THE REPORT

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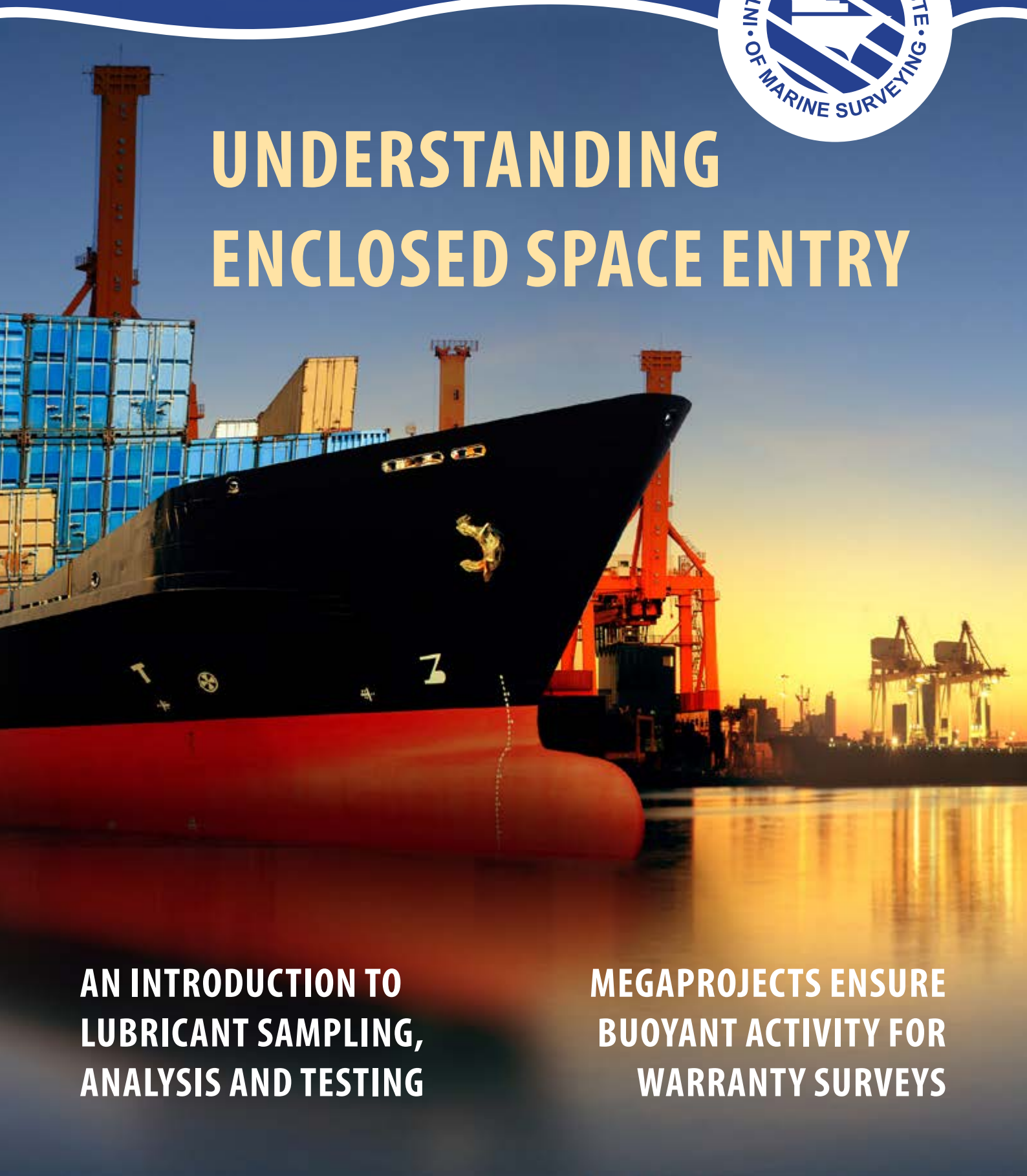
ISSUE 79

The Magazine of the International Institute of Marine Surveying



UNDERSTANDING ENCLOSED SPACE ENTRY

AN INTRODUCTION TO LUBRICANT SAMPLING, ANALYSIS AND TESTING

MEGAPROJECTS ENSURE BUOYANT ACTIVITY FOR WARRANTY SURVEYS

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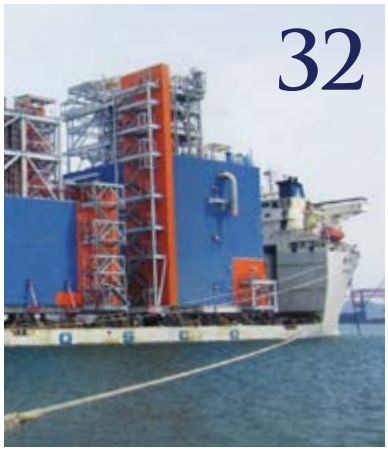

Editor's Letter

Although we are only a couple of months into this year, 2017 already has the feel of a progressive and exciting one about it as far as IIMS is concerned. As I look back over the past two months, I start to realise just how much we have already crammed into a short space of time.

IIMS now has a new Membership Secretary, Camella Robertson, who replaced the popular Jan Cox when she retired last month. She is settling in well and I know Cam (to her friends) is looking forward to hearing from and meeting members over the coming months at various conferences and IIMS events. Jan's 'retirement' interview can be read on page 19.

IIMS also has a new continuing professional development App, officially launched on 1 February, something I am proud of. I have been delighted by the positive acceptance of those members who have downloaded the Android and IOS versions; and also those who have tried the web based version to claim their points. The App is, I believe, a significant game changer and simple to use. It is further evidence of the Institute's strategic aim to lead and develop ever valuable member services using the latest available technological tools to do so. Importantly, it makes the whole CPD process far easier for both members and my head office colleagues alike. My personal thanks to IIMS member, Capt Ruchin Dayal and his App team, based in Goa, for interpreting and delivering my vision so precisely. My concern, however, now turns to members who have not read emails and/or the promotional material we have published about the new App. Currently those members sit outside the scope of this new initiative and it is urgent that we find ways to communicate this innovative new approach to maintaining CPD to them fast. Be sure to read about the new CPD App on page 22.

New legislations and new technologies keep presenting themselves with regularity. So it is encouraging to report that IIMS has run several successful training events tackling both such areas in the early weeks of this year for members and non-members. We kicked off in Athens during early January, Baltimore in February and then organised two training days specifically dedicated to the new RCD-Recreational Craft Directive regulations. Reports on these events on pages 17, 18 and 20.

Another new initiative launched in January is the delivery of short online seminars. Whilst it is fair to say that the early audiences are not yet huge, those who have participated in these seminars have had nothing but high praise for the content delivered so far and the Zoom video conferencing technology being used to deliver it. Mediation and the Marine Surveyor, Dredging Technology and Basic Introduction to Coatings Technology have been broadcast to a combined audience of 40 plus members all over the world.

Do keep an eye out for future IIMS training events and conferences later this year. A full calendar of events can be found on page 21. The London Conference is confirmed for 11/12 September. Our Large Yacht and Small Craft Working Group (LYSCWG) 'Super' Training day will take place on 13 November. But before these events, there are two eye-catching LYSCWG training events in April. The first is a trip to visit the Royal Huisman superyacht builder's yard in the Netherlands, coupled with some technical training; and at the end of April the group meets again at the Palma Superyacht Show.

Perhaps I will meet you at one of these events or at an online seminar soon?

Survey well.

Mike Schwarz
Chief Executive Officer
International Institute of Marine Surveying

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The President's Column

The new year has dawned warm and sunny down here in Tasmania and after a short, very welcome break we are back to business. We have been taking on staff and ensuring our footprint covers the markets and market sectors we have committed to serve, and are continuing to develop our IT and systems with a view towards ISO 9001 accreditation later in the year. I've taken on a number of trainees, male and female , each of whom we have inducted fully and who are now on their way to gaining national accreditation.

It's heartening that there is a generation skilled, ready and interested in becoming surveyors- my sense is that our profession is attractive to many, but that only a few are temperamentally and otherwise suited to the responsibility. I normally take would-be surveyors who approach me and who pass the first filter out with me for as many surveys as possible- there is nothing like a grey or black water tank inspection to sort out the dreamers from the serious in my experience! We need these women and men to come through to ensure the continuity of our profession and our businesses- to me, bringing trainees on makes good business sense. It's also a big risk, so careful selection and frankly discouraging the no-hopers is also a part of the mix I'm afraid.

You may have gathered from my introduction that my thoughts are very much on the business management challenges of our trade. At last years' Australian conference, during the panel discussion almost all active surveyors identified cashflow as the biggest challenge they face. I concur without hesitation. We do this (I state advisedly), to make a living, not as a hobby, and it constantly amazes me how challenging it is to get money from a minority of clients.

My experience is that this is the exception, rather than the rule, but it is sometimes enough to give even the most taciturn amongst us sleepless nights and anxious days. The way I look at it, when the work is done as agreed it's your money- not theirs, and it should be with you as quickly as humanly possible. Like many of you I have staff that have to be paid and overheads to meet and I take these responsibilities seriously.

Based on my own evolving experience I'd like to propose a few mitigation strategies to ensure cashflow for our profession which you might consider…

These are as follows:

1. Diversify and work for as many clients as possible. Don't have your eggs in one basket.

2. Don't release reports for new,unknown clients until they have paid- to help, set up multiple payment channels and make it clear in your terms of survey and T&C that this is an expectation. I carry an EFTPOS machine which is smaller than a wallet and I normally offer this to clients to use before I leave a vessel. Few people walk around without a card these days.

3. Pre-condition your clients to expect to pay before they get their report. Ground rules set early make it easier. If they baulk, they are not clients you want.

4. Be selective who you work for. Not easy at all but if your BS meter is going off the scale after initial discussions with a prospective client-run away! A wise old surveyor once said to me that some of the best jobs are the ones you don't do!!

5. If you need to do a business management course such as the excellent seminars IIMS runs.

6. Get good professional assistance including bookkeepers and accountants, and listen to their advice.

In spite of already failing to achieve one of my stated ambitions as your President (see my speech at last year's London conference on the excellent IIMS Youtube channel) I hope that you will sense an optimism in this edition's column.

There are old surveyors, bold surveyors, but no old and bold surveyors- this adage applies as much in our business life as in our professional one!

Mr Adam Brancher *President*
International Institute of Marine Surveying
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Marine News

TRANSPORT MALTA ISSUES REPORT INTO A FATAL INCIDENT ON RO-RO PASSENGER FERRY GALAXY

Transport Malta has issued its safety investigation report into the mooring equipment failure and subsequent fatality of a shipyard worker on board the Cyprus registered ro-ro passenger ferry GALAXY in Valletta, Malta on 18 January 2016.

The incident
On 09 December 2015, MV Galaxy arrived in Malta under tow on a single, ballast, unmanned voyage from Piraeus, Greece to the Shipyard. Repairs commenced soon after, with the vessel afloat. On 08 January 2016, she was transferred to graving dock number 4 for underwater hull inspections and repairs. She was subsequently re-floated and pulled out of the dry-dock on the morning of 18 January 2016 at around 0900 to continue repairs afloat alongside Boat House Wharf.

During the berthing operation, after the move out of the dry-dock, a roller from the pedestal fairlead at the aft mooring station became detached and flew off over the shipside and overboard. In its trajectory, the roller head hit the Shipyard's Assistant Repair Manager who was consequently fatally injured. The Marine Safety Investigation Unit (MSIU) conducted a safety investigation into the occurrence.

Findings
The immediate cause of the accident was the failure of the two 10 mm bolts holding the roller-keep in place, which sheared off under the tension generated by the mooring ropes.

The safety investigation concluded that tremendous tensile forces in the mooring ropes caused the spring to become very tight and create an upward component of the force acting on the stern rope passing over it and around the lower pedestal fairlead.

The upward component of the force was created by the difference in heights of the pedestal fairleads and the way the ropes were positioned; with the rope on the higher pedestal fairlead crossing under the mooring rope on the lower pedestal fairlead.

No formal risk assessments and detailed 'toolbox' talks were carried out prior to the ship's mooring operation. No briefing on the handling of mooring ropes was provided and the dangers associated with mooring stations were not discussed. None of the seven Shipyard personnel present at the mooring stations on board Galaxy had any training in mooring operations.

Recommendations
In view of the conclusions reached and taking into consideration the safety actions taken during the course of the safety investigation, Moby S.p.A. is recommended to ensure that it addresses the safety-critical periods of dry-docking, irrespective of the validity of Statutory certificates.

Fatal incident on ro-ro passenger ferry GALAXY report published by Transport Malta

FAILURE OF A MASTER PEAR LINK PROMPTS BMA TO ISSUE A SAFETY ALERT

The Bahamas Maritime Authority (BMA) has issued a safety alert regarding the catastrophic failure of an HN330 320 IND Master Pear Link supplied by Survival Systems International UK Limited and the subsequent tender boat fall from its stowed position.

The incident
A tender boat onboard a cruise ship registered in the Commonwealth of the Bahamas suddenly fell from its stowed position into the water. The immediate cause was a catastrophic failure of the link that connects the fall block to the release gear/hook.

No persons were injured; however the tender boat itself was a total loss. An immediate internal investigation was commenced by the Owners who also instructed the vessel's Classification Society to conduct material examination to determine the failure mechanism of the master link.

Findings
Despite annual and 5-yearly inspection by competent person, the substandard condition of the connecting link was not uncovered. No non-destructive testing (NDT) was carried out to verify the condition of the links, and the bolted on handles were not removed to ensure full visual inspection nor were the dimensions of the connecting links measured to uncover potential reduction in diameter as a result of corrosion.

The connecting links were of a substandard material, below LSA Code safety factor requirements,

An example of the Master Pear Link that failed

fitted by design with handles that obstruct visual inspection and cause galvanic corrosion. This overall resulted in the crack originating, propagating without being noticed and caused final catastrophic failure.

Recommendation
It is recommended that the above information is taken into consideration and the condition of master links be verified by a competent authority to ensure the structural integrity is not compromised.

A WASTE PRODUCT FROM SHALE GAS PRODUCTION OFFERS A NEW FUEL OPTION FOR GLOBAL SHIPPING

The first of three ethane-fuelled engines has been delivered for a trio of ships on order for Germany's Hartmann Reederei on order at China's Sinopacific Shipbuilding. They will be pioneers for ethane fuelling, believes René Sejer Laursen, promotion manager at MAN Diesel & Turbo.

The ships will each carry 35,000m3 of the gas so have an obvious source of fuel, but Mr Laursen has a bigger vision: "we see potential for all ships to use ethane gas in the future," he said during a presentation about the company's multi-fuel engines during the Danish Maritime Days in October.

Ethane is a by-product of shale gas production, he pointed out, with up to 20 per cent of shale gas being ethane. So in the US, ethane is relatively simple to obtain and he conceded in conversation with Marine Propulsion that availability elsewhere is not good. But shale gas extraction is being explored in other parts of the world and Mr Laursen expects it to become a significant fuel option elsewhere.

Engines must be specifically designed to burn ethane, which has different characteristics from other fuel gases and MAN Diesel & Turbo uses the ME-GI-E designation to identify those engines. The Hartmann vessels will each be fitted with a Tier-II 7G50ME-GI-E engine.

Meanwhile, Dalian Shipyard holds orders for five 35,000m3 ethane carriers, which will each be fitted with a 6G60ME-C9.5-GI-E engine, coupled with an EGR system to bring it up to Tier III emission standards. These engines will also burn LNG so shipowners can choose whichever fuel is the most cost effective where they are operating, Mr Laursen said.

MAN Diesel & Turbo is also looking at cost-effective fuel gas supply systems and has developed a prototype pump and vaporiser unit. Other devices are available but "we have organised it in a simple manner and removed many sensors, valves and pipes and reduced the size of it," Mr Laursen told Marine Propulsion. It is also designed for redundancy, he said. It has three piston pumps for pressurising the gas but only two are needed, so the third is ready to start if one of the others fails.

MAN Diesel & Turbo's prototype gas fuel pump and vapouriser unit (credit: MAN Diesel & Turbo)

FIRST CHANGES TO MLC 2006 SINCE IT WAS ADOPTED COME INTO FORCE

The first amendments made to to the Maritime Labour Convention, 2006 (MLC, 2006), which ensure better protection to seafarers has entered into force on 18 January 2017. The amendments were originally approved by the International Labour Conference in 2014 prior to implementation.

The 2014 amendments require that a financial security system be put in place to ensure that shipowners ensure compensation to seafarers and their families in the event of abandonment, death or long-term disability due to an occupational injury, illness or hazard. Mandatory certificates and other evidence will be required to be carried on board ships to establish that the financial security system is in place to protect the seafarers working on board.

Foreign ships entering the ports of States for which the MLC, 2006 is in force will be inspected for compliance by port State control authorities and action will be taken if the documentation is missing or incomplete.

It is expected that this new requirement of the MLC, 2006 will prevent the unfortunate situation of seafarers being stranded in port for long periods when shipowners abandon their crews without paying their wages or repatriating them to their home countries. In the past, abandoned seafarers would often be reluctant to leave their ship until it was sold in a judicial sale to pay outstanding

claims, including claims for unpaid wages. Now, the payment of such claims will be expedited by the financial security system. Furthermore, payment of outstanding claims to seafarers or their families in cases of death or long-term disability resulting from their employment will also be expedited.

Of the 81 States that have ratified the Convention, only two have formally expressed their disagreement with the 2014 amendments. Two others have requested to defer their entry into force until 18 January 2018, while several others are yet to submit a formal declaration of acceptance.

Besides addressing the immediate issues of protecting seafarers and their families in case of abandonment, death and long-term disability, the development and entry into force of the amendments demonstrate that the MLC, 2006 can effectively be updated to meet the pressing needs of seafarers and the shipping industry.

The first amendments made to to the Maritime Labour Convention, 2006 (MLC, 2006), which ensure better protection to seafarers has entered into force on 18 January 2017.

Photo credits: NASA/Kim Shiflett

AMSA TO DEVELOP NEW SAFETY STANDARDS FOR SHIPPING LIQUID HYDROGEN

A memorandum of understanding has been signed between Australia and Japan at the headquarters of the Australian Maritime Safety Authority (AMSA) in Canberra which will allow liquid hydrogen to be shipped in bulk for the first time.

Ship containment systems are being developed in Japan that will be capable of safely transporting liquid hydrogen in bulk from Australia to Japan as part of a pilot project scheduled to commence in 2020.

Bulk gas cargoes are carried under the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code) which is a mandatory code under the Safety of Life at Sea (SOLAS) convention.

The IGC code does not currently allow for the transportation of liquid hydrogen. Cargoes not covered by the code can be carried if there is an agreement between relevant nations – the flag State of the ship, port of loading and port of unloading – and changes are developed to the code and taken to the International Maritime Organization (IMO) for approval.

Australia worked with Japan to develop interim carriage requirements for the transportation of liquid hydrogen in bulk from Australia to Japan. These were agreed to at the IMO Maritime Safety Committee in November 2016.

The interim carriage requirements specify the construction standards of containment vessels for liquid hydrogen carriers, and mitigate the safety risks associated with transporting the liquid hydrogen via sea. The interim carriage requirements are a critical milestone in the Hydrogen Energy Supply Chain Project and will allow the pilot project to proceed in 2020.

The memorandum signing was a key element in this process, and an important step forward for Kawasaki Heavy Industries (KHI), which is building the pilot project's liquid hydrogen carrier.

The pilot project between Australia and Japan will inform future amendments to the IGC Code which will allow liquid hydrogen to be carried in bulk under the code without any special agreements.

SAILING YACHT A HAS BEEN DELIVERED BY THE GERMAN YARD NOBISKRUG

Nobiskrug, the luxury German superyacht yard, has announced that it has delivered Sailing Yacht A, one of the world's largest sail assisted superyachts and one of the most eagerly awaited launches of 2017.

Built for the the Russian billionaire, Andrey Melnichenko, the sail assisted superyacht measures almost 143 metres (468 ft) with a gross tonnage of about 12,600 GT.

Sailing Yacht A has been designed by Philippe Starck, who is known for creating unconventional vessels which challenge the expectations of conventional aesthetics; he was responsible for

Melnichenko's previous superyacht, Motor Yacht A.

Sailing Yacht A is one of the world's largest and the most advanced superyachts with unique features such as an underwater observation pod, hybrid diesel-electric propulsion system and state-of-the-art navigation systems.

The vessel's distinctive three masts are the tallest and most highly loaded freestanding composite structures in the world. The mainmast towers 100 metres above the waterline.

Working with the Owners Project Director, Dirk Kloosterman and his dedicated team, Nobiskrug believes Sailing Yacht A will become "one of the greatest PYC superyachts in the world in terms of design and technology"

The German yard used a steel hull and steel superstructure with high-tech composite fashion plates that can be formed into any shape or size.

Commenting on the delivery, Nobiskrug's managing director, Holger Kahl said: "Born from the desire of the owner to 'push the boundaries of engineering and challenge the status quo of the industry', Sailing Yacht A is undoubtedly one of the most visionary projects Nobiskrug has ever been involved in."

"Thanks to her striking looks and innovative technology, Sailing Yacht A is unquestionably the most anticipated delivery of 2017. She will definitely change the future landscape of the Nobiskrug fleet as well as the future of supersail," he added.

Sailing Yacht A arrived in Gibraltar on 15 February where she will undergo further sea trials as the internal fit-out continues at another shipyard.

The handover to Melnichenko is estimated to take place in the late Spring.

Sailing Yacht A.
Photo by Nicholas Canepa

HARBOUR TUGS ARE LIKELY TO BE THE FIRST CLASS OF VESSELS TO BECOME AUTONOMOUS

According to one industry expert, trends are pointing towards harbour tugs being among the first vessel classes to become autonomous

According to Mike Ford, VP, Commercial Operations, at Wärtsilä Dynamic Positioning, trends are pointing towards harbour tugs being among the first vessel classes to become autonomous.

Mr Ford made the comments at the European Dynamic Positioning Conference in London, citing improvements in safety and lower operating costs through less crew as the reason harbour and terminals are likely to focus on developing autonomous tugs first.

Mr Ford said:
"This is a technical trend that we are seeing. We may have autonomous tugs towing and manoeuvring autonomous container ships."

There is a strong case for autonomy in operations as, according to a report published by insurance company Allianz in 2012, between 75 and 96% of marine accidents are a result of human error, often caused by fatigue.

In PTI's technical paper, 'The Smart Ship: The Future of Maritime Intelligence', Oskar Levander, Rolls-Royce, Vice President of Innovation – Marine, said that remote controlled and autonomous ships will reduce the risk of injury and even death amongst ship crews, as well as the potential loss of, or damage to, valuable assets.

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

MAJOR NEW AUSTRALIAN BOAT SHOW, THE CLUB MARINE PERTH INTERNATIONAL BOAT SHOW ANNOUNCED

A major new boating show has been announced for Western Australia to be held at the Perth Convention and Exhibition Centre and nearby Elizabeth Quay over four days of the Queen's Birthday long weekend from 22-25 September, 2017.

The new show, the Club Marine Perth International Boat Show, is an initiative of the Boating Industry Association of Western Australia (BIAWA) and will be managed by Premiere Events, the organisers of the Mandurah Boat Show and related outdoor shows. It will be sponsored by Club Marine Insurance with support from the City of Perth, Perth Convention and Exhibition Centre, and the Metropolitan Redevelopment Authority.

The show will offer both indoor and outdoor exhibits, taking advantage of the recently developed Elizabeth Quay precinct alongside the Perth Convention and Exhibition Centre. Boats under 15 metres will be allowed inside the Quay while bigger boats will be accommodated outside. Boat trials will be available on the Swan River.

"The two sites are ideal for an event such as this," said Peter Woods, Premiere Events managing director. "The inner city location means easy access for transport and infrastructure, and there is no better choice than being right on the stunning Swan River.

