loves the most

Milind with a trekking friend atop the Hampta Pass 14500 feet (you cant miss the IIMS Jacket)

Milind with some trekmates at Deoriatal lake

You don't need much to live: Wandering alpine style (carrying all your gear yourself) makes you realise how little one needs to live - and by little - I really mean very little indeed.

Do not give up: For giving up is not an option in the mountains.

Conquer your fears: Learn to own your fears, face them and then conquer them.

Slowdown - Life is not a race: And there is no better place than the mountains to realise this.

Q 12. If you could change one aspect of your life retrospectively, what might you have done differently?

Not that I regret any of my decisions that I made in life, but if at all I was granted this wish, I would go back to my school life and enrol myself at India's Premium Fine art School, the JJ School of Arts and pursue Fine Arts!

Q 13. I have seen video footage of you riding your amazing self-built electric trike. What made you want to design and ride something like that, how did you make it and what were the challenges?

I am glad that you liked the video footage! I was tired of burning fossil fuels, not that I don't use my car anymore; I don't use it for journeys less than 20 kilometers anymore. We all talk of sustainable means of living, and using renewable energy. But hardly any of us actually adopt that ideology. Instead of waiting for someone else to do that, I thought why not me!

The primary reason to start pedalling was to adopt an environmentally sustainable mode of transport. I could have well started riding a bicycle, but then me being me, how could I do

something which is conventional? Browsing the net I came across this guy nick named JaYoe, who set out on his recumbent trike and is presently covering the Far East, Korea and Japan. Then I came across a gentlemen who despite his handicap had travelled the Himalayas on his recumbent Trike. And that was it... my search for a recumbent trike began. A modest, entry level (non electric) recumbent trike costs around USD1,200 – USD1,500. Add to that a whopping 38% duty on importing a cycle into India; that put the costs to around USD1,600 – USD2,000 for an imported trike. I was pretty much sure I could build one for much less than. I wanted to keep the design simple to build with minimal of welding. I based my recumbent trike on the 'all bolted aluminium frame' open source design 'N 55 from XYZ Spaceframes.com'. I adapted the original design to suit my needs and local road conditions.

The entire trike is made of commercial grade aluminium sections and bolted with stainless steel bolts. The bicycle parts were sourced on line and at a local bicycle store. The tools I used were a hacksaw, an electric handheld drill, a set of spanners and a screw driver. As I developed the design, I thought why not make it an electric trike? So I sourced an alloy wheel with a 250 watts brushless hub motor from another enterprising cycling enthusiast and added an electric drive. The power is via Lithium Ion batteries 36 volts, 10 Ah. Having done that, I added a 150 watts solar panel via a MPPT boost charger to charge the 36 Volt battery via a 12 Volt panel. This made OFFGrid Travel a reality for me. As I write this the roof and solar panel are being redesigned to make the shape more aerodynamically streamlined and aesthetic.

The entire trike (with the electric drive and solar power unit) was built in my office all by myself in about 100 hours and at a cost of INR 100,000 (USD1,300 or so) including wastages and material and parts lost due to errors. Not bad hey?

The biggest challenge when I ride it is to come to terms with public curiosity. I ride daily to my office which is just about a kilometre away from my home. If I walk that distance, I reach the office in about 9 minutes; but it takes over thirty minutes if I go on the trike! The amount of people who stop me at traffic lights and want to know about the trike is amazing! A lot of curious fellow motorists and motorbike riders are amazed that I am able to keep pace with them in the city traffic - by the way I can do 25 Km/hr as a maximum speed.

Q 14. At the end of a hot Indian day as you settle down with a cool beer, how do you choose to relax?

The way you asked this question Mike - I can't resist the temptation to sit down with some cool beer; and if and when I choose to relax, I would love to be found on a little hilly island somewhere in some Ocean - living out of the land and sea - and teaching little children those things that they no more teach in the schools.

Milind and his trike

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