"Undercover exhibits will be within the Perth Convention and Exhibition Centre, Western Australia's premier dedicated convention and exhibition facility. From the Perth Convention and Exhibition Centre, a short walk down the escalators will lead to the on-water displays within Elizabeth Quay."

"The central location and the opportunity to present an event of international quality will attract new audiences to the boat show as well as offer a fresh approach for the industry."

The show will be the first major boating show to take advantage of Elizabeth Quay, a $2.6 billion development project close to Perth's central business district. Peter Woods said the show will offer a similar exhibition model as Sydney's Darling Harbour precinct.

"By using Elizabeth Quay, it means the show can offer so many on-water demonstration opportunities," he said. "Already we have talked about a sailing regatta, and several exhibitors are planning new boat demos, plus sailing activities for kids."

BIAWA chairman Mike Beanland said industry feedback over the past few years has focused on the need to create an event in a location that suited current exhibitors, and allowed room for growth.

"The Club Marine Perth International Boat Show will be the major boating event for Western Australia," he said.

"Until now we have had several boat shows in regional and metropolitan WA. The vision for the Club Marine Perth International Boat Show was to create one major boat show for Western Australia that was of international standard and reflected the prosperous and diverse marine industry we have in WA.

"The Club Marine Perth International Boat Show will raise the profile of the Western Australian marine industry and will be presented to a national and international market," he said.

ENCLOSED SPACE DEATHS CAUSED BY SEMI-COKE CARGO SAYS FINDINGS

The Hong Kong Marine Department has issued an information note about a fatal accident that happened on a Hong Kong registered general cargo ship. Two stevedores and one bulldozer operator were found collapsed inside the stair trunk after they entered the enclosed space without following the proper procedures. The cause of death was due to the oxygen depletion atmosphere inside the stair trunk.

This incident draws the attention of the shipping industry to the dangers associated with the characteristics of semi-coke cargo. Parties concerned should treat the space inside stair trunk to cargo hold as an enclosed space and take appropriate safety precautionary measures before entering such space.

In April 2015, a Hong Kong registered general cargo ship was berthing at a port to discharge the cargo of semi-coke. Two stevedores and one bulldozer operator entered the stair trunk of the No.4 cargo hold to sweep the cargo. They collapsed in the bottom of the trunk.

Some minutes later, another stevedore entered the stair trunk to check why his colleagues did not exit from the bottom door of the stair trunk and enter into the cargo hold. He discovered the incident, and exited from the trunk for help from the ship's crew.

The three casualties were retrieved soon from the stair trunk and sent to a hospital for emergency treatment. However, they were certified dead later in the hospital. The investigation revealed that the main contributory factors of the accident was that the requirements of the entering enclosed space were not complied with. Main aspects were as follows:
The stair trunk had not been provided with sufficient ventilation prior to the entry, and the atmospheres at the bottom of the stair trunk was oxygen deficient due to the oxygen consumption of semi-coke in the cargo hold which was not gas segregated from the stair trunk;
No test of the atmosphere was carried out by the responsible officer to verify the condition of the atmosphere in the trunk for safe entry. No "enclosed space entry permit" was issued to certify the safe entry into the stair trunk; and
Stenciled warning signs "Ventilation before Entry" and "O2 Depletion" at the entrance of the stair trunk were disregarded by the stevedores. There was no particular means to prevent accidental entry to the enclosed space (i.e. the stair trunk).

Lessons Learnt
The enclosed stair trunks to the cargo holds must be treated as enclosed spaces. The requirements of IMO Resolution A.1050(27) "REVISED RECOMMENDATIONS FOR ENTERING ENCLOSED SPACES ABOARDSHIPS" must be referred to and complied with while making entry to those enclosed stair trunks. An entry permit system on board should include the entry of the stair trunk.

Particular measures should be stipulated in the permit system as follows:
At the entrances of the stair trunks, appropriate warning signs should be displayed and barrier, such as a rope of chain should be secured across to entrance to prevent accidental entry;
Prior to the entry, the space should be thoroughly ventilated by natural or mechanical means to remove any toxic or flammable gases and to ensure an adequate level of oxygen throughout the space. The ventilation should be kept continuously during the entire entry operation;
Before any person entering the space, the atmosphere of the space must be tested as appropriate by responsible officer with properly calibrated instruments to ascertain acceptable level of oxygen and acceptable levels of flammable or toxic vapours;
Only trained personnel should be assigned the duties of entering, functioning as attendants or functioning as members of rescue teams. The enclosed space entry drill should be conducted in accordance with the requirement of the SOLAS Convention Regulation III/19 that at least once every two months.

NEW ZEALAND SET TO IMPLEMENT THE MARITIME LABOUR CONVENTION

New Zealand's maritime safety authority (NZ) has announced it will implement the Maritime Labour Convention (MLC) by early next month, in order to protect local and international seafarers.
The move is also expected to improve the safety and well being of seafarers on board both foreign-flagged and New Zealand ships.

MLC was established in 2006, and mandates ship owners to bear the expense of shore-based medical care for seafarers who need hospitalisation or medical care while overseas on a ship.

It also covers timely payment of wages and repatriation to seafarers and their families in case of death and ailment at work.

The convention applies to everyone working on a ship, and also requires that all crew members have some form of health and safety training.

Maritime NZ director Keith Manch said: "New Zealand has always ensured its labour laws are up to scratch with the latest legislation from around the globe, but seafarers will benefit from the improved safety and living standards introduced by the convention. "The advantage for New Zealand in ratifying the convention is we can inspect foreign flagged ships from any country to make sure they meet MLC standards.

"For the owners of New Zealand ships affected by the convention this is not a significant change because NZ law largely covers the requirements. For New Zealand vessels, the Health and Safety at Work Act introduced in 2015 also covers key parts of the convention's requirements."

New Zealand will join a list of 81 countries that have adopted the convention once implementation is complete.

VEKA Group set to build the world's first hybrid trimaran for transporting personnel offshore

VEKA GROUP SET TO BUILD THE WORLD'S FIRST HYBRID TRIMARAN WORKBOAT

Workers on drilling rigs and offshore wind farms can hopefully look forward to a more pleasant commute to work with considerably lower risk of seasickness thanks to a special, innovative ship built by VEKA Group. VEKA will be building two trimarans intended specifically for transporting personnel and freight to offshore wind farms. These are the first hybrid trimarans in the world. Transporting offshore personnel takes place mainly by catamaran. These will be VEKA's first trimarans.

Most of the innovations are intended to make the so-called workboat more stable and more comfortable, thereby reducing the risk of seasickness. For example, the ships have lower windows than is customary, so that the passengers have a better view. The third bow is designed to ensure additional stability and comfort. There are also innovative stabilisers built into the hull.

"You do see these on those enormous passenger ships like the ones that go to England, but they're not customary on catamarans. That's what makes it special", says project manager Robin Sijbrands. "These stabilisers allow the passengers to arrive at the offshore windfarm as comfortably as possible."

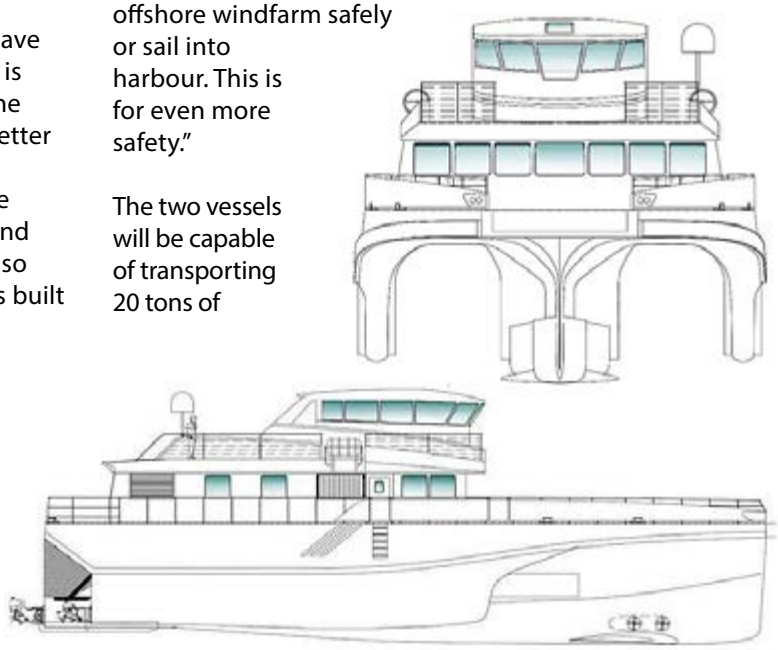
In addition, the 33m-long trimaran has an innovative driveline. The ships will have five water jets installed. Furthermore, according to Sijbrands, considerable extra attention was paid to safety. "Three of these jets are run directly by diesels engines. However, the outer two water jets are driven by permanent magnetic generators. So if one system fails, the ship can just continue to sail."

There are also batteries on board as an extra backup, which are charged by the generator. These batteries can run the outer jets. This combination of diesel and electricity makes it the first hybrid trimaran in the world. Says Sijbrands, "The ship can sail for approximately an hour on the batteries. So in the very rare case that everything fails, it can always get away from offshore windfarm safely or sail into harbour. This is for even more safety."

The two vessels will be capable of transporting 20 tons of freight on the foredeck. Inside, there is space for 24 passengers in comfortable business class seats. There are six cabins on board for the ship's crew, along with a mess room, changing locker and space for the crew. This allows the ships to be deployed 24 hours per day.

The trimarans are being built for the Danish shipping company World Marine Offshore. The vessels will be used for work at offshore windfarm in Europe. Delivery is scheduled for the third quarter of 2017.

About VEKA Group
VEKA Group is a distinctive Dutch shipbuilder that has become an international player in the maritime industry over the period of its 25 years of existence. Today they operate in diversified nautical markets and deliver a wide range of specialised vessels. At their shipyards in the Netherlands and abroad they have experience in building high quality vessels.



VEKA Group set to build the world's first hybrid trimaran workboat

Members' News

INAUGURAL ECMID AVI CONFERENCE ANNOUNCED

The Marine Surveying Academy, which manages the CMID Accredited Vessel Inspectors scheme on behalf of the International Marine Contractors Association (IMCA) and the accrediting professional body, the International Institute of Marine Surveying (IIMS), is delighted to announce the first conference for CMID AVI's.

The special one day conference will take place on Tuesday 25th April 2017 in Amsterdam.

The cost for the day to include luncheon, tea and coffee breaks is GBP £150.00 plus VAT where applicable.

For full details and to reserve your place go to:

Location: by Amsterdam Schiphol Airport
Date: 25 April 2017
From: 09.00 hrs to 16.30 hrs

THE CONFERENCE PROGRAMME

09.30 - 10.15	Mike Schwarz, IIMS CEO: Background to the accreditation scheme and update on its progress and followed by Chris Baldwin, IMCA Technical Adviser: Major changes and new developments to eCMID
10.15 - 11.00	Ian Coates, Lead Tutor: Key learnings from the AVI validation courses
11.00 - 11.20	Break
11.20 - 12.00	To be confirmed
12.00 - 12.45	Anders Boman, Chief Operating Officer, Northern Offshore Services: Inspecting CTVs
12.45 - 13.45	Lunch
13.45 - 14.30	CMID AVI and DP expert, Ursula Smith, presents: How to inspect a DP system and complete the DP supplement
14.30 - 15.15	CMID AVI Capt Sujit Viswanathan, Principal Marine Surveyor, Noble Denton Marine Services: Definitions, guidance and what to cover in the heavy lift supplement
15.15 - 16.00	Panel discussion with questions from the floor
16.00 - 16.30	Networking (Close at 16.30)

Who Should Attend?
- Current accredited eCMID Vessel Inspectors
- Those seeking accreditation before it becomes a requirement on 1 January 2018
- Vessel owner and operators who wish to know more about the scheme
- Representatives from P&I Clubs

http://cmidvesselinspectors.com/first-ecmid-2017-avi-conference-announced-in-amsterdam/

LYSCWG SET TO VISIT THE ROYAL HUISMAN SUPERYACHT YARD IN HOLLAND

The recently formed IIMS Large Yacht & Small Craft Working Group is pleased to announce another training event and has been fortunate to secure an opportunity to visit the Dutch superyacht builder, Royal Huisman's yard at Vollenhove in the Netherlands.

Royal Huisman has built some of the most iconic, striking and stylish craft to set to sea in recent years. They boast a facility of 30,000 square metres, which houses the modern equipment and infrastructure required for large custom yacht building and refitting. This state-of-the-art facility, set in Holland's internationally renowned concentration of specialist maritime businesses, includes many advanced design and engineering software programmes for rapid communication with clients and the design team on systems design, engineering and construction processes. Naval architects and designers have access to the people with the experience, expertise and specialist skills that will enable them to realise their vision in the most intricate detail. IIMS has been granted permission to bring a group to the facility and this is a unique opportunity to have a look into their exciting and dynamic world at close quarters.

The training event will commence at 14.00 on Thursday 6 April. The centrepiece of the afternoon will be a tour of the facility, preceded by an introduction to the company and three technical presentations by Royal Huisman personnel (topics to be confirmed), followed by a short reception and dinner at a nearby restaurant. The group will stay overnight and meet on 7 April at a local hotel for a further round of four presentations before departure at 14.00. IIMS member Paul de Roock will speak (topic to be confirmed). Qualified Registered Marine Coatings Inspector, Ron Kleverlaan, will talk about superyacht coatings. IIMS member and experienced superyacht Captain and surveyor, Mark Souter, will present 'Project management and surveying of a new build yacht'.

Royal Huisman Training Event - Programme and timings

DAY ONE - 6 APRIL

14.00 Welcome with tea and coffee
14.15 General yard presentation about Royal Huisman
14.45 Electronics and bridge systems
15.15 Hull, materials and stability
15.45 Role of the surveyor in project managing a new build from the yard's perspective
16.15 Royal Huisman Yard tour
17.30 Day closure, drinks and fingerfood
18.00 Transfer to restaurant

Who should attend?

- Any surveyor who is currently engaged in surveying superyacht and large yachts
- Any surveyor who is looking to expand his/her knowledge with a view to extending into this area of surveying operation
- Any surveyor who is simply curious to see inside a superyacht manufacturing facility

DAY TWO - 7 APRIL

09.00 Business management skills by Mike Schwarz, IIMS CEO
09.30 Project management and surveying of a new build yacht from the surveyor's perspective by Capt Mark Souter
10.30 Coffee
10.45 Surveying and inspecting superyacht coatings by Ron Kleveranen (RMCI)
11.45 Paul de Roock (topic to be confirmed)
12.45 Lunch
14.00 Close

The cost of attending this event is 325 euros (350 euros for non IIMS members) and includes the yard visit, both days training, reception and drinks on the first evening and lunch on day two before departure at 14.00 on 7 April. Attendance at this event is worth 5 CPD points.

To reserve your place please call Tania Bernice on +44 (0) 23 9238 5223 or email **ca@iims.org.uk**

IIMS WESTERN MEDITERRANEAN LYSCWG TRAINING AT THE PALMA SUPERYACHT SHOW 27/28 APRIL

Once again, IIMS is planning to return to Palma, Mallorca for two days of training around the Superyacht Show itself.

Thursday 27 April will offer classroom based training at the facility adjacent to the showground. There will be a range of presentations suitable for yacht, small craft and larger yacht surveyors. Confirmed speakers for the first day are Jon Sharland (two sessions) Rory Marshall and Gary Miller.

The morning before the show opens at 09.30 on Friday 28, IIMS will once again host an informal gathering of members and non-members for an update on the many new activities being organised by the Institute. Come and Mike Schwarz and John Excell for a coffee to start your day and do a bit of networking! Delegates are then free to walk the show and will be given a free pass for the day. The afternoon from 13.45 until 16.30 - Mike Schwarz will deliver a short session on business management skills. Capt Phil Duffy on Superyacht sea trails. John Excell will give a refresher on report writing.

Please note the schedule below is provisional only at this stage and is subject to possible change at short notice.

PALMA TRAINING EVENT DAY ONE

09.00 Jon Sharland Tritex NDT (classroom session on how thickness gauges work)
09.30 Jon Sharland practical session using Tritex thickness gauges on steel and GRP hulls
11.15 An introduction to large and super yacht coatings by Rory Marshall
12.15 Gary Miller (subject to be confimed)
13.00 Lunch
14.15 Transfer to Global Superyacht Group workshops by Palma Airport
14.45 Tour of their workshop facilities with presentations about Global Superyacht Group
17.30 Return to Palma Superyacht Show entrance
19.30 Group dinner

PALMA TRAINING EVENT DAY TWO

09.30 Open outdoor session: IIMS update by Mike Schwarz
10.15 Free time to visit and walk the Palma Superyacht Show
13.45 Business management skills by Mike Schwarz
14.15 Superyacht sea trials by Capt Phil Duffy
15.15 Coffee break
15.30 Report writing refresher by John Excell
16.30 Close

The cost of attending this event is 250 euros for both days (275 euros non IIMS members). The event is worth 5 CPD points.

To reserve your place please call Tania Bernice on +44 (0) 23 9238 5223 or email your reservation to her at **ca@iims.org.uk**

ONLINE SEMINARS STARTING TO PROVE POPULAR

IIMS has now delivered several online seminars since the start of the year using Zoom video technology as the medium to do so, drawing a combined audience of fifty plus delegates. Audience sizes have been variable, depending on the subject material, with just a handful signing up to hear Luc Verley present 'Dredging Technology' from his office in Singapore at 18.00 local time.

'Mediation and the Marine Surveyor' delivered by Karen Brain at 17.00 UK time drew a larger, truly international audience including delegates from as far afield as Thailand and Canada.

Most recently on 16 February, Gareth Thomas, Technical Support Team Manager, Speciality Coatings, International Paint Ltd, presented the 'Basics of Coating Technology' from Southampton at 08.30 UK time to an audience approaching 20 online delegates with a further 15 requesting to receive the video and presentation after the event. In his talk, Gareth covered what coatings are, how they are used and how they can be prevented them failing?

One IIMS member who participated said, "The presentation was very good and the topic was very interesting. I learnt a lot. This online seminar format is a perfect means for learning." Another member said, "With regards to the seminar, I found the on-line format very easy to use, stable and would not hesitate following other presentations in the future when delivered this way."

Is it easy to join a Zoom online seminar?
Yes taking part is straight forward. All you need is a device ideally with a camera and a microphone and internet connectivity. Joining instructions are issued in good time before each seminar.

IIMS has in the region of 20 online seminars planned for 2017. If you are wondering what the fuss is about, you are invited to view the video that was made of Dredging technology on the IIMS YouTube channel for quality and content. Each online seminar lasts no more than 90 minutes maximum and the times have been deliberately flexed so that timings become favourable for surveyors in different parts of the world.

For Dredging Technology go to:
https://www.youtube.com/watch?v=ESKdfqVGyUM

To reserve your place on a future IIMS online seminar, go to
https://www.iims.org.uk/education/online-seminars/

Future online seminars planned are:

March 2017	Imaging techniques for surveyors
7 March 2017	NDT ultrasonics testing gauges by Jon Sharland (Tritex)
April 2017	Applying knowledge management in marine surveying
24 April 2017	Expert witness & salvage casualties
15 May 2017	Report Writing
June 2017	Briefing a diver for underwater survey
June 2017	Tonnage theory
July 2017	Introduction to dynamic positioning
August 2017	Container lashings
August 2017	Cloud and PC Computing
18 September 2017	Report Writing
15 November	Expert Witness
December 2017	Surveying and windfarm vessels

IIMS CANADA ONE DAY SMALL CRAFT SEMINAR

Ian Hopkinson reports from Vancouver following the inaugural IIMS Canada branch one day training workshop in December 2016.

Our recent seminar was in three principle parts. After being introduced by our Regional Director Andrew Korek, I started the programme.

I was surprised on looking back on my records, to learn that I had been surveying for 49 years. When I started all reports were on legal sized paper. Today that is not a good idea as people often want to receive a report by email and it is difficult to scan that size. Nevertheless I went through each of the pages of a typical small craft report issued by my office. At the end of describing the content of each page I opened the discussion up to all present as there was a lot of expertise sitting around the table. This made for a very informative discussion which was of benefit to all. I had started the discussion by advising of the need for a surveyor to know precisely what was required of the survey, be it purchase, insurance, valuation for a bank or perhaps valuation for a divorce. Inevitably when looking back over 49 years, a number of 'sea stories' were told and these livened up the tone of the discussions.

The second speaker was David McEwen Q.C. who I have known for many years. David practices admiralty law and is highly regarded in that subject. David spoke of the absolute need for surveyors to have E.& O. insurance if they deal with small craft and particularly when doing purchase surveys where their exposure is greatest. David cited a number of cases he had been involved with which involved surveyors who had come croppers at one time or another. David's main aim was to scare the hell out of the assembly, and he succeeded! One item of particular interest coming out of David's presentation was his opinion on the meaning of the term 'Without Prejudice', a term common in surveying parlance.

The third speaker was John King, an insurance broker specialising in E.& O. insurance in the marine community. I have known John also for many years and in fact his father George was one of my mentors when I started surveying so many years ago. John rode into the seminar as a knight astride a white horse and offered much needed relief to those who had become distressed by the comments of the previous speaker. I am sure he was able to sell policies to a number of those present, certainly there was a lot of interest in what he had to say.

After a lunch break I took the floor again and showed everybody the contents of my small craft survey tool bag. This generated a lot of discussion which of course became a perfect excuse to tell a few more 'sea stories'.

There is absolutely no business like show business!

The seminar concluded around 14.30 hours. There were a number of complements and I would say it was a success. We are hoping that it was the first of many such seminars to be held in the future.

IIMS LARGE YACHT & SMALL CRAFT ATHENS TRAINING EVENT REPORT

A group of nearly 20 surveyors met in Athens on 9/10 January for the first IIMS Large Yacht & Small Craft training event of the New Year since the formation of the expanded group. Despite unusually cold, at times sub-zero temperatures coupled with some unwelcome snow, the group braved the elements on the second day taking to a local marina to practice the art of tonnage measuring.

The training day was hosted by Yannis Stratis and IIMS is most grateful to him and his colleagues for their support and hospitality. The venue was the well-appointed Lloyd's Register offices opposite Piraeus port.

The first day was entirely classroom based training with a couple of IIMS members joining the training event by Zoom video conferencing. After opening speeches and introductions from John Excell, IIMS Chairman of Large Yacht & Small Craft, and Yannis, Mike Schwarz presented the very latest

news about the IIMS and its activities.

Yannis presented on mini ISM (International Safety Management) schemes for large yachts, explaining how it works and what is required. He followed up with some information on classification and flag surveys.

Expert insurance broker, Paul Winter, whose company Winter & Co insures a number of members for Professional Indemnity gave two presentations either side of lunch. The main theme was obtaining PI insurance and reducing the risk of claims. Jon Sharland from Tritex NDT, manufacturers and distributors of ultrasonic gauges, joined the meeting by video conferencing and presented information about how the gauges work and what they do, including a session on GRP thickness gauges.

John Excell presented a refresher on report writing, the surveyor's intellectual property and gave some useful tips and reminders on how to make sure this most of vital of documents is well presented with relevant content.

It fell to Mike Schwarz to close the day with three whistle stop presentations on business management skills, including cashflow management, how to give good customer service and simple marketing tips.

Day two in Athens dawned with snowy, slippery pavements and a concern over whether or not it would be possible to conduct the practical training planned for later in the day. But a bright sun melted the worst of the snow. John Excell talked at length about tonnage measurements, the theory behind how to do them and how to complete the IIMS tonnage form. He followed this presentation with a short one on the IIMS Certifying Authority and the work that is undertaken by coding surveyors.

After lunch the group headed for a local marina and spent a couple of hours engaged in performing tonnage measurements on two yachts and one motorboat, putting into practice all they had learnt from the morning session.

Feedback from those who attended has been very positive and the group looks forward to the next event.

IIMS ORGANISES RCD - RECREATIONAL CRAFT DIRECTIVE TRAINING AS NEW LEGISLATION COMES INTO FORCE

More than 30 IIMS members met at two locations in early February for a day's presentation and training on the new RCD regulations, which came into force on 18 January 2017.

Directive 94/25/EC on recreational craft, as amended by Directive 2003/44/EC, is a European Union directive which sets out minimum technical, safety and environmental standards for the trade of boats, personal watercraft, marine engines and components in Europe. It covers boats between 2.5 and 24m, personal watercraft, engines and a number of components. It ensures their suitability

for sale and use in Europe. The directive has some complexity to it and surveyors need to be aware of the implications resulting from the new directive.

The Recreational Craft Directive applies to new and second hand recreational craft from 2.5m to 24m in length, personal watercraft, marine propulsion engines and components placed on the market for the first time after 1998. Products excluded from the scope of the Directive include: canoes, kayaks, gondolas, pedalos, sailing surfboards, surfboards, racing boats, historical craft, craft built for own use provided that they are not subsequently placed on the market during a period of five years, commercial vessels carrying passengers (covered by separate legislation), submersibles, air cushion vehicles, hydrofoils, and external combustion steam powered craft.

IIMS invited Ross Wombwell, Technical Manager of British Marine, to deliver the two sessions on consecutive days at Portsmouth in south UK and Bromsgrove in the midlands. Ross has been working closely with the RCD regulations for a considerable time and brought his extensive knowledge and experience of the legislation to both sessions. Both days were voted a success and those who attended said they were hugely beneficial.

IIMS MEMBERSHIP SECRETARY, JAN COX, RETIRES

On 23 February, the head office team was joined by a handful of IIMS members keen to see Jan off into her retirement in a fitting fashion. The group of nearly twenty people headed out for lunch at a nearby hostelry. Several presentations were made during the event to Jan, including the gift of a cheque made up of personal donations from members of the Management Board.

Jan Cox has served the Institute with distinction as Membership Secretary for the best part of the last decade. In this short interview, Mike Schwarz posed some questions to Jan

Q1.
What are your earliest memories of IIMS when you joined?
A.
When I started at IIMS almost ten years ago there were only four of us crammed together in very small premises in Gosport. Conferences in the early days were held on HQS Wellington in London.

Q2.
What are the biggest changes you have seen both with membership specifically and the Institute as a whole?
A.
The level of communication through advances in technology has increased over the years making the Institute reach out to another level of marine surveyor. We have now become a highly respected organisation with members enjoying the kudos that membership brings them.

Q3.
Which aspects of the role have you most enjoyed?
A.
I have always enjoyed speaking with both new applicants and long standing members. I enjoy chatting to them about their work and families and feel I have made many friends over almost ten years.

Q4.
And which aspects have you least enjoyed?
A.
To be honest there isn't much to dislike. I suppose hassling members for CPD, or PI was my most unpleasant duty, but most members know they need to supply this information which made my job easier.

Q5.
Which events and/or conferences have been most memorable during your time with IIMS?
A.
Conferences for me have always been the best opportunity to actually physically meet the people usually only communicated with by email, or occasional phone call. Our last Conference in 2016 to mark the Silver Jubilee was the most memorable for several reasons. The team and members all enjoyed the special Silver Jubilee celebrations.

Q6.
Apart from working with your colleagues, what will you most miss about IIMS?
A.
My colleagues have all been brilliant. I have had so much fun which always makes life more pleasant. It has been very rewarding to see the IIMS membership steadily grow. I will definitely miss hearing how all our surveyors are faring.

Q7.
Do you have a parting message for IIMS members?
A.
I would like to wish all of our members my very best wishes in their future careers. I will be keep in touch with several of you, either directly or through the team.

Be Safe, Jan Cox

IIMS BALTIMORE TECHNICAL WORKSHOP REPORT

A group of nearly 30 marine surveyors, mostly non IIMS members, (including some who joined online via Zoom video conferencing), gathered for a two day training event and technical workshop at the Maritime Institute of Technology and Graduate Studies (MITAGS) in the Linthicum district of Baltimore on 3/4 February 2017.

IIMS would like to thank James 'Randy' Renn for organising what was a great event. Not only a great location and facility, but James managed to attract a range of quality speakers, who delivered some excellent presentations, some of which were highly technical in content and touched on new and emerging technologies in some cases.

IIMS CEO, Mike Schwarz, opened proceedings, welcomed delegates and passed on best wishes from the Institute's Management Board and President, Mr Adam Brancher. In his presentation, he spoke about the work of the IIMS, particularly the new initiatives that are currently underway and those under development for the future.

Rod Sanders gave an overview of the latest range of Cygnus NDT instruments and gauges, explaining how they operate and what they can do. Menno Ligterink talked about the Mastervolt range of batteries and in particular digital switching, charging and Li On/Iron Batteries.

Mr. John Adey, General Manager of the American Boat & Yacht Council (ABYC), spoke knowledgeably about the minefield which is the new RCD-Recreational Craft Directives Compliance legislation from an American perspective, stressing the challenges of selling boats into the European Union, one of the largest markets in the world for American builders.

Capt Andrew Korek, (joining from Canada) and Capt Michael Lloyd and Adam Allan (joining from the UK) came to the workshop by video conference link. This is

the first time presenters from two countries have simultaneously come together to present to an audience. They talked about the dangers of working in enclosed spaces, a subject dear to all their hearts and one that surveyors are always being reminded to take heed of.

Mr. David Horst covered the increasingly important subject of LED lighting fades and Mr. Robert Kochan, a forensic analyst, spoke passionately as he delivered a case study of a large scale marina fire that took place at Urbanna, which led to loss of life and wiped out an entire fleet of vessels in the process.

Mr. Ken Roberts presented the Rinda Technologies Computer program as a tool for the surveyor and investigators.

Eric Black and his colleagues tackled the fascinating subject of thermal imaging equipment and training, demonstrating some of the latest kit to those present ranging in price from $2,000 to $40,000.

Multi fuel outboard systems with on the fly changeover, incorporating the inevitable, positive impact of natural gas on the boat sector was the subject of Miguel Guerreiro's informative and enlightening talk.

Mr. Mike Griffin, a marine surveyor himself, talked about the range of stray current sensors. He spoke about detection of stray current and electrical faults from the pier to pedestal to the ship and on board.

The conference was brought to a close by Dr. Carys Mitchelmore from the Maryland Department of Natural Resources. She discussed in detail and gave an explanation of testing, measuring, filtration or treatment of bilge and ballast water.

Following this event, IIMS has released eleven videos (most of the presentations) which were recorded at the technical workshop. They are available on a free to view basis via the IIMS web site at:

https://www.iims.org.uk/media/marine-surveying-videos/iims-baltimore-2017-conference/ and/or also through the IIMS YouTube channel at: **https://www.youtube.com/c/MarineSurveyingIIMS**

DATES FOR THE DIARY

Upcoming confirmed calendar of IIMS events, conferences and training days...

LYSCWG Royal Huisman Visit & Training Event **6/7 April**	LYSCWG Western Mediterranean Training Event Palma **27/28 April**	Certifying Authority Spring Training Day **15 May**
Small Craft Surveyors Forum Seminar at Seawork 14.00 to 16.30 **14 June**	IIMS Annual London Conference **11/12 September**	LYSCWG Scotland Training Event **6/7 November**
LYSCWG Super Training Day **13 November**	Certifying Authority Autumn Training Day **14 November**	IIMS UAE Branch Conference (subject to confirmation) **27 November**

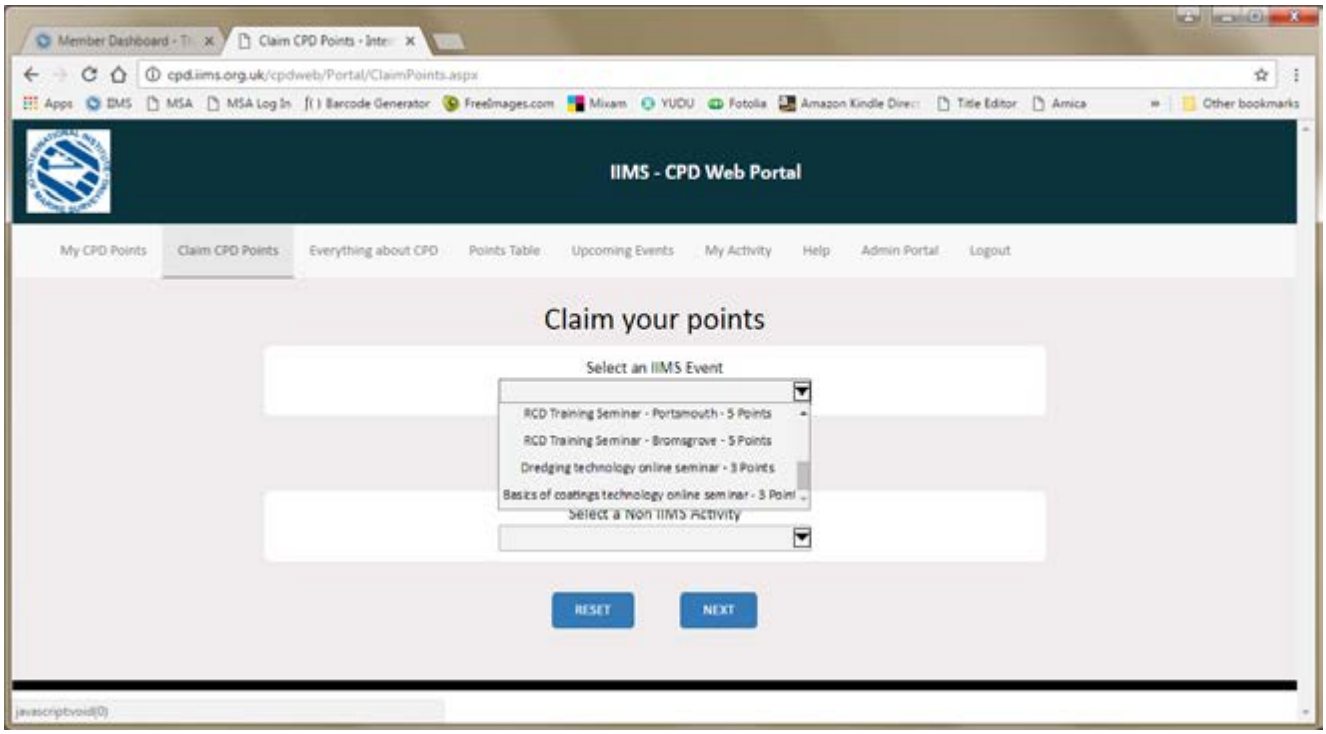
IIMS goes **hi-tech** with the launch of its first App to manage Continuing Professional Development

In January 2017, the Institute released a sneak preview about a new App that has been designed specifically to help members maintain their Continuing Professional Development (CPD) points in a simple, yet efficient fashion as well as announcing a change to an annual CPD year cycle from a three year one.

The new App was launched on 1 February 2017 and is now live. Although the CPD App is straightforward to use, IIMS expects there will be some members who have questions, or want to give feedback about its usability, or who struggle to log in. Version two is already under development and will be released soon, so all suggestions for enhancements are welcomed and should be sent by email to Membership Secretary, Camella Robertson at membership@iims.org.uk.

ACCESSING THE CPD APP VIA THE WEB

So first of all one needs to be able to access, or download the CPD App. For those who are traditional internet website users and prefer to use this version, the login panel can be found by clicking http://cpd.iims.org.uk/CPDWeb/Private/Login.aspx. Alternatively a new link "My CPD Program" is present on the IIMS web site, clicking on which re-directs the user to the new CPD Program Website. To log in to the App members need to use the email address and password used to access the members' section of the IIMS web site. If you have lost or misplaced those details, please contact the IIMS head office.



ACCESSING THE CPD APP BY ANDROID OR IOS

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

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

The three year CPD cycle ended on 1 January 2017 with immediate effect. From 1 January 2017 the IIMS CPD scheme is based on one single calendar year, in other words from January to December 2017 and so on thereafter. All CPD accounts for members have been set to zero and any existing points prior to 1 January 2017 are lost. A member's aim now is to acquire 10 CPD points in this and subsequent calendar years to keep them up to date. The activities for how a member can claim points are slightly changed, but it is the administration of how points are requested and managed that alters significantly by the introduction of the App.

GET IT ON Google Play

Download on the App Store

USING THE APP

As stated above, each IIMS member will have a unique log in consisting of email address and password that is used to access the membership page on the IIMS web site. Members will be encouraged to claim points in real time rather than saving up a claim for months. So for example, let's say a member attended an IIMS training day yesterday. At the end of the event, or once home, the member can open the App to make a claim for 5 points for the training event from the drop down menu on "Claim CPD points".

The claim is submitted. An automatic email comes back to the member to advise them that their points claim has been submitted and will be verified soon. At the same time an email comes into IIMS advising the team that a member has claimed 5 points for attending the IIMS training day. The IIMS Membership Secretary will click to accept or decline each claim. Assuming the claim is verified and accepted, an email is automatically sent back to the member to inform them that 5 CPD points have been added to their CPD account and that they now only require 5 more points by 31 December 2017 to make their annual quota. Members can check their CPD account themselves to see that the points have been allocated and added successfully. This process repeats each time a member makes a successful CPD points claim, with the number required counting down automatically. There is no limit to the number of points a member can claim in a year, but only 3 CPD points can be carried forward to the following year, which the App will automatically do. A member can send attachments to substantiate and prove their claims too if necessary. For example, let's say a member attended a boat show (worth one point). The member took a photo of themselves at the event and attached it to the App as proof! A successful CPD claim.

Commenting on this initiative, IIMS Chief Executive Officer, Mike Schwarz, said, "I am delighted at what has been achieved to streamline an activity that was cumbersome and took up a lot of time to process for both members and the head office team. The result is stunning. My thanks to IIMS member, Capt Ruchin Dayal and his team in Goa, for developing a solution that more than meets my expectations and initial specification."

In the event a member does not make any CPD points claims during the year, he/she will be reminded periodically and automatically by email that they have a duty and responsibility to acquire the necessary points by the 31 December.

The IIMS Management Board will monitor the progress over the first year of the CPD App before discussing and deciding what action should be taken against those who fail to register any CPD points.

SHIPYARD ACQUAINT COURSE

- SOUTH KOREA -

JANUARY 2018

(FINAL DATES TO BE ANNOUNCED)

AIM OF THE COURSE

To provide an opportunity for the student to gain an understanding of shipbuilding, from placing a contract to delivering a completed ship, delivered against the backdrop of the largest shipyards in the world in South Korea.

LEARNING OBJECTIVES

To provide the student with an overview of the essentials of the shipbuilding processes. Over the two weeks of the course, students will learn about:

- Shipbuilding Contract
- Shipbuilding Specification
- Plan Approval
- Classification Society and Statutory Plan Approval
- Classification Society Site Supervision
- The Site Team on behalf of the Owners / Technical Manager / Charterer
- Inspection Test Plans (ITP) and Onboard Test Procedures (OTP)
- HSE in the shipyard and at sub-contractors
- The Supply Chain
- Factory Acceptance Tests (FAT)
- Steel grades
- Welding processes and quality assurance process
- Forging and Castings
- Hull blocks
- Coatings and PSPC (Ballast Tank Coatings)
- Statutory items during construction
- Piping systems
- Machinery - Main Propulsion and Auxiliary systems
- Electrical and Control Systems
- Outfitting
- Commissioning
- Sea Trials
- Class Society and Statutory Certification
- The Crew - Training
- Delivery

HSE and PPE

There will be a separate module dedicated to HSE for the students and issuing of individual Personal Protective Equipment (PPE) suitable for attending in the shipyards and at vendors' facilities.

Organised and delivered for the International Institute of Marine Surveying by Broadreach Marine Ltd.

Broadreach MARINE TECHNICAL CONSULTANTS

DURATION

Two Weeks in January 2018 (final dates to be announced).
A total of 9 days training over 2 weeks.

LOCATIONS

The course will be undertaken and presented at various locations in South Korea

- Marine Training Facility and lecture room, Busan, South Korea.
- DSME Shipyard, Geoje, South Korea.
- Various vendors and suppliers, Changwon, South Korea

Please note: Details to be confirmed nearer the time and subject to change at short notice for operational reasons.

AN INTRODUCTION TO PETER BROAD, LEAD COURSE TUTOR

Peter has spent his entire 30 year career in shipping. Peter has always worked to the highest possible standards and has led teams to success and enjoys mentoring others. Over the years, Peter has worked with and managed a number of multinational and multicultural teams and values highly the diversity of these relationships. He is the owner and Managing Director of Broadreach Marine Consultants (UK) Ltd (based in South Korea) and is involved with newbuild ship project management, plan approval, marine surveying and marine training. Peter will be assited in the delivery of this course by other specilaist tutors.

Some of his career highlights:

- Marine Maintenance Office (Superintendent) to the Sultan of Oman, Royal Yacht and Auxiliary vessels
- Surveyor with Lloyd's Register (UK) for ships in service and under repair, refit and conversion
- Senior Surveyor & Project Manager with Lloyd's Register (Japan & Korea) for newbuild projects
- Principal Surveyor with DNV (Korea), building LNGC's and latterly transition Manager for DNV/GL Merger
- Newbuild Site Manger working for Braemar Engineering UK, building LNGC's for Bonny Gas Transport (NLNG) in Korea with a project value of $500 Mn.
- Newbuild Site Manger working for K-LINE LNG (UK) Ltd, building LNGCs at DSME, South Korea with a project value of $500 Mn.

Peter has authored white papers for Government, two marine engineering related books and a number of bespoke marine related training packages. In addition, he is an expert witness and has been a non-executive director and Education Committee member for the IIMS. He is also a Chartered Marine Engineer, a Fellow of IMAREST and of the IIMS.

WHO SHOULD APPLY?

At this time, expressions of interest are being sought for the course by email from individuals who have a basic knowledge of 'shipping' and want to expand their practical knowledge of ship building in particular. However, applications from existing, more experienced marine surveyors keen to extend their knowledge in this area are also welcomed.

It is likely that the successful candidates for the course will have one or more of the following entry requirements and/or pre-qualifications:

- A BSc in Marine Science, Marine Engineering, or Naval Architecture
- Post graduate experience in a marine related industry such as Marine Insurance, Underwriting, Broking, or Ship Design
- Two years working for a Non-Classification Society Marine Surveying company
- Ex seafarer: Second Engineer, Chief Engineer, Chief Office, or Master
- Be a competent Marine Surveyor

Other qualifications will be considered on their merits along with an applicant's previous background and experience.

The course will be conducted in English. Students must have a GOOD skill level in both written and spoken English. Candidates need to be medically and physically fit.

COURSE ACCREDITATION

A course attendance certificate with details of the learning outcomes will be presented to each student on successful completion of the course, certified and issued by the International Institute of Marine Surveying.

10 CPD points will be awarded to members of the International Institute of Marine Surveying on successful completion.

FINAL EXAM

Students will be required to sit a one hour multiple choice exam on the final day. The exam papers will be passed to the International Institute of Marine Surveying who, as previously stated, will issue the certification for this course from the UK.

Students will be required to keep a journal throughout the course. This will form a personal training record for each individual.

The journals will be vetted for accuracy and content by the Course Administration before the student finishes the course.

VISA, OTHER COSTS AND CONSIDERATIONS

It is the responsibility of the student to apply for and gain the correct Visa and papers to enter South Korea. Before applying, the applicant is advised to find out about their own visa requirements to enter South Korea, as a tourist, before making a formal application. For British Citizens it is normally possible to gain a 90 day tourist visa on entry.

The cost of the Visa is the responsibility of the student.

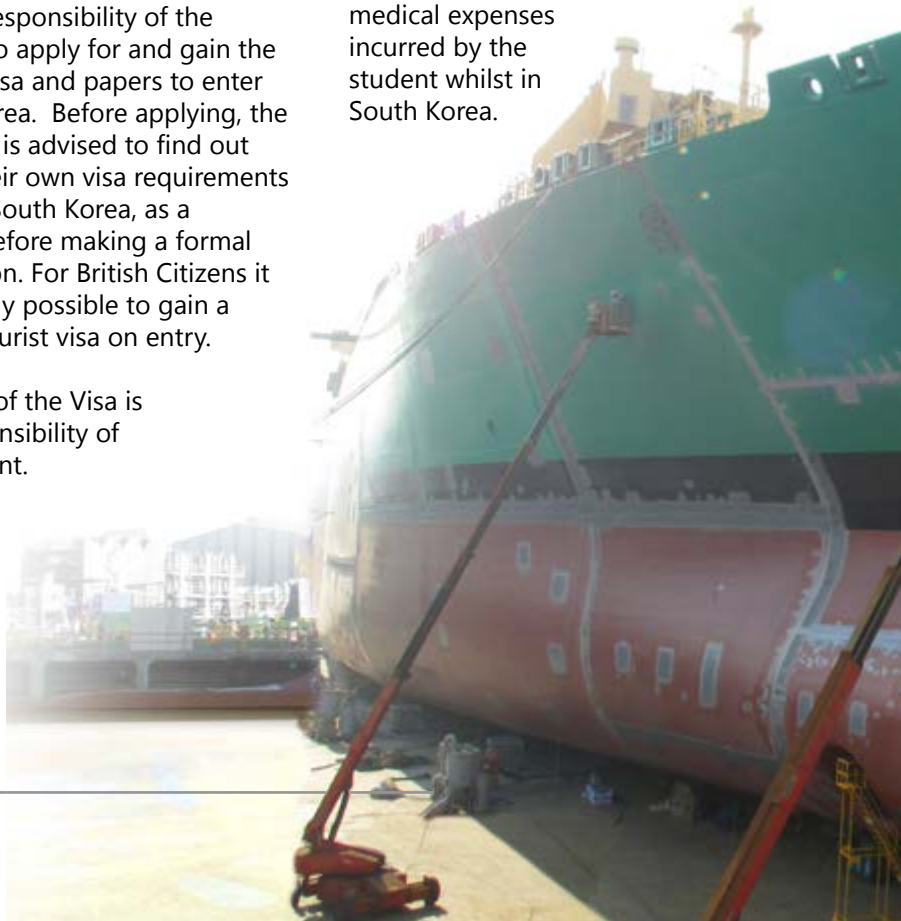
The student will need to organise and finance their own flight/s to and from South Korea.
The main international airport is Incheon in Seoul. There are connecting flights to Busan, Gimhae Airport (approx 1 hour). However, it may be necessary to transfer in Seoul from Incheon to Gimpo domestic airport by bus and then fly onto Busan.

There is also a high speed train service (KTX) from Incheon Airport to Busan Station at selected times throughout the day (approx 3 hours 30 minutes).

Busan, Gimhae Airport also has an International Terminal, so the students may be able to fly into Busan International Terminal directly from another country (i.e. Japan).

The student is required to take out basic medical and travel insurance for the duration of the visit to South Korea. Medical Services are very good in South Korea, but you do need to pay, or have a valid insurance policy.

Neither the International Institute of Marine Surveying, nor Broadreach Marine Ltd, will cover any normal medical expenses incurred by the student whilst in South Korea.



TERMS OF PAYMENT

On acceptance of the candidate's application an invoice will be issued by the International Institute of Marine Surveying for the sum of GBP £4,000.

Full payment is required within two months of the course commencement - in other words 1 November 2017.

A 50% refund will be given for cancellation within two weeks of course commencement.
A 40% refund will be given for cancellation with less than one week of course commencement.
Payment is to be made by bank transfer to a nominated account as detailed on the invoice.

EQUIPMENT

Students must provide their own Safety Shoes or Safety Boots. You will not be allowed to visit and attend the shipyard/s without suitable safety footwear.

If the student normally wears prescription glasses they are advised to prepare and bring their own prescription safety glasses. 'Over glasses' to be worn over regular prescription glasses only will be provided.

COURSE COST

The cost of the course is GBP £4,000

The cost includes the following:

- Meet and greet at Busan, Gimhae Airport on arrival.
- Meet and greet at Busan Station (KTX) on arrival.
- Transfer from Busan, Gimhae Airport to hotel in Busan.
- Hotel accommodation in Busan, Geoje.
- Breakfast and lunch on 10 days of the course, Monday to Friday. Breakfast only over the middle weekend, based on a hotel in Busan.
- A Course dinner on the first Monday evening.
- A Course dinner at the end of second week.
- Training facilities and lecture rooms in Busan.
- Transport to shipyards and industrial sites for training as required.
- Access to qualified and experienced marine industry professionals and trainers.
- Training module provided by Lloyd's Register.
- Training Materials (hard copy of course booklet).
- Basic PPE, coverall, hard hat, safety glasses, gloves, ear plugs, (waterproofs as necessary).
- Transfer from the hotel in Busan to Busan, Gimhae Airport on departure.

HOW TO APPLY AND MAKE YOUR EXPRESSION OF INTEREST

Application is to be submitted via the International Institute of Marine Surveying's website on the standard application form with a copy of your CV attached. To do this, go to:

http://www.iims.org.uk/shipyard-acquaint-course-south-korea

Please note that applicants need to be physically and mentally fit and have no underlying health issues. If and when your application has been accepted, you will be sent the Terms and Conditions, Invoice and a Questionnaire to complete. It is a requirement that the Terms and Conditions and Questionnaire are completed in full and to be sent by e-mail at time of your payment.

It is wholly at the discretion of Broadreach Marine Ltd, who are running the Shipyard Acquaint Course on behalf of the International Institute of Marine Surveying, as to who will be selected and invited to attend. Selection will be on a first come first served basis for those who meet the joining criteria with a limited number of just 20 places available.

If it is deemed that the applicant is not suitable to attend this course, they will be informed by email of the decision.

Broadreach Marine Ltd decision on candidate selection is final and is not open to discussion.

Change is in the air for IMCA's eCMID

From January 2018 the International Marine Contractors Association's (IMCA) will recognise only formal inspection reports conducted using its eCMID database, meaning that paper reports not uploaded into the database will no longer be considered by IMCA to be authorised inspection reports. The whole eCMID system is now based on the principles described in the ISO 19011 Guidance for Auditing Management Systems standard and is aligned with other comparable industry guidance on safety management system assurance.

From the same date only validated Accredited Vessel Inspectors (AVIs) will be able to use the 'inspector role' in the IMCA eCMID database to conduct authorised Common Marine Inspection Document –IMCA M149 and Marine Inspection for Small Workboats – IMCA M189) inspections.

"Working with the International Institute of Marine Surveying (IIMS) the AVI scheme is already proving successful, and 2016 saw a concentrated drive to ensure vessel owners/operators register on the eCMID database and to encourage all aiming to become AVIs to complete the steps necessary for validation," explains IMCA's Technical Director, Richard Benzie.

"The planned changes are certainly already bearing fruit, as an example, IIMS tell us that only recently they played host at their UK office to a visitor from Vietnam eager to talk about the steps needed to ensure all their inspectors get through the validation process. And calls are coming in from around the world from organisations and individuals eager to ensure they meet the January 2018 deadline."

"These steps are designed to improve both the integrity and quality of the eCMID scheme, which in turn helps reduce the burden of over-auditing of vessels."

Validation of AVIs

There are now 240 plus AVIs based in 35 countries; and 12 AVI assessors. IIMS has run 17 courses, with IMCA's Technical Adviser Chris Baldwin leading three of them. IIMS now has trainers in the Far East, Australia, the UK and Norway.

As IIMS's Hilary Excell, who leads the validation programme explains: "We plan at least one course a month throughout 2017, and the programme for the first half of the year is as follows:

About IMCA
IMCA, the international association representing offshore, marine and underwater engineering companies, publishes some 200 guidance documents, safety promotional materials, timely information notes and safety flashes. Its members benefit from a core focus on safety, the environment, competence and training, lifting and rigging and four technical divisions – Diving, Marine, Remote Systems & ROV, and Offshore Survey; plus five active geographic sections encompassing the globe.

15 March	East Yorkshire	Safety Marine Consultants offices
Wc 2 April	Jakarta	venue tbc
Wc 7 May	Nice	venue tbc
12 June	Southampton	Novotel, West Quay (Seawork)
25 July	Singapore	alongside IIMS event
31 July	Sydney	alongside IIMS event

"When the courses first started they were largely about how to use the eCMID database. Now they cover legislation, expectations, code of conduct, and importantly they provide a networking opportunity as well as use of the database."

IIMS works with applicants to ensure that their applications fit the bill, and suggest work on certain aspects, or attendance at specific courses before the application goes to an assessor. They also step in with suggestions if they feel a prospective or accepted AVI would benefit from mentoring or shadowing. "We want to feel that all AVIs are inspectors who anyone would be pleased to have on their vessel," says Hilary Excell.

The very first CMID AVI Conference has recently been announced too. The CMID Accredited Vessel Inspectors One Day Conference will take place in Amsterdam at the Novotel Amsterdam Airport Schiphol Hotel, Netherlands on Tuesday 25 April 2017. A number of speakers have been confirmed including Mike Schwarz, IIMS CEO, Chris Baldwin, IMCA Technical Adviser, Ian Coates, Lead Trainer, Nicki Cranch, Senior Marine Technical Advisor at BP and experts Ursula Smith, Jan Sloth Moller, Sujit Viswananthan and Anders Boman, who will each talk about specific categories within the CMID inspection process.

Further information on CMID, eCMID, the AVI scheme is at http://cmidvesselinspectors.com. And further information on IMCA and its work on behalf of around a thousand member companies in over 60 countries is available from www.imca-int.com and imca@imca'int.com. The association has LinkedIn and Facebook groups, and its Twitter handle is @IMCAint

NEW DEVELOPMENTS IN PROFESSIONAL STANDARDS FOR MARINE SURVEYORS

Seawork 2014 saw the issue of an updated UK Workboat (Brown) Code following comprehensive updating by an industry technical working group (TWG) over a long period of time, supported by the UK Maritime & Coastguard Agency (MCA).

Further detailed work has been carried out by the TWG since then and the official launching of the Workboat Code Edition 2 is expected shortly.

The new Code has been enthusiastically supported by the UK workboat industry and it is hoped that this will be recognised and adopted internationally in the same way as the UK Large Yacht Code (LY3), thus countering criticism aimed at UK commercial vessel standards (i.e. those in MGN 280 (M)) by some EU Flag States, which spurred the development of the new WB code.

One consequence of this work was an early recognition and understanding that this excellent new standard must be embedded and supported by the professional standards of the Certifying Authorities (CA) and other suitably qualified and experienced surveyors who are to apply the new code.

To explore and develop this process further, the Certifying Authority Professional Standards Working Group (CAPSWG) was set up in February 2015 comprising professional surveyors from CA's, Class, Industry and the UK MCA, with additional input and advice from leading marine industry training and education providers. The initial report from the CAPSWG was presented to the MCA CA British Certification Committee (CABCC) at the annual meeting at MCA Head Quarters in Southampton, UK in February 2016 and accepted for implementation.

There were three significant strands and recommendations from this first report that must be adopted and implemented if the new standard is to become universally successful and to be regarded as fit for purpose:

1. minimum entry standards for surveyors engaged in the certification of vessels based on a mix of educational achievements and qualifications, experience as a surveyor and time served.

2. the use of a matrix document for individual surveyors, which must objectively match the surveyor's experience, competency and qualifications to vessel type, survey type, vessel complexity and any specialist knowledge required for certain surveys.

3. continuation and expansion of the PSWG to develop and co-ordinate common training, education and continuing professional development (CPD), whilst embracing all current communication and delivery methods to make this available to all surveyors, engineers and naval architects.

One exciting consequence of this recent work has been the realisation that the profession as a whole, not just small ships, could benefit from a long overdue, joined

up, education and training programme. This work must find a way to link academic and vocational qualifications, recognised by the relevant professional institutions, potentially all the way up the ladder to chartered status, with national occupation standards developed for the surveyors, for which validated technical apprenticeships could then be developed. As appropriate to the level of education, training and experience, as a code vessel surveyor, there should also be specific levels to be attained, for example *'registered'* and *'incorporated'* along the career ladder.

There is a disparity in the UK with different educational and training providers offering general and specialised courses in the surveying profession, none of which enjoy official high level recognition by the professional bodies, such as IMarEST or RINA. There are diplomas and educational programmes on the market (these may or may not be certified by a recognised Further Education or Higher Education institution), which are generally accepted as CPD by Certifying Authorities and others. However, currently these educational programmes do not enjoy endorsement by the marine institutions towards core professional education and training. There are also leading Class Societies and the MCA providing high level training to their own people without seeking wider professional endorsement. Development and co-ordination of education and training courses towards recognition by the professional institutions must be a prime goal of this initiative.

There is now an opportunity to re-structure the surveying profession in all sectors for the benefit of the industry, those who work in it and the wider UK marine industry generally.

These ideas have already been embraced at conceptual stage by leading vocational training and education providers and by IMarEST too, who are keen to support the surveying profession and sector. The task of bringing all the disparate stakeholders together is significant and should not be underestimated, but has already begun in earnest.

The next stage of the initiative will be to bring all stakeholders together to develop a realistic and achievable road map to the '*registered*', *incorporated*' and '*chartered*' status steps and goals (ultimately awarded by the UK Engineering Council through appropriate professional engineering institutions) and to explore funding possibilities for the different entry points, for example technical apprenticeships for the vocational route.

This is not a short term project, nor a quick fix initiative. It is expected to take 5 to 10 years of development, but it is felt by those involved that it will become a vital ingredient for 'UK Marine Ltd' to achieve and maintain its status at the top of international marine standards.

This article does not set out to criticise any particular education or training providers, nor their courses and modules; rather it seeks to identify the need for all such existing and future courses and modules to have common and recognised accreditation. Course and education providers have a key role to play in this initiative. It is right and would be the intention that all those education, training institutions, certifying, surveying authorities and organisations who wish to contribute to the establishment and development of a system should be encouraged to do so at the appropriate time.

AUTHORS:

John Fearnley - CEO, Mecal Ltd, *PSWG Chair 2015-16*
Mike Schwarz – CEO, International Institute of Marine Surveying, *PSWG Chair 2016*

Modules being loaded for the Yamal project

MEGAPROJECTS ENSURE BUOYANT ACTIVITY

Ian Cochran takes another look at marine warranty surveying (MWS) in the light of the downturn in the heavy lift and project cargo sector. Industry experts give their views on how the sector is coping, as well as on the developing trends concerning modularisation, renewable energy and the skills shortage.

The current state of the marine warrant surveying (MWS) industry was summarised by Steven Weiss, senior vice president marine at Aspen Insurance, who said: "MWS ebbs and flows with economic activity and things like investment in developing energy, renewable energy, traditional energy, and infrastructure development that needs heavy machinery and/or uses material and supplies from around the world."

Arjan Honing, a surveyor with Interlloyd Averij's Amsterdam office, said that the amount of business is growing.

Captain Nathan Mills, master mariner, marine consultant and surveyor with Newman Giles Paines & Co Limited, suggested that insurers are becoming more risk adverse due to the uncertain economic climate.

CONSTANT DEMAND

Bob Volante, managing director and Gino Covello, director of project cargo, both of CSL Global, agreed that the demand for project cargo warranty surveying has remained mainly constant and, if the current growth trend in new 'megaprojects' (projects that cost more than USD1 billion and attract a lot of public attention because of substantial impacts on communities, environment and budgets) is taken into account, warranty survey activity has grown by approximately 10 percent year-on-year since 2014.

Peter Baggaley and Tony Moran from London Offshore Consultants (LOC) said that from LOC's point of view it is actually increasing. The market has shifted and this is now a growing sector.

The trend towards greater modularisation is also affecting surveyors' work. Weiss said: "This does lead to potentially more MWS work but it can also lower the number of total shipments surveyed. One example is that many of the modules have to be moved by barge, and typically ocean barge traffic with modules is all surveyed."

Mills thought that due to the cost of modules, compared with traditional stick and build projects, there is an increase in surveying work. "The increased value of a single module, which incorporates sensitive and critical equipment, gives underwriters cause for concern," he explained.

Volante and Covello agreed that, by and large, cargo warranty surveyors are seeing a change of emphasis towards larger modularised shipments. If the initial component parts of a pre-fabricated unit are already classified as critical prior to the modularisation exercise, then the number of warranty survey interventions will almost certainly increase, as both pre- and postmodularised surveys will be required, they explained.
It is the increase in modularisation that is increasing the amount of cargo warranty surveying work, LOC's Baggaley and Moran said. However, because of the complexity of the transport, the size and scope of the contracts, it is often only the larger companies that have the marine warranty capacity and services to cover such contracts.

RENEWABLE ENERGY

Turning to the transport of renewable energy-related cargoes, which many see as a buoyant market for heavy lift/multipurpose vessels, Weiss explained that sector's wide scope is driving demand for MWS services.

"The size and complexity of these shipments drives the need for a warranty surveyor. Offshore wind, much like traditional offshore energy, will need MWS approval on many aspects of the project, including the design and installation phase, as well as the transit," he said.

Mills said that in weighing up the specialised nature of renewable cargo, given that sometimes it can be a prototype, such as ocean turbines, the role of the warranty surveyor changes into more of an "outside of the box thinker".

Volante and Covello said that beyond the need to survey the often new technology and/or prototype equipment associated with the rapidly expanding renewable energy sector, many of these projects still include shipments of conventional (large and expensive) items of generating or transmission equipment that are deemed by underwriters to be critical and subject to survey.

Baggaley and Moran thought that, essentially, the role remains the same, regardless of the project – the marine warranty surveyor still works on behalf of the underwriters to ensure that the construction and installation is done to accepted industry standards and to ensure that the risks are managed in such a way as to be as low as possible.

INSURERS' PERSPECTIVE

As for the insurers themselves, Weiss said that the insurance world tends to be circumspect. However, in his area of project cargo, when the company understands and can price for the risk, it is happy to take it on. "The bigger question nowadays is whether we are getting the proper premium for the exposure," he said.

Honing also thought that insurers are more aware of the risks, due to larger and more expensive modules. Therefore they require more risk control than before and this can only be achieved by an independent third party.

Volante and Covello said that as a result of ongoing soft marine insurance market conditions, cargo underwriters continue to maintain focus on the importance of warranty surveys to ensure that all reasonable practical risk management practices are followed, to minimise or avoid losses and achieve best risk performance.

As with many industries today, there is a danger of a potential skills gap which Weiss said has become geographically noticeable. "The bigger challenge for the insurance industry is the ageing of the workforce. In ten years, I might answer this question differently," he said.

EXPERIENCED PROFESSIONALS

Mills was adamant that there is a huge skills gap. "In my opinion, underwriters need to look for three crucial factors before appointing a marine warranty surveyor. The first is an unlimited master mariner licence or unlimited chief engineer licence, or university engineering qualifications. The second factor is experience. The third factor is professional indemnity. However, at the end of the day, it is about cost," he explained.

Volante and Covello said the traditional experience-based skills associated with MWS – with a heavy dependency on master mariners, chief engineers and naval architects – remain important components.

Peter Baggaley, London Offshore Consultants

> "It is the increase in modularisation that is increasing the amount of cargo warranty surveying work."

LOC's involvement with the Yamal project will extend until 2018.

EXTREME WEATHER CHALLENGES

Some of the recent challenges faced by MWS were outlined by the respondents to HLPFI's questionnaire. Steven Weiss from Aspen Insurance gave an example concerning the weather. "We were moving a transformer inland in Mexico and due to several back-to-back storms, waited over ten days and the site entry for the ground to dry out and stabilise.

"Other recent projects involve a long overland transit in Russia and several surrounding states. The challenge is making sure that the transit is safe both security-wise and with the routing of the cargoes. Alternative ways to deliver cargo to the 'Far North' are being discussed. Can the opening of the Northwest Passage allow a water route that ends close to the oil sands? Or closer to other mineral rich areas in the region?" he asked.

DENSE TRAFFIC

Captain Nathan Mills of Newman Giles Paines & Co Limited said that shipping cargo in areas of dense marine traffic can be fraught with challenges. "Cargo underwriters need to look at any external risk that may be present. Weather is always difficult to predict and can change in an instant. Wind turbine components may seem simple to transport, but small damages, such as blade damage, can be very expensive to repair or even replace," he explained.

Bob Volante explained that on a recent project, CSL Global experienced a significant number of challenges with the client continually questioning the survey recommendations and decisions. "Despite a continuing pressure to review and/or withdraw recommendations, we continued to maintain our fully explained decisions and because of this it is our opinion that no incident occurred in respect of the critical item transportations that we were involved with. This is mainly due to CSL's intervention whenever it was required."

They made every effort to ensure that all inputs from the client, and other interested and formally contracted third parties, were reviewed and taken into consideration to ensure that the integrity of the warranty survey programme was not compromised as a result of unjustified influence or pressure from any party, they said.

YAMAL LNG PROJECT

LOC London is currently acting as the marine warranty surveyor for the Yamal LNG project, providing independent third-party design review and approval of marine operations including load-out, seafastening, transportation, shipping and offloading of cargo dedicated to the transportation of modules and modularised buildings.

The project is located in Sabetta, in the Ob River estuary, which is ice-bound for nine months of the year, northeast of the Yamal Peninsula in Russia. It is the first LNG development venture to be established in the Arctic.

The Yamal LNG facilities are being built in modules in different areas of the world and then transported to the site for installation or assembly. The modular construction process has been chosen to cope with the extreme climate conditions at Sabetta.

LOC's involvement in Yamal LNG project will continue until 2018.

More recently, with the reduction in global oil prices, a wide range of experienced maritime talent from a broad range of sources has become more available. Warranty survey skills still need to be developed and new blood (not just from a maritime background), new skills and education continue to be a longer-term challenge for the industry.

As for sub-contracting surveyors, Honing said that by being a Lloyd's agent in the Netherlands, his company is involved in setting up a new network for project-related surveys and qualified Lloyd's surveyors. This will create a worldwide network of qualified surveyors. "We now already use the network because we know exactly which company is qualified in our network," he stressed.

Volante and Covello said that there is a wide global network of known, qualified, established and proven warranty survey practitioners that, when required, can be formally appointed to support the requirements of a large or complex warranty survey programme.

Planning is an essential part of any project cargo move and should involve the surveyors at the outset. Weiss said: "One of the key success factors in any MWS project is coordination and communication. As an underwriter doing project cargo, I make it a priority. The meeting facilitates the project by connecting the responsible parties to each other in person. I consider it a must-have."

Honing agreed, saying: "The advantage of pre-project meetings with a surveyor already present is that some transport issues can be discussed and prepared during construction phase, which will save costs in the end."

Volante and Covello said that the attendance of warranty surveyors at pre-project 'kick-off ' meetings is highly recommended. The role of the project cargo warranty survey has evolved significantly over the past five years and is no

longer primarily one of acting as a 'policeman' on behalf of insurers or other principals.

In an increasingly commercially competitive world, warranty surveyors are adding value to all project stakeholders by helping to ensure that the integrity of the project cargo and delay in start-up insurance cover is maintained throughout the project lifecycle.

RedBox's Audax transports Yamal project modules.

MEETINGS

Baggaley and Moran said all of LOC's projects start with a kick-off meeting, as it is an invaluable opportunity to introduce all of the parties to each other. They discuss the scope of work, clarify the contractual terms, and make sure everyone understands what is required. The meeting also serves as a good opportunity to establish LOC's independence.

Baggaley added that LOC also has a presentation that explains exactly what marine warranty is. He said that "people often think they know and you find they do not really, or even worse they think you are there as the man from the insurance or some sort of police enforcement surveyor. We can dispel all of those misconceptions and the meeting is usually very constructive."

Weiss said that all the stakeholders should be involved. "I want all of the parties to be concerned about the move and pay attention to every detail. There are many companies out there that are very experienced in moving project cargo and while everyone has a problem occasionally, the ones that have problems all the time need to be rooted out and not used. It would be prudent to be working with financially stable carriers as well," he stressed, alluding to Hanjin's plight.

Honing said: "Sometimes they [the stakeholders] have different ideas which do not always provide a workable solution."

Mills agreed but warned: "You should always try to see the motive behind their reasoning and actions."

MINIMISING RISK

LOC's Baggaley and Moran said that successfully minimising risk is its absolute priority, but another stakeholder may be more focused on cost or keeping to schedule. It can be a juggling act to manage all of the different priorities, but no one actually wants to be a problem; if one party is being difficult, it usually means their objectives and priorities have not been understood correctly, or even more likely, it is a lack of, or breakdown in, communications.

As for any potential improvements in MWS, Weiss said that the intense competition and large amount of available insurance capacity has caused a decline in rates almost to the point of the project not being worth the risk for the underwriter. Therefore an improvement in rates would be an important factor.

Another consideration is that risk engineering is the driver behind the success or failure of a project. When a project is accomplished without the use of risk engineering, while it can lower the immediate cost, the longer-term cost can be a claim, which not only costs the underwriters but also costs the project time and possibly reputation. Honing advised appointing a good surveyor at an early stage so that he or she can help with issues that might arise.

Mills advocated the use of ISO 55000 (standards for asset management), which "…would be a great way to start weighing up risk".

Volante and Covello said the infrastructure project industry could benefit from the development of more combined and tailored insurance programmes that effectively cover a more extensive range of risks under a single insurance policy, which could be paid for, in an agreed proportion, by the key participating project stakeholders.

Baggaley and Moran said that they would always lobby for earlier visibility and earlier involvement in the process – the earlier the marine warranty surveyor is involved the more robust the management of risk can be.

"It would also help if the MWS could meet the lead underwriter and the insured party right at the beginning of the project so that they could review the scope of work and agree on the marine warranty surveyor's role throughout the project. Too often they are remote and information is channelled through many intermediaries, which can lead to the distortion or loss of information en route," Baggaley said.

> **"It is never ideal to be working on a project where everything is last minute."**
>
> **Tony Moran**, London Offshore Consultants

CATHODIC PROTECTION

FOR SMALL CRAFT

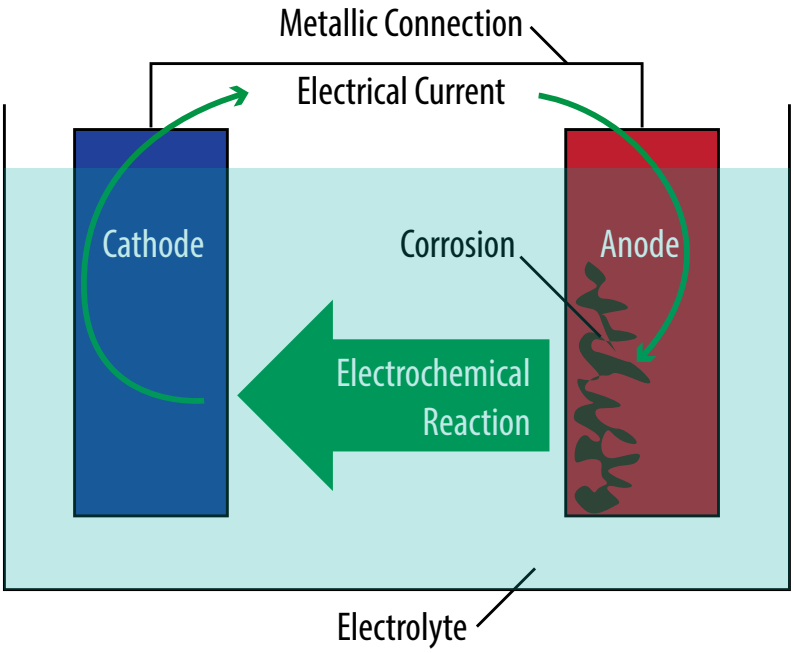
BY **ELLIOTT BERRY** MIIMS

The first practical use of cathodic protection is generally credited to Sir Humphrey Davy in the 1820s. Davy's advice was sought by the Royal Navy in investigating the corrosion of copper sheeting used for cladding the hulls of naval vessels. Davy found that he could preserve copper in sea water by the attachment of small quantities of iron or zinc; the copper became, as Davy put it, "cathodically protected".

To understand cathodic protection, it is necessary first to understand how corrosion is caused. For corrosion to occur, three things must be present:

1. Two dissimilar metals
2. An electrolyte (water with any type of salt or salts dissolved in it)
3. A metal (conducting) path between the dissimilar metals

Basic Cell Corrosion



The two dissimilar metals may be totally different alloys – such as steel and aluminium – but are more likely to be microscopic or macroscopic metallurgical differences on the surface of a single piece of steel. In this case, we will consider freely corroding steel, which is non-uniform.

If the above conditions exist, the following reaction takes place at the more active sites: (two iron ions plus four free electrons).

$$2Fe \Rightarrow 2Fe^{++} + 4e^{-}$$

The free electrons travel through the metal path to the less active sites, where the following reaction takes place: (oxygen gas is converted to oxygen ion - by combining with the four free electrons - which combines with water to form hydroxyl ions).

$$O_2 + 4e^{-} + 2H_2O \Rightarrow 4\ OH^{-}$$

Recombination of these ions at the active surface produce the following reaction, which yields the iron corrosion product: (iron combining with oxygen and water to form ferrous hydroxide).

$$2Fe + O_2 + 2H_2O \Rightarrow 2Fe\ (OH)_2$$

This reaction is more commonly described as 'current flow through the water from the anode (more active site) to the cathode (less active site).'

How does cathodic protection stop corrosion?

Cathodic protection prevents corrosion by converting all of the anodic (active) sites on the metal surface to cathodic (passive) sites by supplying electrical current (or free electrons) from an alternate source.

Usually this takes the form of anodes, which are more active than steel. This practice is also referred to as a sacrificial system, since the anodes sacrifice themselves to protect the structural steel from corrosion.

In the case of aluminium anodes, the reaction at the aluminium surface is: (four aluminium ions plus twelve free electrons)

$$4Al \Rightarrow 4AL^{+++} + 12\ e^{-}$$

and at the steel surface: (oxygen gas converted to oxygen ions which combine with water to form hydroxyl ions).

$$3O_2 + 12e^{-} + 6H_2O \Rightarrow 12OH^{-}$$

As long as the current (free electrons) arrives at the cathode (steel) faster than oxygen is arriving, no corrosion will occur.

The electrical current that an anode discharges is controlled by Ohm's law, which is:

$$I=E/R$$

I = Current flow in amps

E = Difference in potential between the anode and cathode in volts

R = Total circuit resistance in ohms

Initially, current will be high because the difference in potential between the anode and cathode are high but as the potential difference decreases due to the effect of the current flow onto the cathode, the current gradually decreases due to polarization of the cathode.

The circuit resistance includes both the water path and the metal path, which includes any cable in the circuit. The dominant value here is the resistance of the anode to the seawater.

For most applications, the metal resistance is so small compared to the water resistance that it can be ignored (although that is not true for sleds or long pipelines protected from both ends). In general, long, thin anodes have lower resistance than short, fat anodes.

They will discharge more current but will not last as long.

Therefore, a cathodic-protection system designer must recommend anodes so that they have the right shape and surface area to discharge enough current to protect the structure and enough weight to last the desired lifetime when discharging this current.

As a general rule of thumb:

The weight of the anode determines how much current the anode can produce, and consequently, how many square metres of steel can be protected.

Galvanic corrosion - often misnamed electrolysis - is one common form of corrosion in marine environments. It occurs when two (or more) dissimilar metals are brought into electrical contact under water. When a galvanic couple forms, one of the metals in the couple becomes the anode and corrodes faster than it would all by itself, while the other becomes the cathode and corrodes slower than it would alone.

Either (or both) metal in the couple may or may not corrode by itself (themselves) in seawater. When contact with a dissimilar metal is made, however, the self corrosion rates will change: corrosion of the anode will accelerate; corrosion of the cathode will decelerate or even stop. The choice of material depends upon the position of the metals concerned in what is known as the galvanic series. For information, the galvanic series is given in the table below. It is a list of metals and alloys ranked in order of their tendency to corrode in marine environments.

Metals at the top of the scale are called noble and those at the bottom base. The galvanic series can be used to predict which metal will become the anode and how rapidly it will corrode. If any two metals from the list are coupled together, the one closer to the anodic (or active) end of the series, the upper end in this case, will be the anode and thus will corrode faster, while the one toward the cathodic (or noble) end will corrode slower. For example, suppose an aluminium alloy with a voltage range of -0.7 to -0.9 V (an average of -0.8 V) as shown on the series, is coupled to a 300 series stainless steel with an average voltage of -0.07 V.

The galvanic series predicts that aluminium will be the anode, and the voltage difference between the two alloys will be about 0.73 V (obtained by subtracting the two average voltages). It is this voltage difference that drives the current flow to accelerate corrosion of the anodic metal.

The two major factors affecting the severity of galvanic corrosion are:

- the voltage difference between the two metals on the galvanic series
- the size of the exposed area of cathodic metal relative to that of the anodic metal.

The weight of the anode determines how much current the anode can produce, and consequently, how many square metres of steel can be protected.

The Galvanic Series

MATERIAL	ELECTRICAL POTENTIAL RANGE (IN VOLTS)
TITANIUM AND ALLOYS	+0.06 to –0. 05
300 SERIES STAINLESS STEELS	0.00 to –0.15
MONEL METAL	-0.04 to –0.14
COPPER	-0.14
COPPER NICKEL	-0.13 to –0.22
LEAD	-0.19 to –0.25
SILICON BRONZE	-0.24 to –0.27
MANGANESE BRONZE	-0.25 to –0.33
CAST BRASSES AND BRONZES	-0.24 to –0.40
NAVAL BRASS	-0.30 to –0.40
ALUMINIUM BRONZE	-0.30 to –0.40
HIGH STRENGTH STEELS	-0.60 to –0.63
LOW STRENGTH ALLOY STEELS	-0.57 to –0.63
PLAIN CARBON STEELS	-0.60 to –0.70
CAST IRONS	-0.60 to –0.72
ALUMINIUM ALLOYS	-0.70 to –0.90
ZINC	-0.98 to –1.03
ALUMINIUM	-1.25 to –1.50
MAGNESIUM	-1.60 to –1.63

Corrosion of the anodic metal is both more rapid and more damaging as the voltage difference increases and as the cathode area increases relative to the anode area. The approximate voltage difference for any two metals can be taken directly from the table. It is worth noting that marine slime films composed primarily of microscopic bacteria and diatoms can change the potentials of many of the alloys near the noble end of the galvanic series as indicated.

The potentials of these alloys become more positive in the presence of slime films thus increasing the voltage difference when these metals are placed in contact with more anodic alloys. This has been found to increase the corrosion rate of copper, steel and aluminium anodes by a factor of 2 to 5 but to have no effect on the corrosion rate of zinc anodes. It may also change which metal in the couple becomes the anode.

When the two metals in a galvanic couple are close together on the series, such as manganese bronze and silicon bronze, their voltage ranges overlap and either one can be the anode, depending on the exact exposure conditions. In this case, more detailed information would be needed to predict the behaviour of the couple. The effect of the second factor above, the cathode to anode area ratio ($R_{C/A}$) is illustrated by the example of a rivet in a plate. In the first situation the rivet is of aluminium and is comparatively small and the plate of stainless steel and the $R_{C/A}$ ratio is large. In the second the situation is reversed: the stainless steel rivet is small and the $R_{C/A}$ ratio is also small.

In both aluminium is the anode and stainless steel is the cathode. Corrosion of the aluminium rivet in the first arrangement would be severe. However, corrosion of the large aluminium plate in the second arrangement would be much less even though the potential difference is the same in each case.

The cathodic member of the couple is one of those alloys identified as being influenced by slime films and, if there is a reason not to paint, periodic cleaning of the bare metal surface can minimize the effect of the slime and reduce the corrosion rate of the anode. Periodic cleaning is not recommended for reducing galvanic corrosion of other alloys because removal of corrosion product films from those metals usually increases corrosion rates.

Whenever the vessel is slipped, the existing anodes should be wire brushed back to bright metal and then coated with soft soap before painting the hull. Any paint accidentally applied to the anodes will then wash off with the soft soap when the vessel is placed in the water. If it is necessary at some time for the vessel to change from a salt to a fresh water environment or vice versa then it should be borne in mind that this will have a deleterious effect on the anodes fitted.

Magnesium or aluminium anodes (which are suitable for fresh water) have a much higher driving potential than anodes manufactured from zinc. If a vessel fitted with magnesium or aluminium anodes passes into salt water for anything longer than about seven days, the anodes will waste away very quickly.

Vessels which are fitted with magnesium or aluminium anodes moving into a salt water environment for longer than a week, should therefore be fitted with a replacement zinc anodic system. Conversely vessels fitted with zinc anodes (suitable for use in salt water) will find over a period

exceeding about seven days that the metal will be coated with an impervious off-white crust of zinc salt which will very effectively prevent it working even when returned to salt water.

After any trip into a fresh water environment a vessel fitted with zinc anodes should have these thoroughly scaled clean back to bright metal. If proceeding into fresh water for longer than about seven days a vessel should be fitted with replacement magnesium or aluminium anodes. In no case should magnesium anodes be fitted to the hull of wooden boats.

The selection of sacrificial anodes for a vessel is dependent on the surface areas and type of metals to be protected taking into account their electronegative potentials. The marine surveyor should note that the ABYC inter alia states that a sacrificial anode should induce and maintain a minimum negative shift of 200 mV relative to the least noble (or most negative) metal.

The issue of under protection is, of course, well understood. Put simply, too little protection results in corrosion. The various Formulae and methods given above were designed with that requirement in mind and are backed up by the author's experience.

Over Protection

The marine surveyor should also be aware that it is possible to put too many anodes on a boat, a danger which is called over-protection. That occurs when the sacrificial anodes generate a current higher than necessary to protect the more noble metallic fittings. Common issues on metal, frp, ferro-cement and wooden hulls given over protection include: -

1. **Paint stripping** – This is the hydrogen blistering of paint and occurs because of the destruction of the adhesion between the coating and underlying metal to which it has been applied. The defect can be often seen near where sacrificial anodes are attached to steel or fibreglass hulls. The process often results in local blistering of the paint coat near the anodes and is often referred to as cathodic disbondment. It is sometimes mistaken as osmotic blistering.

2. **The repulsion of anti-fouling and propeller coatings** – In the same manner as hull paint stripping, over protection can lead to the non-retention of these coatings due to the incompatibility of the application with sacrificial anodes. It can render the application ineffective and often leads to increased barnacle and other marine growth attachment.

3. **Marine Growth** – Excessive cathodic protection accelerates the formation of calcareous deposits on a vessel's hull, rudders and propellers including a calcium carbonate coral like structure.

4. **Alkali Attack** – This can also arise as a result of excessive cathodic protection systems and can lead to the formation of alkaline conditions on metallic hulls when there is insufficient flow of water to return the water to its natural pH, resulting in accelerated corrosion. This can be accentuated as the paint blisters to create an even more alkaline condition and further lead to rapid deterioration of the submerged metal. Also seen on wood – see below.

5. **Embrittlement and Metal Blistering** - Studies have also shown that the metal-hydrogen interaction which is effected by the entry of hydrogen into the interstices within the metal's crystal structure by the over protection potentials may significantly influence the strength behaviour of mild steel by the influence of the hydrogen on the rate of increase of lattice dislocation multiplication i.e. the metal tends to become brittle. Ductility may be retained if the potential does not exceed -900 mV. In wrought iron, the hydrogen tends to collect inside the metal causing metal blistering near the anodes.

Defects due to over protection can also be found on wooden hulls. Cellulose is the natural polymer which gives wood its remarkable strength and is a major component of the material where lignin holds the cellulose together. Over protection resulting from the galvanic current flowing between the anode and cathode destroys the lignin and that results in the effects of localised wood decomposition and the defect called angel's hair.

The images below show the result of installing too many anodes

The Images below show the results of Over Protection within the confines of a small water ballast tank.

Anode Calculations for Iron and Steel Hulls.

The surface area of the hull and anode determines the amount of protection given. The voltages of all metals will vary depending on the salinity of the electrolyte and the total weight of anodic material determines the useful life of the protection system. On a metal hull, it is common to use the standard formula for sea water immersion:

For the hull's wetted surface: in square metres it is usually accurate enough to use Kirk's formula. The current density: mA per square metre is approximately 35 for steel, the immersion hours factor is (8760 hours/year times the number of years intended service (usually 2) times the fraction of the year the vessel is in the water and the energy content in amp-hours is 368 for zinc anodes at 99% efficiency. The factor for other metals is usually obtainable from the Galvanic Table.

Anode Weight =
(Hull's Wetted Surface) x (Current Density) x (Immersion)/(Energy Content) x (1000mA/Amp)

For FRP hulls it is necessary to determine the amount of exposed underwater metals of different type, but easier to install standard anodes and then attach fish anodes until the desired potential is reached.

Estimated remaining life of existing anodes is calculated from

L	=	$12 + 19.2k(1 - \%_A)$	months
L	=	Life	months
$\%_A$	=	percent loss of anodic material per anode	
k	=	1.00 for zinc, 0.90 for magnesium	

Weight of one anode is calculated from

w_A	=	$aqlbd/10^3$	kg
l, b, d	=	the dimensions of the anode	cm
q	=	7.13 zinc	
		1.74 magnesium	
a	=	0.38 for ovoid anodes	
		0.55 for long anodes	
		0.89 for flat anodes	
		0.59 for circular anodes	

The Wetted Surface Area of the Hull is calculated from a modification of the well known Kirk's analysis:

S_A	=	$k.L(B + 2d)$	m^2
L	=	Length	m
B	=	Breadth	m
d	=	Mean draught	m
k	=	Constant	-

Required current amperage is calculated from

A	=	$S_A \times C_D/1000$	Amps
S_A	=	Wetted Surface area	m^2
C_D	=	Current Density	
		10 – 30 generally about 20	mA/m^2

Total weight of anodic material required to give this amperage is calculated from

$$W^A = \frac{A \times Y \times 8760}{C}$$

W^A	=	Weight of required anodic material	kg
Y	=	Required life in years	Y
8760	=	Number of hours in one standard year	h
C	=	Capacity of Anodic Material	ah/kg
	=	780 for zinc	
	=	2700 for aluminium	
	=	2000 for magnesium	

Recommended life of anodes for small craft is two years (3 years maximum).

It is generally recognised that it is good practice to place the anode(s) at a point where it or they can 'see' the item it is or they are protecting. For example, one can often inspect transom sterned motor boats where the anodes have been placed on the transom. While there is nothing intrinsically wrong with that, the anodes cannot 'see' the items they are protecting and, therefore, work less efficiently than those that would be placed under the flat of the bottom. The anodes are generally reckoned to have a working range of about 5 metres (15 feet) and should be so spaced to include that idea.

Again, for example, one often inspects narrow boats of, say, fifty feet length with an anode fitted each side on the forward swim and another on the after swim. Careful inspection of the hull will show that the middle section out of the 5 metre range will be badly pitted. Such boats should have an anode fitted at mid length each side taking care not to thereby put the boat 'out of gauge'.

It has become common practice on such canal boats to place anodes inside small boxes inset into the hull. Experience will show that the steel forming the interior of the box will be in pristine condition while that plating surfaces even quite nearby will be badly pitted. The anode cannot see the steel it is supposedly protecting.

REPORT ONLY WHAT YOU KNOW

BY **CAPT BARRY THOMPSON** HONFIIMS

Although the following account refers to a cargo survey the lessons to be learnt from it by a surveyor apply just as much to a yacht or small craft condition survey — indeed to any 'fit for purpose' survey.

In 1985 a New Zealand company ordered just over 22,000 tonnes of compound fertiliser at a C & F cost of US$4.2 million. It was part loaded into the geared bulk-carrier ***Adelina*** (26,687 dw, built 1977) in Sweden with the balance in Tampa, Florida. SGS, of worldwide reputation, were the appointed surveyors to certify the holds as clean, dry and fit to receive the fertilizer.

Arriving at Napier, NZ on 1 August 1985 ***Adelina*** was initially refused permission by the NZ Government inspectors to discharge her cargo because diseased barley gains were found in all five holds. Although the authorities subsequently relented they imposed a number of restrictive conditions on the fertiliser's sale and understandably the importers refused to accept receipt of the cargo because of these restrictions.

After several weeks of argument with those responsible in New York for the original purchase, a buyer was found for the cargo 'as is' in Belgium and the ship left Napier nearly two months after arrival. The contaminated fertilizer was finally discharged in Antwerp.

The loss on the actual sale of the contaminated fertilizer amounted to just under US$1 million but with extra steaming and port costs and damages under the terms of the Charter Party the claim eventually reached US$2.4 milllion.

It was not until nearly the end of 1989 that the claim came before the New York District Court when SGS was sued, it being alleged that the surveyor failed to detect the grains of barley in the holds and should not have accepted that the ship was fit to receive the cargo.

The holds had been cleaned prior to loading and some hold painting carried out. In fact some painting of residue barley from a previous cargo on ledges arising from the construction in the holds, had taken place!

The difficulties associated with this type of survey are well known to us as surveyors and it is extremely difficult, if not sometimes almost impossible, to be satisfied that all residue of previous cargo, and significant rust, is not present on the ledges of beams and stingers in the holds. These surveys require considerable time and care, often even assistance and equipment to carry them out properly.

In this case of this ***Adelina*** claim, the survey company were grateful the District Court judge laid 50% of the blame on the shippers who, he contended, should have drawn to the surveyors' attention the very high standards of cleanliness required by the NZ Authorities.

The survey fees in Tampa amounted to only $50 per hold and the judge contended that the shippers had to assume a responsibility because a much higher fee should have been expected if SGS was expected to assume a much higher standard of responsibility — or else they should have expected SGS to decline the survey in the absence of an appropriate fee. He was critical that the shippers, in their acceptance of such low survey fees and casual dealings with the surveyors, had shown too little concern regarding the risks involved.

In 1990 the case went to the US Court of Appeal where the judges found that the surveyors in the loading ports failed to carry out their surveys with sufficient care so that SGS were in breach of contract. But the Appeal Court did not award the shippers the full contract damages for similar reasons to those expressed by the lower court judge.

THE LESSONS FOR SURVEYORS

Apart from the obvious lesson of appreciating the difficulties of surveys of this nature and performing accordingly, another lesson is contained in further comments made by the first trial judge. He made the point that the attending surveyor should have **stated only what he actually saw and specifically reported only on the areas of the holds to which he could gain access**.

This is sound advise for all types of surveys and we surveyors should always make it clear whenever and wherever, for various reasons, we have been unable to carry out a survey to the required standard.

There are frequently surveys where we have to accept some limitations on the extent to which we can report fully on some part of a structure in ships and small craft. In some surveys of cargo it is impractical (often prohibitively expensive) to examine every item. We may be obliged to form an opinion on a limited sighting or sampling and that may be quite acceptable BUT we need to say so in the report and express any limitations. This applies to all 'fit-for purpose' surveys where there are often good reasons why the extent of a survey is restricted BUT it is important that principals are aware of them.

Making the appropriate statement in the report is essential but the surveyor's responsibility will often arise well before his principal receives the written report. The surveyor must, in these circumstances, inform his principal of the limitations on his survey as soon as possible, maybe by email or even better by telephone or in person. In many cases the written report will arrive too late for the principal to make decisions on what should have been done as a consequence of the limitations of the survey.

It may be very necessary to delay loading a cargo until a very much more extensive survey (doubtless at a much greater cost) can be carried out, perhaps to provide greater safeguards against contamination. Prompt notification may be essential in any other types of condition surveys, i.e. 'On hire/ off hire' for a charter, or for the purchase of ships and small craft.

Although mention has been made of situations where a surveyor may be constrained in a survey and restrictions legitimately imposed on the extent of his reporting, this should **not** be seen as an opportunity for an easy excuse for not bothering to do everything reasonable to overcome those obstacles. The use of disclaimers in reports where a little more care and trouble might have permitted a fuller and more useful survey, will rarely be of much protection for the surveyor. The courts are unlikely to accept any excuse for a lazy survey and will see the surveyor as having been negligent. He can expect to pay the price for his lack of care and attention.

AN INTRODUCTION TO LUBRICANT SAMPLING, ANALYSIS AND TEST IN PREDICTIVE MAINTENANCE

PART 1

BY **JEFFREY CASCIANI-WOOD** HONFIIMS

Lubricants are the life blood of all machinery and as an important element of predictive maintenance technologies, in service oil sampling, analysis and test can provide, *inter alia*, trace information about machine wear condition, lubricant contamination and general condition. See Figure 1. Marine surveyors, using oil test analysis results, can make important maintenance decisions among which are the immediate benefits of avoiding the mixing of oils, contamination control, condition based maintenance and failure prediction.

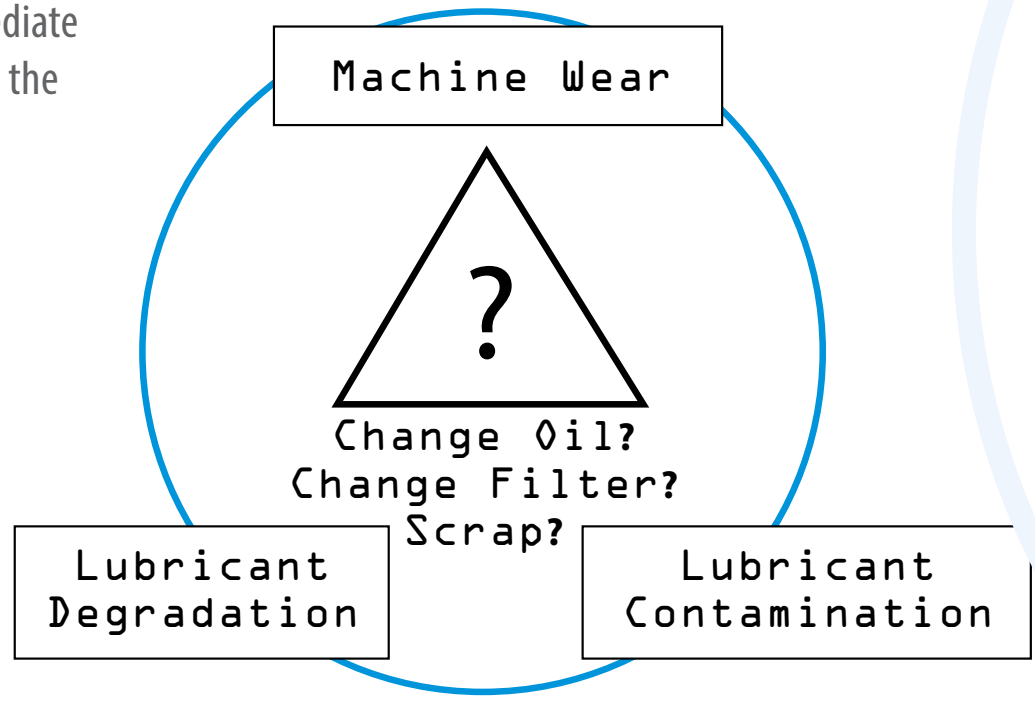


Figure 1 Lubricating Oil Analysis and Choice Diagram

Machine condition monitoring and/or predictive maintenance is the practice of assessing a machine's condition by periodically gathering data on key machine health indicators to determine when to schedule overhaul and maintenance. One of the keys to keeping machinery operating at optimal performance involves monitoring and analysing lubricant oils for characteristics such as contamination, chemical content and viscosity. A huge amount of money is spent annually replacing machinery components that have worn out due to the inability of the lubricants to perform their required task. Knowing how to interpret changing lubricant properties is the task of the marine surveyor and can increase both the working time and the life of often highly critical capital equipment. The existence or amount of debris and particles from wearing parts, corrosion, erosion and contamination provide clear information about the issues affecting performance and reliability. Lubricant and other key fluid analyses provide critical early warning information indicative of machine failure. Analysing and trending the data means maintenance can be scheduled before a critical failure occurs. The result of such good practice is higher equipment availability and productivity, lower maintenance costs, lower total cost of ownership, less down time, optimal equipment performance and a greener operation.

Common In Service Oil Analysis Techniques

The author's experience has been confined to the marine field but this paper, although marine orientated, applies equally well to land based machinery.

Table 1 below shows typical oil analysis parameters and common analytical techniques to monitor machine wear, contamination and degradation.

Table 1
Key oil analysis parameters and corresponding analytical techniques

CATEGORY	KEY ANALYSIS	ANALYTICAL TECHNIQUES
Machine wear	Fine wear metal elements	Rotating Disc Electrode (RDE) Spectroscopy, Inductive Coupling Plasma (ICP) Spectroscopy
	Large wear metal elements	Rotrode Filtration Spectroscopy (RFS), FPQ, XRF
	Particle count and distribution	Particle count, Laser Net Fines (LNF)
	Wear particle shape analysis	LNF, Ferrography, Wear Debris Analysis (WDA)
Contamination	Sand and Dirt	Particle count, LaserNet Fines (LNF)
	Fuel Dilution	Fuel Sniffer, Gas Chromatography (GC)
	Water/Moisture	Infrared (IR), Karl Fischer Titration (KF)
	Glycol/Coolant	Infrared Spectroscopy
	Soot	Sootmeter, ir
	Alien Fluid	IR

It is always good practice to advise relevant personnel to require oil samples to get an idea of the status of wear on machinery. If the person accepts that advice, the marine surveyor should further advise his client he has a subject clause his next moves of "subject to a favourable oil analysis". Should he not avail himself of such advice the marine surveyor will have closed off any avenue of legal action against himself.
Any machine is kept running smoothly by the addition to the sump of lubricating oil. This is pumped round inside the engine by means of an oil pump which is usually mechanically driven and inside the sump and the oil passes through a filter, over every bearing and down each cylinder wall. The oil is kept at a reasonable working temperature by-passing through a heat exchanger which is often fitted in tandem with the cylinder jacket water heat exchanger. The actual arrangement varies from engine type to engine type and from manufacturer to manufacturer. By-passing through the engine in this manner the oil takes into a loose solution tiny particles of wear metal from the bearings and combustion particles from the cylinders. In carrying out a full survey on any machine, the marine surveyor should, when he is looking at the engine, check and report on the condition of the lubricating oil. The nature of the contamination or any effects it may have had on the engine cannot be accurately determined by this method but carrying out this test will certainly give the engineer confidence in suggesting that a detailed chemical analysis of the oil be made and any recommendations of the analysing laboratory be accepted.

There are two main reasons for removing oil from service and these are respectively:

1. **pollution from outside sources, and**
2. **oxidation causing deterioration of the oil itself.**

High water content is possibly an exception. On some plants it would be removed simply by centrifuging the oil but such a process is not usually available on smaller installations and, if excess water is found, the marine surveyor should at least suggest that the oil should be changed. For detergent oils, a third reason for changing

the oil may be added in i.e. a high insolubles content as that causes a depletion of the detergent additive.

Lubricating oil analysis (LOA) is the laboratory analysis of a lubricant's properties, suspended contaminants and wear debris. It is a quick non-destructive method of gauging the health of an engine by taking a close, specialised look at what is in the oil and should be performed as part of a routine preventative maintenance scheme to provide meaningful and accurate information on lubricant and machine condition. By tracking oil analysis sample results over the life of a particular machine, trends can be established which can help eliminate costly repairs. The study of lubrication and wear in machinery is called tribology. Strictly, tribology is the science and engineering of interacting surfaces in relative motion. It includes the study and application of the principles of friction, lubrication and wear. Tribology is a branch of mechanical engineering and materials science. LOA can be divided into three categories:

- **analysis of oil properties including those of the base oil and its additives.**
- **analysis of contaminants.**
- **analysis of wear debris from machinery.**

Oil sampling is a procedure for collecting a volume of fluid from lubricated machinery for the purpose of oil analysis and it is important to ensure that procedures are used to minimize disturbance of the sample during and after the sampling process. The samples are typically drawn into a small, clean bottle which is sealed and sent to a laboratory for analysis. A key factor in the success of the analysis was the development of the spectrograph, an instrument which replaced several wet chemical methods for detecting and measuring individual chemical elements such as iron or copper. In addition to monitoring oil contamination and wear metals, modern usage of LOA includes the analysis of the additives in oils to determine if an extended drain interval may be used. Maintenance costs can be reduced using LOA to determine the remaining useful life of additives in the oil. By comparing the LOA results of new and used oil, a tribologist can determine when the oil must be replaced. Careful analysis might even allow the oil to be sweetened to its original additive levels by either adding fresh oil or replenishing additives that have been depleted.

The analysis usually comprises four standard tests:

1. **a spectral examination,**
2. **an insolubles test,**
3. **a viscosity test,**
4. **a flash point test.**

In the spectral examination, a portion of the oil sample is taken and passed through a machine called a spectrometer which analyses the oil and yields data that show the various metals and additives that are present. This gives a direct measure of how much wear is taking place in the engine and show the parts of the engine from whence the various particles come.

The insolubles test measures the amount of abrasive solids that a present in the oil. The solids are formed by oil oxidation which takes place when the oil is in the presence of oxygen and heat. The insolubles blow past the piston rings causing wear damage. The test shows how well the oil filter is performing and to what extent the oil has oxidised.

The viscosity test measures the actual grade or thickness of the oil sample. Whatever the original grade of the oil, it should lie within a specific range of viscosity and if the sample falls outside that range the oil will probably have been contaminated by overheat, fuel, moisture or coolant.

The flash point test measures the temperature at which the vapours from the oil ignite. As with viscosity the oil whatever its grade should ignite at a specific known temperature. If the vapours ignite at or above that temperature then the oil is not contaminated. If, however, they ignite at a lower temperature then the oil is probably contaminated, most likely with fuel oil.

These standards can be performed on any sample of oil, whether it is engine oil, transmission oil, an oil based additive, steering gear fluid, hydraulic oil, biodiesel or any other type of oil. The marine surveyor should know that there are other more specialised tests.

To confirm the results of the ferrous spectroscopy test, two other tests are commonly performed to analyse wear debris.

These are:

- **particle counting,**
- **analytical microscopy.**

Particle counting is actually a test for particle contaminant levels and not specifically wear debris. It does not distinguish between wear and dirt particles but, if it can be determined that nonferrous contamination has remained stable, then an increase in the particle count must be attributable to wear. A magnet can be used to modify the particle count to count ferrous debris only. There are various ways of doing that but essentially a magnet holds back the ferrous debris while the nonferrous debris is flushed from the sample after which a ferrous debris particle count is performed. Such particle counts are invariably reported according to ISO 4406:99. Other standards do exist but they are not as commonly used. ISO 4406:99 yields a three digit solid contamination code. The method of particle counting is not as

important as performing the test properly and it is important to note that only results from the same method should be compared. The particle count is an easy test to interpret, assuming the test has been correctly performed. This point is made because there are many factors which can negatively affect a particle count. An increasing count is an indication of an increased number of particles in the oil. Exception tests such as analytical ferrography or patch microscopy would then be used to qualify the type and source of the particle contamination.

Analytical microscopy is a technique used to qualify contaminants, including wear debris, in an oil sample. There are two commonly performed variations of this technique:

- **analytical ferrography,**
- **patch microscopy.**

Analytical ferrography uses magnetic fields to separate ferrous debris according to particle size. As the name suggests, the technique is biased to ferrous particles but some nonferrous particles are typically deposited on the substrate either via entrapment or by magnetic effects imparted to them by impaction of ferrous particles.

Patch microscopy, on the other hand, does not demonstrate a bias to ferrous particles. All particles above the membrane pore size are presented on a piece of filter paper, the filtergram, for examination. However, patch microscopy does not have the size separation attributes of the ferrography, so particle deposition is random. A modification of the patch test can be performed to analyse both ferrous and nonferrous debris separately. A magnet is used to hold back magnetic particles while a filtergram of nonferrous debris is prepared. Then a filtergram of the remaining magnetic debris is made.

In deciding on the correct microscopy test to perform, the analyst must make some judgment on the machine metallurgy and the nature of the contaminant being sought. It is not a good idea to perform ferrography on a worm and wheel gearbox where the majority of wear particles are likely to be cupric (thus nonmagnetic) in origin. Similarly, if a wear situation is suspected on a reduction gearbox with helical gear sets, then analytical ferrography will probably provide far better resolution than the patch. It is worth mentioning that for filtered oil systems, a ferrogram or patch which does not show abnormalities should be treated with suspicion. Assuming that there was a reason to proceed with the analytical microscopy in the first place, one would then expect to see problems. A good approach to filtered systems is to remove a section of the filter medium, wash it out in solvent and perform the microscopy on the extract. Each laboratory will have its own system for quantifying and reporting wear and contaminants in each of these tests. Interpretation is subjective and can be expensive to perform because it is labour intensive. Analytical microscopy is a powerful technique which should be used to confirm and qualify contamination and wear situations identified by the routine tests.

Infrared analysis is the second type of spectroscopy commonly found in a laboratory. Unlike elemental analysis, FTIR as it is known, provides information on compounds rather than elements found in an oil. FTIR measures several useful degradation parameters so is particularly useful in engine oil samples. Infrared analysis detects the presence of water and can also be used to identify oil base stocks. While the Inductively coupled plasma (ICP) spectroscopy measures emissions of radiation of specific wavelength in the visible and ultraviolet regions of the electromagnetic spectrum, infrared analysis measures the specific wavelengths of radiation in the infrared region. The various degradation by products and contaminants found in the oil cause characteristic absorptions in specific regions of the infrared spectrum. The higher the level of contamination in the sample, the higher the degree of absorption in the characteristic region. A plot of absorbance, transmittance, or concentration versus wave frequency is generated during the analysis of an oil sample and is called the infrared spectrum. This spectrum is subsequently analysed by specialized oil analysis software that yields measurements most commonly for soot, oxidation, sulphates, nitrates and water. Other compounds, such as additives, fuel and glycol can also be measured but for these an accurate sample of the new oil is needed as a reference. If no such reference sample has been supplied then readings of the latter parameters should be regarded with suspicion. The basic types of contamination that must be dealt with are examined below.

These are:

- **solids,**
- **moisture,**
- **condition caused.**

Soot and other Solid Contamination:

It is generally recognized, backed by numerous tests and studies over the last 40 years, that it is contamination generated in an engine that is responsible for the majority of normal wear, is within the 1 - 15 micron range. Also this small solid contamination contributes to accelerating Condition Caused Contaminants such as Oxidation, Nitration, Acid formation and more. Consequently, it is imperative that this contamination be removed from the system as fast as possible. The typical full flow filter cannot control 1-15 micron particles because of its porous design which is needed to supply the engine with a high flow rate of oil and UF filtration that is capable

of controlling solids in the 1-15 micron range and smaller should be used. Ultrafiltration (UF) is a variety of membrane filtration in which hydrostatic pressure forces a liquid against a semipermeable membrane. Suspended solids and solutes of high molecular weight are retained, while water and low molecular weight solutes pass through the membrane in a form of forced osmosis. The soot index is a linear measurement that measures the extent to which the oil has become contaminated by fuel soot which is an unwanted by product of combustion. The units reported depend on the spectrometer manufacturer. The measurement really applies only to compression ignition oil engines because the soot measurement on petrol engines is expected to be very low. In compression ignition oil engines, excessive amounts of soot can be generated by over-fuelling (air to fuel ratios), incorrect combustion temperatures, low operating revolutions, restricted intake and exhaust systems and faulty turbochargers. Dispersant additives are formulated in engine oils to hold soot in suspension. Unfortunately, there is a limit to how much soot a lubricant can carry. When the maximum amount is exceeded, sludge deposits start to form, which can harm the engine. The effects of severe sludging manifest themselves as increasing oil viscosity. These usually occur rapidly to the point where the oil can no longer be pumped and engine failure ensues. When interpreting the severity of the soot index measurement, the marine surveyor should take into account the soot readings on previous samples from the engine as well as the magnitude of the change in the oil's viscosity. It should also be noted that high soot loading can negatively affect the accuracy of other infrared measurements.

Other than soot, there are several other types of contamination that must be dealt with in order to extend lubricating oil change times requiring additional filtration to be installed and proper service intervals to be established to deal with contamination missed by the full flow filters and other types of contamination generated within the engine.

These types of contamination are explained below together with how additional by-pass filtration will effectively control them.

Moisture Contamination:

This form of contamination within the lubricating oil will cause viscosity increase, VI polymer decrease, TBN decrease, acid formation, accelerated sludge formation and corrosion of parts. To safely eliminate routine oil drains, e additional filtration that utilizes an adsorbent filter media which can remove suspended moisture from the lubricating oil must be used.

Water, when it contaminates hydraulic and lubricating oils, has a degrading effect to both the lubricant and the machine. Some additives adsorb to the water and are removed when the water separates from the oil. Others are destroyed by water induced chemical reactions. Water also promotes oxidation of the oil's base stock. It also causes rust and corrosion of machine surfaces and reduces critical, load bearing film strength and represents a real risk to the equipment and should be aggressively controlled. Water coexists with oil in either a dissolved state or a free state. When single water molecules are distributed throughout the oil due to the water's chemical attraction to the fluid, it is in a dissolved state. Numerous factors such as viscosity, base stock type and condition, impurities and additive package determine the volume of water that the oil will dissolve and the dissolved volume is a function of the oil's temperature and relative humidity. If the oil has dissolved all the water it can at a given temperature, it is said to be saturated. Dissolved water is very difficult to place under control and does only minimal harm to the machine and the oil.

When the oil is saturated and experiences a temperature decrease, it reaches a point below which water will condense into a free form. This is called the dew point temperature. Free water is the other state in which water coexists with the oil. Water is in a free state when undissolved globules of water are physically suspended in the oil. Large globules tend to separate to the bottom of the reservoir or sump. However, in mechanical equipment, the shearing forces of gears, pumps, bearings, etc., tend to crush the water into such small globules that a stable emulsion exists. An emulsion is the stable state of physical coexistence of chemically insoluble substances such as oil and water. Additives and impurities that lower the oil's surface tension can serve as agents to strengthen the emulsion. Free and emulsified water pose the greatest risk to the machine and the lubricant and they should be placed under strict control.

There are a number of ways to measure the presence of water in oil but most of them are complicated, expensive or difficult to use in the field because they employ wet chemistry. An easy way to detect the presence of free and emulsified water, the most dangerous forms of water in oil, is with the hot plate crackle test. This simple, tried and true method alerts the marine surveyor to the presence of any free water.

Coming up in
PART 2:

Major condition caused contamination: acid, oxidation, nitration.
Lubricating oil on site tests: the feel test, the drop test, the crackle test.... **and more!**

"AN INSIGHT ON BULK CARRIER TRIMMING"

BY **CAPT REAZ SHAHID** AFFIIIMS

BULK CARRIER loading operation encompasses numerous activities involving mathematical calculation and or physical verification. However, certain exercises are purely based on calculation; physical verification is not required or not possible (BM, SF etc.) to comply with commercial and or regulatory requirement. Trimming of a bulk carrier is such an activity where expected result is calculated but physical verification is required to confirm that desired outcome has been achieved. Otherwise, it usually has serious commercial and regulatory implication especially when some restrictions are imposed on loading operation from the terminal e.g. loading operation cannot be ceased till belt is clear of cargo or minimum cargo that can be loaded is 500 MT etc. At times it turns out to be very complicated as to determine the trimming quantity through mathematical calculation solely. Successful denouement of loading operation contingent upon correct determination of trimming quantity and therefore, trimming is a very important operational activity on board a bulk carrier. Recently I had to go through some trepidation in order to ascertain cargo quantity while trimming a cape size ore carrier fitted with 6 cargo holds and this article is predicated upon it. During the intermediate draft survey before trimming, we noticed about 8.4 cm hog as shown.

DRAFT BEFORE TRIMMING:

Observed draft	*Port*	*Stbd*	*Mean*
Ford	17.90	17.85	17.875
Aft	18.07	17.98	18.025
Mid	17.92	17.82	17.870

Corrected Draft	
F Perp draft	17.871
A Perp draft	18.037
Mid corrected	17.870

Hog(-) / Sag(+)	-0.084 m

FIGURE 1

As per original loading plan, cargo hold no.6 & 2 was assigned for trimming of the vessel and maximum sailing draft (MSD) applicable for the vessel was 18.33 m, i.e. any of the three drafts (Forward, Aft & Midship) should be maximum of 18.33 m. Based on calculation shown below (calculated using trimming table), anyone would have decided to load 6300 MT to reach MSD of 18.33m.

TRIMMING CALCULATION:

Max Draft	18.330	**Balance to go**	
Summer/mid	18.330	7705	
F & A Draft	18.330	6298	
1/4 Mean	18.330	7354	

LBP	318.000
LBM	288.000

Cargo Requirement 6300

			Fwd	**Aft**	**Mid**	**Trim**
			17.871	**18.037**	**17.870**	**0.166**
Mid #	0	No.4	0.000	0.000	0.000	
			17.871	**18.037**	**17.870**	**0.166**
Aft #	2486	No.6	-0.149	0.447	0.148	
			17.722	**18.484**	**18.018**	**0.762**
Fwd #	3814	No.2	0.610	-0.153	0.228	
			18.332	**18.331**	**18.246**	**-0.001**

FIGURE 2

Displacement is extracted from hydrostatic table based on 'quarter mean draft' and 'quarter mean draft' is derived from the formula: (Forward corrected draft + Aft corrected draft + 6 X Midship corrected draft)/8. If vessel's MSD is controlled by Dynamic Under keel clearance (DUKC) applicable for the vessel, maximum cargo lift can be achieved through loading the vessel to her even keel draft and without any hog or sag. Maximum cargo lift reduces when vessel suffers hog or sag and in case of hog, this loss is more significant. If MSD is controlled by load line mark and if there is no DUKC issue, only sag will reduce maximum cargo lift. Contrary to that hog will increase and this can be confirmed through analysis of aforementioned formula for 'quarter mean draft'.

Looking at the intermediate draft as shown in FIGURE 1, Master requested me to change the trimming hold and instead of cargo hold no.6, to load in cargo hold no.4. According to him, if we use cargo hold no.6 & 2 for trimming, vessel's hog will increase and consequently, cargo lift will be further reduced; which means loss of freight. Though I did not acquiesce with Master, but I had no documented evidence to defy his claim. In my opinion, considering huge size cargo hold of ore carriers, the possibility of increased hog could be eliminated through loading in after part of cargo hold no.2 and forward part of cargo hold no.6. However, it is always the ship's call and I had no other choice but to accept the Master's proposal. Now the question is how much cargo should be loaded in cargo hold no.4 & 2 to reach MSD of 18.33m. Here, Master refrained from affording any decision and was relying on my experience to decide on trimming quantity. According to calculation shown in FIGURE 3, distributing 6300 MT between hold no.4 & 2 is likely to bring the vessel's draft to her MSD of 18.33m.

TRIMMING CALCULATION:

Max Draft	18.330	**Balance to go**		**LBP**	318.000
Summer/mid	18.330		7705	**LBM**	288.000
F & A Draft	18.330		6298		
1/4 Mean	18.330		7354		

Cargo Requirement 6300

			Fwd	**Aft**	**Mid**	**Trim**
			17.871	**18.037**	**17.870**	**0.166**
Mid #	0	No.2	0.000	0.000	0.000	
			17.871	**18.037**	**17.870**	**0.166**
Aft #	4558	No.4	0.182	0.365	0.272	
			18.053	**18.402**	**18.142**	**0.349**
Fwd #	1742	No.2	0.279	-0.070	0.104	
			18.332	**18.332**	**18.246**	**0.000**

FIGURE 3

But can we rely on this calculation? My answer to this question is "NO". I have been doing draft survey since 1995 and since 2014, I am collecting data to identify the change of hog or sag while using different pair of cargo holds for trimming of a cape size bulk carrier. In fact, I am proactively doing a research and the research question at this stage is "What is the effect on hog or sag of a cape size bulk carrier for loading cargo in different pair of cargo holds during trimming of a vessel" If we load 6300 MT and trim the vessel with cargo hold no. 4 & 2, my experience suggest that vessel would have never reached to MSD of 18.33m. It is relevant to mention here that minimum quantity that can be ordered is 500 MT. Any short load quantity which is less than 500 MT on completion of trimming pour also cannot be ordered later and subject to dead freight claim by Master.

At that stage the insight which I have developed through data collection for my research rescued me from the dilemma. I used the hindsight to determine cargo quantity to be loaded so that she can reach to her MSD and at the same time minimize the loss of freight resulting from hog.
Figure 4 indicates that if we distribute 6800 MT among hold no.4 & 2, vessels fore and aft draft will exceed MSD applicable for the vessel. However, on completion of loading, we found that actual draft is less than calculated draft and also meeting the MSD requirement. Hog of the vessel was also significantly reduced and so the loss of cargo i.e. loss of freight, which is clearly evident from Figure 5.

TRIMMING CALCULATION:

Max Draft	18.330	**Balance to go**		**LBP**	318.000
Summer/mid	18.330		7705	**LBM**	288.000
F & A Draft	18.330		6298		
1/4 Mean	18.330		7354		

Cargo Requirement 6800

			Fwd	Aft	Mid	Trim
			17.871	**18.037**	**17.870**	**0.166**
Mid #	0	No.2	0.000	0.000	0.000	
			17.871	**18.037**	**17.870**	**0.166**
Aft #	4975	No.4	0.199	0.398	0.297	
			18.070	**18.435**	**18.167**	**0.365**
Fwd #	1825	No.2	0.292	-0.073	0.109	
			18.362	**18.362**	**18.276**	**0.000**

FIGURE 4

FINAL DRAFT:

Observed draft	*Port*	*Stbd*	*Mean*
Ford	18.32	18.30	18.310
Aft	18.34	18.32	18.330
Mid	18.32	18.28	18.300

Corrected Draft	
F Perp draft	18.309
A Perp draft	18.332
Mid corrected	18.300

Hog(-) / Sag(+)	-0.021 m

FIGURE 5

Trimming table included in the hydrostatic booklet always shows linear change of draft. It does not take into account the effect of the external and internal factor on the draft and therefore, actual draft at times does not match with calculated draft. This discrepancy mostly evident when trimming is being carried out using extreme pair of cargo holds or the cargo holds which are close proximity to midship. As I am regularly doing draft survey, very often I find ship staffs are not aware of this anomaly and always come up with a proposal to load inappropriate trimming quantity without knowing the consequence.

All tanker vessels maintain record of Vessel Experience Factor (VEF) and this is used to identify loss or gain of cargo between load & discharge port and determine likely trend. Similarly, ship staff on board all bulk carriers should also compare between calculated draft and actual draft after loading trimming pour at each loading port and keep a record of it. Format for record keeping can be prepared based on detail research.

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THE IMPORTANCE OF UNDERSTANDING ENCLOSED SPACE ENTRY

BY **CAPT MICHAEL LLOYD**
RD**, MNM, FNI

Enclosed space entry and the resulting deaths caused by poor procedures and/or lack of knowledge each year is a vexing subject and one that The Report Magazine has highlighted before. However, it seems insufficient progress is being made in this area and the number of casualties remains stubbornly high. Capt Michael Lloyd has become passionate about this subject and is now something of an authority in the field. In this article, he shares his current thoughts on the matter and offers some practical tips and advice for surveyors.

Accidental death on ships is tragic, wasteful and distressing, especially when following the correct procedures, or having the right equipment could have avoided the death. So much has been said about enclosed spaces that it would seem there is nothing left to say. There are many booklets, posters, videos, ISM statements and safety meetings; so why are people still dying?

The initial problem with enclosed spaces is in the definition and the difficulty of people to realise that in fact, the entire ship is one huge enclosed space divided up into many separate spaces.

We also have to allow for the changing nature of some of the spaces. In bad weather vents on the forecastle and sometimes the main deck will be covered. In this way spaces that are normally safe and entered without second thought now become hazardous, and more so dependant on what is stored there and how it affects the oxygen in the compartment. There are numerous cases of ships sailing for weeks without opening their hatch access cofferdams. Even the main deck becomes an, 'enclosed space' for definition of heavier than air gases that can escape on some types of vessels.

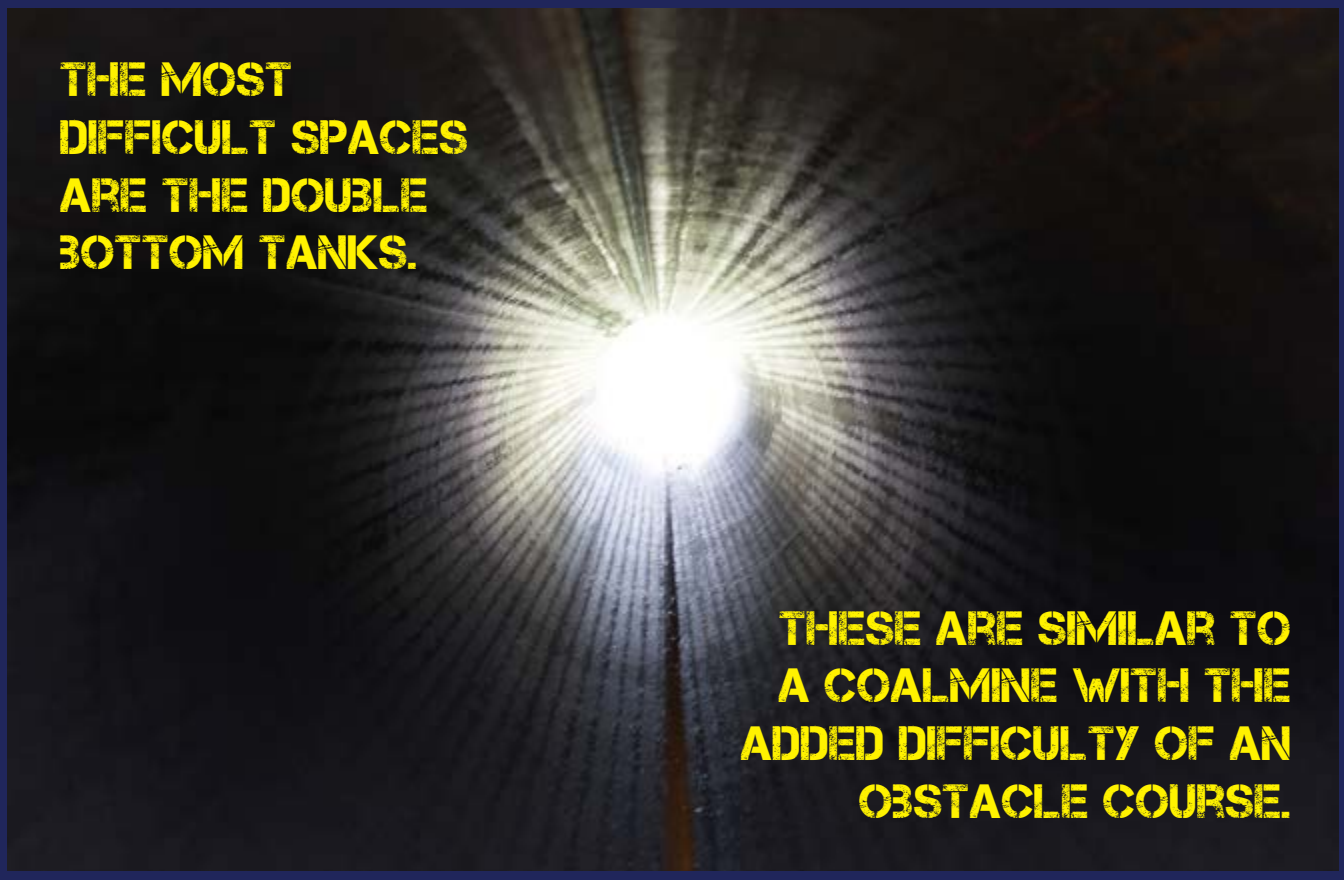
The human being requires an atmosphere of 20.93% Oxygen and 79.04% Nitrogen with the remainder being Carbon di-oxide. Any space that has less that 20.8% oxygen is a potential hazard that could eventually be fatal to any human. Now as we know, most substances give off gases of some kind or other, even the bulkheads of an empty space can do this through rust and paint, therefore any space that has been closed for some time without any ventilation must be considered as a hazard.

Perhaps one day all compartments which have no permanent natural ventilation will be fitted with a gas detection meter that will show the reading from the outside in order that it can be checked before anyone enters, but until then we are presently reliant on a rigid safety assessment system being in place to ensure that this check is made.

The principle must be that all spaces that have been closed for any period of time, especially those with seals such as tanks, stores with weather or storm doors are potentially dangerous.

The most difficult spaces are the double bottom tanks. These are similar to a coalmine with the added difficulty of an obstacle course. They are unlit, often mud covered,, honeycombed with steel subdivisions that separate the tanks into small separate compartments with often only four to five feet head room, barely enough space to turn around and each one entered through holes of around 18 inches in diameter. On larger vessels these spaces can span hundreds of feet.

Also in such tanks the problem of rust which depletes the oxygen exists. Not just large ships either. One 500 dwt ship took 5 tons of rust out of two after ballast tanks while engaged in cleaning the tanks.



EQUIPMENT

Proper equipment for entering and rescue from these spaces is essential.

Obviously, before entering such a space, the normal precautions should have been taken. The tank will have been ventilated for at least 24 hours, and all the checks will have been made with a gas detector which will check for oxygen levels and gases. Unbelievably, it is only last year that these became mandatory.

The problem with this is the oxygen testing is done at the entrance. What is the state of the air in the centre? Let us say that before the surveyor boards, the crew make their test reading and it shows a safe atmosphere at the entrance point. As far as they are concerned, that space is safe to enter, which doesn't do the surveyor much good when he collapses half way through the space.

RESCUE

Consider that any entrants or rescuers will have to go through lightning holes often less than half a meter diameter. The only SCBA sets most ships carry are designed for fighting fires. There are SCBA sets designed for such tight spaces but there is no SOLAS requirement to carry them and very few ships have these. This makes the procedure on many ships involve trying to put the BA set on when in the space while hanging onto a ladder. Imagine the time it is going to take with such equipment. That is of course assuming that the ship has a properly trained rescue team which the vast majority does not.

STRETCHERS

The stretchers we have are often not designed for such spaces and require four persons to carry them, indeed the design of many of these goes back a hundred years. Yet ashore there are stretchers used by rescue organisations that can be used in such spaces, that can be manoeuvred through small holes and only require two persons to carry them. Not required.

STANDARD SHIPS BREATHING APPARATUS

If the space is not easily accessible, such as a deep tank or a double bottom, there are a number of problems to deal with. If there are manholes or lightening holes to go through, then as well as ensuring that the casualty has a constant air supply, it will require a minimum of two strong persons in BA sets to get an unconscious person through these. The difficulty could be increased by the necessity of having to remove the BA sets in order to pass through the holes. Increased exertion will require the tanks to be supplying full air and this will be using up the air available very quickly therefore spare tanks will have to be kept ready. Alternatively airlines can be used instead of BA sets but this has the risk of entanglement if various obstacles have to be negotiated. The chances are that by the time such a rescue attempt reaches the casualty, it will be too late.

COMPRESSED AIR BREATHING LINES

In spaces where it is not possible to enter using the standard SCBA sets, there are only two alternatives and that is to use a SCBA set with small cylinders, which will limit the rescue time available, or to use on outside cylinders with breathing lines attached.

The supply of air can either be by a dedicated on board airline, a compressor or from cylinders on a transportation trolley. One advantage is that a number of rescuers can use the same system. Provided there is enough air supplied. Again, however the time element comes in to play.

RESUSCITATORS

This would then indicate that the best method or rescue is to treat the casualty immediately the rescue party reaches him. This requires a resuscitator. It is portable and

small enough to be placed onto a casualty's chest on a stretcher to ensure a constant supply of air throughout the rescue. But how many ships have one? There is no legislation from the IMO requiring this essential equipment.

TRIPODS

For a vertical access point, these are essential in retrieving a casualty yet again not many ships have one or have training in their use. All too often ships are reliant on an improvised cargo residue hoist rather than a dedicated rescue device. On a very recent casualty involving a well-known British company, all they had was a length of rope. No training, no rescue equipment, and no hope for the two casualties. I suggest no safety culture in the office ashore either.

Tripods have self supporting anchors and often if there is insufficient space above an entry point, the winch arrangement can be disconnected from the tripod and an eye bolt or a strop above the entry point can be used. Quadpods are stronger and more versatile than tripods. The fourth leg allows them to straddle manholes and also gives them more stability on a rolling deck. A typical one is light with aluminium legs and a SWL of around 300Kg. Again, in standard use ashore in industry.

TRAINING

Finally and most important, on the majority of dry cargo ships, those entering the tanks have to rely on crew who have had no formal training to rescue them and those directing the attempt also having had no formal training in enclosed space rescue management. There are many courses available and in occupations ashore where personnel are working regularly with such spaces, training in entry, rescue management and rescue is mandatory. No reputable land based company would consider anyone entering such spaces without this training being in place.

SPECIFIC TRAINING

Although required in many industries ashore, formal training in enclosed space entry and rescue is as yet not required for seamen on ships other than tankers and chemical carriers. Yet the Marine Accident Investigators' International Forum have found that over 75% of deaths in these spaces occurred on ships that were not tankers or chemical carriers.

In their findings, which will not come as any surprise to those at sea, they list amongst the areas of concern;

1. lack of knowledge, training and understanding of the dangers of entering enclosed spaces.
2. Personal protective Equipment or rescue equipment not being used, not available of appropriate type, improperly used, or in disrepair.

This means that any ability and knowledge for this has to be taught on board often by those with no experience either.

MRSL, formally Mines Rescue Marine have specialised solely in Marine entry and rescue for several years and have devised a series of courses as follows;

LOW RISK CONFINED SPACE

Target Audience

Aimed at persons who may be lone workers.

Objectives

- Prepare to work safely in low risk confined spaces
- Enter and exit confined spaces safely
- Use equipment and tools safely and in accordance with manufacturers' specifications
- Follow procedures and work safely
- Deal with emergencies

MEDIUM RISK CONFINED SPACE

Target Audience

Aimed at persons who may be involved in confined spaces with difficult entry / exit, may need to use monitoring equipment and escape breathing apparatus.

HIGH RISK CONFINED SPACE

Target Audience

Aimed at persons who may be involved in confined spaces which involves difficult entry / exit, and wearing of self-contained open circuit breathing apparatus when work is being carried out within the confined space

EMERGENCY RESCUE & RECOVERY OF CASUALTIES FROM A CONFINED SPACE

Target Audience

Aimed at persons who have been trained to work in high risk confined spaces, and who may form part of a team of rescue workers who may need to enter and assist persons to exit the confined space in the event of an emergency.

MANAGING CONFINED SPACES

Target Audience

Supervisory staff, key permit/ safe systems of work personnel or anyone who needs an appreciation of safe entry into confined spaces.

Objectives

- To give candidates knowledge of risk assessments, safe systems and categorisation of confined spaces.

THE MANAGEMENT OF ENCLOSED SPACES

At sea, this is not yet seen as a problem that assists with the prevention of accidents in these spaces yet as has been shown, in many cases, it is the lack of knowledge of a space that has contributed towards an accident and hindered the rescue attempt.

As many surveyors will know, each space on a ship can present different problems. Ladders may have rungs missing. One entry point may be difficult and another easier. Walkways may be unguarded in one space but guarded in another. Ventilation and lighting differ. There are so many variables yet too often we find that a risk assessment is made to cover all spaces and no detail of individual spaces and their problems recorded.

This meant that when entry was required, specially by those unfamiliar with a space, there was no information that could be given prior to entry to enable that person to understand what particular problem would be encountered.

Based on MRSL's experiences on many ships and rigs, a computerised management system has been designed to enable all such information to be recorded on each space and better still to allow such information to accumulate over time and not leave the ship with each change of personnel.

Better still the required documentation for entry such as work permits can be printed out together with a report of any particular space and forwarded ahead of the ships arrival at a port where the space will be entered. This enables those about to enter have a preliminary report on the space and any pertinent information. If there is any perceived problem it at least allows this to be discussed with the ship managers prior to the ships arrival and, if necessary either rectified or precautions such as a standby rescue team or specialist equipment be supplied.

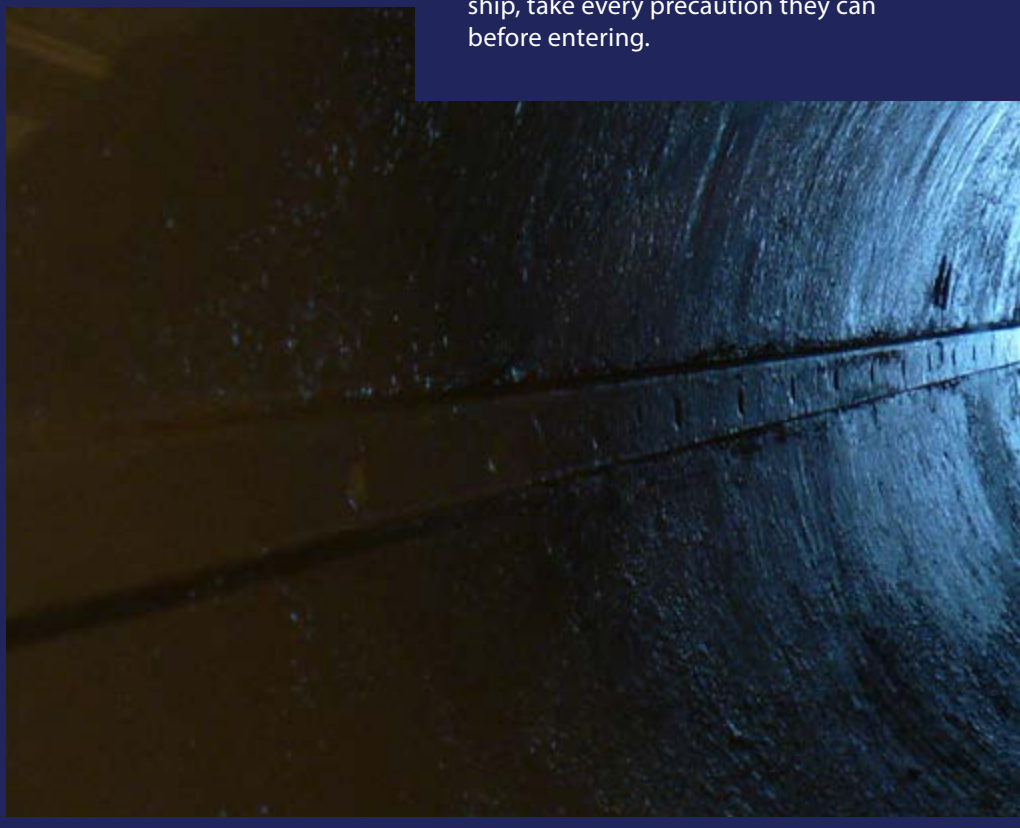
There is however a motto beloved of ship owners and managers. 'If it is not legally required, then don't supply it.'

The answers, as always, are in equipment and training. Safety conscious companies will do what they can but it is always the same few companies that do this while many do not. If a ship does not have the correct equipment and there is a serious doubt that a rescue can be affected from a space that crew are entering, then if a full check of the entire space cannot be carried out properly, it must be questioned as to why persons are willing to enter that space, regardless of the seemingly urgency of the task.

Those most at risk are the shore personnel, such as surveyors, who attend a vessel for a few hours, with no knowledge of that specific ship and the spaces, and have to enter spaces and are reliant on the crew to respond aptly and promptly in an emergency.

I remember a time in my career when I was trading regularly to the Gulf and being appointed ashore there for some time. During this period I was asked to do surveys on behalf of a classification society and boarding a number of ships, had a chance to see the other side of the coin. In some cases, when I had to survey a tank, they could not even find the correct entry point never mind prepare the tank for inspection. On one ship I walked off and refused to carry on. When the class surveyor tried to urge me to go back, I suggested that he do the survey instead.

It is our experience in MRSL that there are very few ships that have adequate rescue equipment or the training in rescue. If this is the case, it makes it essential that those entering these spaces, especially surveyors who are completely reliant on the safety regime of the ship, take every precaution they can before entering.



A brief checklist would be as follows:

THE SURVEYOR

PPE equipment;
- Safety helmet with lighting and comms.
- Gas detector.
- Safety Harness
- Emergency Escape Breathing Apparatus.

THE SHIP

- Tripod or winch arrangement for recovery
- Resuscitator
- Two BA sets suitable for entry at the entry point.
- Stretcher suitable for space being entered..
- Guardian at the entry point,
- One responsible crew member to accompany the person entering.
- Rescue party of at least two persons capable of entry and carrying a stretcher.

Viewed Documentation;
- Risk assessment of the space
- Work Permit
- Record of ventilation
- Record of gas testing of the space

A surveyor may consider this excessive. If this is so, then he can decide what he requires, is it his life? However, I would point out that if I were the Captain, I would insist that this be followed.

As all of us concerned with ships know, the standard of professionalism and seamanship is in decline, and the manning is minimal. These factors may lead such precautions to be declined, especially as the manpower requirement could well take all the deck crew away from any other work. That is not the surveyors concern, going off the ship safely is, and that of course is his option.

The more those visiting a ship from ashore require that the safe and proper precautions that they would expect ashore are taken on board, then the more the ship owners and managers will be required to treat the possible dangers of these spaces with the seriousness they deserve. As they find that the delays incurred by surveyors refusing to enter a space or the cost of hiring standby rescue teams and equipment from ashore accumulate, they will realise that it is better to train and have the correct equipment and procedures on board.

It is surely ridiculous that what is considered to be normal precautions to take ashore in industry is considered not to be required on ships. The sooner we all work together on this problem, both those ashore and those at sea, the sooner we will solve this last vestige of safety hazard deniability in the shipping companies and in the IMO, where the real responsibility lies for the failures to stop the unnecessary deaths that are occurring with such frequency in these spaces.

Looking good on the web

and an introduction to search engine optimisation

As part of an ongoing, occasional series of articles dedicated to business management skills, IIMS CEO, Mike Schwarz, looks at what makes a good web site, things to avoid and gives a brief introduction to the mysterious world and art of search engine optimisation, the means by which a web site can be forced to the top of search engine rankings.

BY **MIKE SCHWARZ**

A web site and search engine optimisation (SEO) are inextricably linked, but more on the latter a bit later in this article.

Quite simply, your web site is one of the most important weapons in your marketing armoury and speaks volumes about you, your business and its services and your personality.

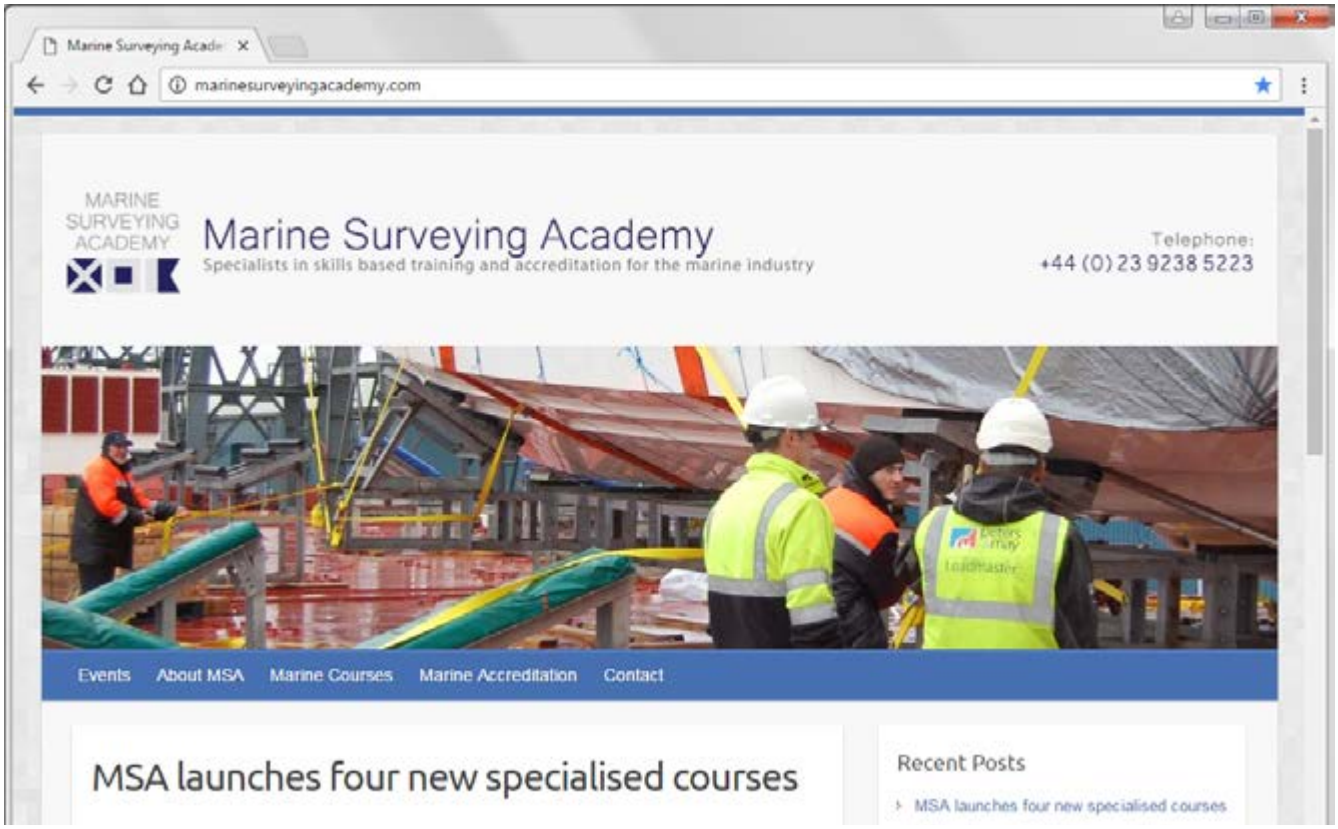
In this day and age it is surely unthinkable that any small business, no matter what industry sector they operate in, does not have a presence on the internet? Ten years ago it was fashionable (and expensive) to pay an expert to develop your web site. But these days things have changed. Web site designers are plentiful and the cost to develop a site has plummeted as a result. And if you have some basic IT skills it is not hard to develop your own site using the free web software that is readily available. Just make an internet search and you will find many free web site platforms such as WordPress, Wix and Webly to name but three.

So what makes a proficient web site that will encourage people to visit and stay on it?

The layout and architecture are of primary importance. Good websites are well organised and should follow a logical structure. They are not cluttered and should be purposefully built around the target audience and market. White space is a positive thing.

EASY TO USE SITE NAVIGATIONS

It is essential that any web site is easy to get around. Site visitors must be able to find what they



need fast. You only have a few seconds to keep their attention before they move on elsewhere.

TOP QUALITY SITE DESIGN

Make your site memorable by making it look excellent and classy. Use quality images and be prepared to pay a small price to obtain top quality photos for your main site pages. The small investment will be beneficial.

WRITE ORIGINAL CONTENT

Think about the web sites you like and use often. Generally people are attracted to a site because of the depth and quality of the content. And remember, content is king always! An effective web site will focus on the needs of their audience and not what you are selling.

SPEED TO LOAD

This is a no brainer. Ensure your site loads fast and if it does not then take action to rectify the problem. Web hosting is cheap and plentiful.

EASY TO READ

It is a fact that most people do not sit down to read a web site. They scan them, sometimes when on the move. Your site should look aesthetically pleasing and the contrast you choose on the page will help to make it easy to read too. Generally speaking you are advised not to use a black or very dark background colour. Nor should you use a white background with yellow text for example. It just requires a bit of thinking about. High quality, competently designed web sites use headings to break up the content in sections and they provide small blocks of text to help visitors read more easily.

TRACKING

It is easy and worthwhile to understand who is visiting your web site. Metrics and site analysis give an amazing insight into what is happening in the back end of a web site. Good sites measure their traffic and marketing efficacy. Tracking software is plentiful and free to obtain.

COMPATIBILITY

It is vital to make sure your web site works on all platforms and devices that are available these days. Designing a site that can only be viewed on a PC means you are missing a great opportunity and potentially denying thousands of potential visitors from coming to you. So your site must be visible on all normal operating systems and in PC, laptop, tablet and mobile formats.

UNDERSTAND HOW PEOPLE VIEW WEBSITES

The Gutenburg diagram (see image) explains the area of a web page and how it is viewed.

PRIMARY OPTICAL AREA

The higher left portion of the page is the user primary focus. This is where the eyes will automatically focus regardless if the site visitor is searching for something, wanting to read, or just scanning the page for information.

STRONG FALLOW AREA

The second stage of the reading habit is moving to the higher right portion of the page; you can think of it as a follow up from the left portion but less important. It's not a good idea to break the reader's experience created from the starting point. What that means is if you have a call to action in this area the user will stop at this point and act.

WEAK FALLOW AREA

The lower left portion is the blind portion of the Gutenberg Diagram. Although it is readable the user will not give much importance to content in this area of the web page.

TERMINAL AREA

When the user reaches the lower right portion of the page there is a break in the reading, or page scan process and the visitor will need to take an action. This is the perfect place on the page to insert call to action buttons and links.

So, we have established that the left side of the page gets more attention than the right. Most people read from left to right.

This is another reason why the left side of the web page gets more attention. Research shows that web users spend 69% of their time viewing the left half of the page and 31% viewing the right half.

PEOPLE READ IN F-PATTERNS

As stated previously, most people do not read a web page, but instead they scan it. One study concluded that on average only 28% of the text is read on a page. Eye tracking software shows that users often read website content in an F-shaped pattern: two horizontal stripes followed by a vertical stripe. Bear this in mind when planning how your pages should look. And if you have a vertical menu, put it on the left. That said, navigation placed at the top of a home page still performs.

SO HERE ARE A FEW POINTERS TO SUM UP...

- People start viewing a website from the top left corner.
- People only scan the lower parts of your website and do not read it.
- The site menu works best when placed at the top of the site.
- Short paragraphs will be more effective than long ones.
- Headlines draw attention.
- Visitors will spend more time looking at menus and buttons than other parts of your web site so make sure your navigation is clear and efficient.
- Text attracts more attention than pictures.
- Readers dislike banners and pop ups.
- Fancy fonts are a waste of time.
- Big pictures attract more attention than small ones.
- Lists are better at keeping your reader focused than large paragraphs.
- White space and white page background is recommended.

Listed below are some reasons and examples why people will not spend time on a web site.

- Autosound is really not essential. To come into a site to be greeted with a wall of sound is not pleasant, even if you like the music that is blaring out of your screen at you.
- Pop-ups are not good. Leave them out. People do not like them.
- Sites that are slow to load. If people have to wait and have a fast broadband connection, imagine their frustration when a site does not load fast! In this day and age there is no excuse.
- Poor navigation. A badly architected site will turn people away. The navigation through any web site should be intuitive and straightforward. Make the content easy to get to.
- Missing or hard to locate key information is hugely frustrating. You have snared a potential customer and then they cannot find the telephone number to call or address to email. Maddening.
- Instant demands to register your details. A big no no. Let people browse your site before you make demands for their email address.
- Things that flash on a web page. Put simply, people do not like them.
- Bad grammar and spelling mistakes. This is so obvious yet it remains an issue. It is about attention to detail and if you cannot get your home page right, it speaks volumes and gives a clue to what could lie ahead. Typos and poor grammar do not send the right signals to the visitor. There are literally no excuses. This is about attention to detail, as much as anything. If you're not bothered about that kind of thing then what kind of message does it give out?
- No 'About' page. People want to quickly and easily understand what your business does and how it may be able to help them. Make it easy.
- Usual normal language. Do not speak in jargon.
- Sites with no discernible personality. Even for an organisation that has a mundane product or service, the web site does not have to reflect that. A site does not need to be dull because what the company does is boring. Good quality, impactful images and well written copy will overcome this.
- A site that is hard to read for example, dark blue background pages with orange text are not good. Keep your site clean, crisp and contemporary.

Eye tracking software shows that users often read website content in an F-shaped pattern

Understanding the basics of search engine optimisation (SEO)

A great, well laid out web site with excellent content and no visitors is an invisible website. Sure SEO is a buzz phrase, but in essence SEO is the process by which you bring targeted traffic to your site and it is something you can acquire enough knowledge about to do much of it yourself should you so choose. Targeted is the optimum word in that last sentence. You really do not want all and sundry on your site. It is about bringing potential clients to your site who are looking for your services, who will hire you and pay for them.

SEO is about keywords, the words you choose to describe your business. It is those keywords that will bring people to your site and raise you up in the search results.

The first thing is to try and understand how your web site currently performs in search engine rankings. Have you any idea? There are several free page ranking tools that you can use to help you.

It's also important to check your referrer log regularly. This will help you to know where your visitors are coming from and which search terms in particular they are using to find your web site.

And now back to the aforementioned keywords. You should be conscious of placing appropriate keywords throughout every page of your site, including the content, the page URL's and even the captions on any images too. Think about what words people might use to find your web site. Then make sure you sink them in. It is not just a single word too. It could be a short phrase made up of several words. Just one word of caution though. If you over populate your content with the same keyword, your site will become labelled as a 'spammer'. The result? Search engine spiders will simply ignore your site. So be careful and as a rule of thumb, 3% to 5% of your content as a keyword or phrase is plenty.

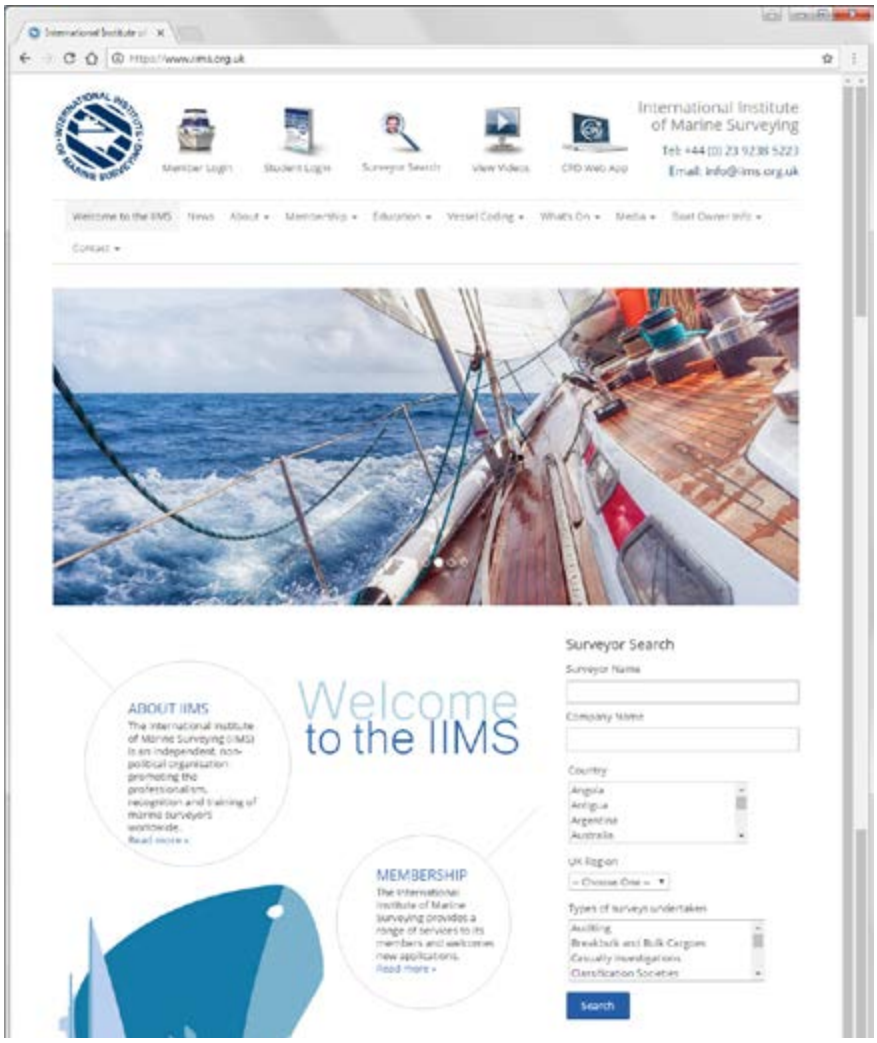
A very basic, yet effective SEO strategy is to create internal links into your site. It is a simple way of boosting traffic and getting people moving around your site. So ensure you have a sitemap, which is simply a page that lists a link to all other pages on your web site. This makes it very easy for search engine spiders and the easier you make it, the better your rankings are likely to be.

Creating search friendly URLs is of critical importance – these are the page descriptors at the top of every web page. A search engine's job is to feed back the most relevant information to match what the searcher is looking for. So the URL needs to tell the search engine what is on that page and no surprises. Consider these two URL's:

http://www.iims.co.uk/64592/19845/5694.htm

http://iims.org.uk/membership/membership-benefits

It is plain to see which one will excite search engines more.



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NEW PRODUCTS

New Products is a new feature for the Report Magazine. Each quarter we will bring you an update on some of the new products and innovations to hit the boating, shipping and maritime industry.

Unique decking system sees an uplift in business

Esthec Sensor Deck, the unique decking material that detects every motion on board, has seen an increase in demand since its launch last year.

The decking acts as a nifty type of deck lighting, a security system and also helps shipowners to save energy on board. When it comes to deck lighting, patterns, symbols and text can be created on the deck, extending the freedom of design for shipbuilders and designers.

http://www.esthec.com/en/news/esthec-sensor-deck-a-world-of-possibilities.html

Wärtsilä pioneers new prop design: EnergoProFin

Wärtsilä EnergoProFin is a state-of-the-art energy saving solution that increases propeller efficiency and creates fuel savings of up to five percent. The solution is now available for both controllable pitch propellers (CPP) as well as fixed pitch propellers (FPP), yielding the same results in both propeller options. Offering the solution for technologically more challenging CPPs was previously considered impossible in the industry, but is now made possible due to development work by the Wärtsilä hydrodynamics team.

The Wärtsilä EnergoProFin is a specially designed propeller cap with hydrofoil section fins on the downstream side of the propeller. It is an innovative energy saving device that can significantly reduce a vessel's fuel consumption as well as its emission levels.

The Wärtsilä EnergoProFin, which rotates with the propeller, is optimised for propulsion upgrades of existing vessels and as such can be easily mounted without the need for complex structural changes. The device is designed to minimise the losses in the vortex leaving the propeller by transforming rotational energy into effective thrust, resulting in an efficiency increase that brings up to five percent fuel savings.

http://www.wartsila.com/media/news/02-12-2016-energy-saving-wartsila-energoprofin-propeller-cap-increases-efficiency-of-controllable-and-fixed-pitch-propellers

Suzuki launches new remote control box

A new binnacle-mount mechanical remote control box has been launched by Suzuki at the Paris Boat Show. Following feedback from its partner boat builders and end-user customers, Suzuki introduced significant modifications to make the control box easier to fit and easier to use.

The new design aims to improve user-friendliness by using enhanced tactile materials on the throttle lever as well as a specially chamfered shape. This allows the lever to feel more comfortable to use even for long periods of time, and provides easier gripping in all conditions, aiming to improve safety overall.

In addition, the movement of the throttle is designed to be smoother while the power trim and tilt button is located at the top of the lever so that it is within easy reach. This is in order to give the driver greater control,

http://www.maritimejournal.com/news101/power-and-propulsion/suzuki-launches-new-remote-control-box

Software will help boatbuilders comply

The International Council of Marine Industry Associations (ICOMIA) has partnered with CE-marking consultancy, CEproof to produce the ICOMIA Technical File Generator (TFG) – a software package designed to simplify the process of creating and managing compliance documentation required by the Recreational Craft Directive.

The new RCD came into effect on January 18 with Annex IX stating that technical documentation relevant to the assessment of the craft must be readily available and contain a detailed description of the craft and all its systems.

In addition, says ICOMIA, as many ISO standards have been updated to reflect the new RCD, the files of all existing boats and products must also be updated.

The software allows users to enter the key statistics of their craft and obtain a list of all applicable standards as well as the detailed requirements of each of these standards.

http://www.boatingbusiness.com/news101/industry-news/software-will-help-boatbuilders-comply

Idwal Marine launches first online ship inspection platform

Idwal Marine, a provider of ship inspection services, has launched a free Cloud-based online platform to provide quotations and deliver reporting for vessel condition, pre-purchase and pre-charter inspection services.

The online platform provides access to a global network of ISO-certified ship inspectors along with vessel condition reports to allow users to assess the condition of shipping assets.

Users can track the progress of each inspection performed on a vessel, with photographs and other supporting documents, and download full condition reports through the online interface. The platform also provides complex technical analysis for Idwal customers in reports for benchmarking against a new 'at-a-glance' ship grading system.

http://www.idwalmarine.com/

SOLAS certification granted to Life Cell

Australia headquartered Life Cell Marine Safety has announced that its buoyancy device, Life Cell, has achieved SOLAS certification. The certificate of Type Approval as a Novel Life-Saving Appliance was granted by Lloyds Register under the IMO resolution A.580 (13) and the LSA code regulation I/1.2.

Under the rules and regulations, Life Cell is classified as a Throwable Buoyancy Device and has the capacity to support 1-4 people depending on the model. Life Cell is suitable for installation up to a height of 30 metres above the waterline and can now be used on ships bound by the International Convention of SOLAS. In addition to buoyancy, the added advantage of the Life Cell is that crew can store all essential safety equipment to notify authorities and ensure survival at sea.

http://lifecellmarine.com.au/

NEW PRODUCTS

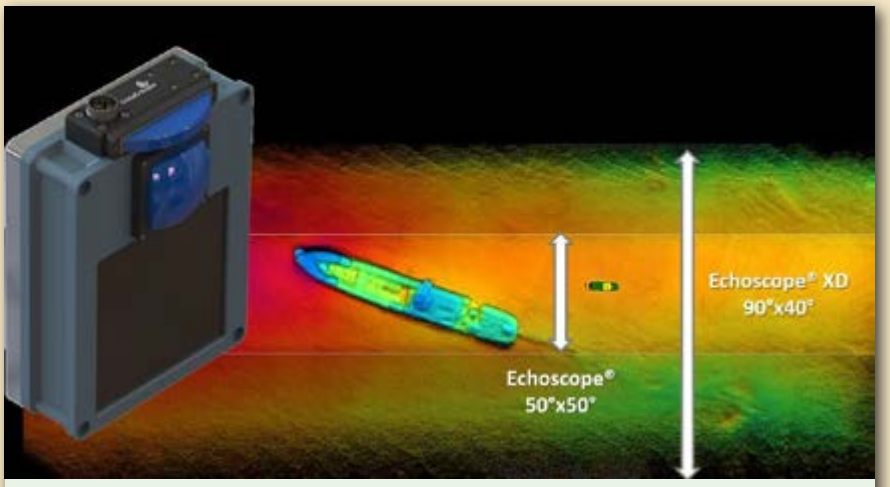
Mastervolt digital switching technology

Mastervolt has launched a compact and intelligent replacement for a traditional fuse box and panel of circuit breakers which uses digital switching technology.

CZone Combination Output Interface (COI) is a CANbus technology where a single data cable can be used to operate clusters of switches around a boat or RV.

The new interface uses just one compact 30-channel unit to provide all the necessary outputs.

http://www.boatingbusiness.com/news101/boatbuilding/electircal/mastervolt-digital-switching-technology



New Coda Octopus wide-angle development

Edinburgh, UK-based Coda Octopus, the underwater systems specialist with subsidiary bases in Australia, Norway and the US, has extended its patented series of real-time Echoscope 3D sonars with development of a wide-angle 90 x 40-degree 240kHz XD model.

It features multiple projectors with an increased opening angle producing significant improvements in field-of-view and survey areas of coverage. In addition to real-time 3D imaging enabling the system to realise results in low or zero visibility conditions, the new dual frequency model will enable large area imaging and mapping to be completed in support of a wide range of subsea bathymetry and imaging projects.

Coda Octopus claims its Echoscope systems as the world's first.

http://www.maritimejournal.com/xporttoprint/hydrographic-survey/new-coda-octopus-wide-angle-development

ConnexWire switch panels introduced to the European market

New Zealand company, ConnexWire, introduced a range of four and six way 12 volt fused switch panels to the European market at METSTRADE 2016. The panels are designed for robustness and durability in marine applications and can be customised to suit individual client's needs. They were developed and tested in the marine environment together with automotive applications.

The faceplate conceals circuit protection making it easy to change fuses if required, without having to get behind the dashboard. Switching can be customised to suit the client's needs during manufacture so that the panel is delivered ready for installation aimed at saving time and money in production.

http://www.boatingbusiness.com/news101/Promotions/metstrade-2016/switch-panels-introduced-to-the-european-market

Hall Spars NZ rig all three new Pac 52's with next generation mast

Hall Spars & Rigging New Zealand has been selected by three of the four founders of the new USA-based Pac 52 racing class to design and manufacture the rigs for their new builds. The Pac 52 class was established in 2016 and uses a modified TP 52 hull with a taller rig, deeper keel and lighter engine for a reduced total weight.

"We are working to build a grand prix big boat class on the USA's West Coast, so the boats have to be state-of-the-art but also measured so they can race boat-for-boat and not on handicap," says Frank Slootman, owner, Invisible Hand and one of the new class' founders.

Dave Ridley, operations manager, Hall Spars & Rigging New Zealand, added: "The rigs fitted to the Pac 52s represent our next generation of mast which drive significant performance gains on the water.

http://www.sail-world.com/Australia/Hall-Spars-NZ-rig-all-three-new-Pac-52s-with-next-generation-mast/151464

Hempel launches 2 new epoxy primers

Denmark-headquartered coatings specialist Hempel is introducing two new coatings; Hempadur Quattro XO 17820 and 17870.

They are part of a series of two-component epoxy primer coatings which provide advanced crack resistance using Hempel's patented fibre technology.

https://www.iims.org.uk/hempel-launches-two-new-epoxy-primers-harsher-offshore-conditions/

Ballast water free heavylift jack-up concept

Netherlands-based SeaOwls and Norwegian shipyard Ulstein have launched a pioneering heavy lift jack-up vessel design concept, the Soul.

The cruciform structural lay-out is claimed to make the patent-pending solution more than 10 per cent lighter than conventional jack-up vessel designs, yet, all loading and installation operations can be performed without the need of ballast water. In combination with a high capacity crane, the SOUL enables operators to take the next step in developing offshore wind farms. The concept aims to install the next generation wind turbines (10-12 MW) in the same time frame as currently used for installing 6-8 MW units, a significant efficiency gain over any jack-up vessel design currently available in the market.

Scaling-up conventional heavy lift jack-up vessel designs proves challenging due to the disproportional weight increase compared to gain in Variable Deck Load (VDL).

http://www.maritimejournal.com/news101/marine-civils/marine-civils/ballast-water-free-heavylift-jack-up-concept

New Portasonic Portable Ultrasonic Flow Meter unveiled

Coltraco Ultrasonics has unveiled its new handheld, portable, clamp-on flow meter device.

It aims to provide an accurate flow measurement from the outside of a pipe. The self-adapting Portasonic measures the flow rate, by utilising two transducers that function as ultrasonic transmitters and receivers.

The flow meter is optimal for checking the flow rates of clean non-aerated fluids, such as water, with the ability to measure anywhere on full pipes from ½" to 180" (12 to 4570mm).

Portasonic Flow can penetrate all common metal and plastic pipe materials with its non-invasive external clamp. The technology provides an easy way to cater for sprinkler system maintenance in the fire industry.

http://www.coltraco.com/portasonic-page/

World's largest LEG-carrier with nearly 38k ethane volume delivered

In late 2016, the first vessel of the new ECO STAR 36k type, GasChem Beluga, was delivered to the owners Ocean Yield ASA in China.

The design for this new type of vessel was developed under the lead of German ship owner Hartmann Reederei together with its long-term partners HB Hunte Engineering for the ship design and AC Inox delivering gas plant and equipment.

The hull design is unique and highly efficient: The vessel's superstructures are located at the bow, the engine at the stern, resulting in an excellent distribution of weight and a significant reduction of ballast water. In combination with the new "Svelte" bow design invented by Hartmann, this hull type leads to reduced, more efficient fuel consumption.

The innovative MAN main engine is capable to burn gas and traditional fuel alike. It is also the first ever 2-stroke engine operating on ethane and LNG with negligible methane slip - due to the diesel principle. As this technology reduces emissions considerably, it will enable the vessels of the ECO STAR type to meet future requirements on emission control.

The cargo tanks are constructed in the new Star-Trilobe design developed by Hartmann and Stargas. This type of tank enables higher cargo flexibility and faster loading operations and provides an increase in cargo capacity of about 30% at the same ship dimensions and therefore significantly increasing economies of scale.

At the seatrials, GasChem Beluga performed even better than anticipated: She needed less propulsion power to achieve and keep her speed, which again results in lower consumption. Additionally, her cargo volume of nearly 38,000 cbm turns her into the world's largest LEG carrier.

https://www.shipinsight.com/worlds-largest-leg-carrier-with-nearly-38k-ethane-volume-delivered/

Fifty Shades of Insurance: Chapter 12

TALES FROM MISS HISTORY THINGS YOU SHOULD KNOW

"It burnt for 5 days
As no fire brigades
What shall we do?
Said King Charles to
Nicholas Barbon
Was quite a smart one
He formed a company to protect
And resurrect
Compensation was great
It spread past our gates
Now a worldwide need
That's insurance – indeed"

Miss History

She asks "Are you interested in history? Do you like to know the past? Or are you only a future person? But the future is soon the past." say Miss History to the class.

"The story today is the history of insurance, disclosure and important changes in the rights and obligations of insureds."

Lloyd's of London started in the 17th Century in a coffee house near the River Thames. The first class of business was marine insuring against things such as storms and piracy. The ship owner gave information about the risk to the merchant on a slip of paper and the merchant decided if he was to accept the risk by writing his name on the slip of paper under the details that is where the word "underwriter" came from.

In the past the declarations signed by the proposer formed the basis of the contract and hence a warranty. This has now all changed since the implementation of the 2015 Insurance Act.

So how does this affect you?

What is the duty of fair presentation

There is now a duty of fair presentation and this means a duty to disclose to Insurers every material circumstance which you know or ought to know that would affect the underwriting of the risk. Or an Insured must give the Insurer sufficient information to put a prudent insurer on notice that it needs to make further enquiries in order to reveal material circumstances. A matter is material if it would influence the judgement of a prudent insurer as to whether to accept the risk, or the terms of the insurance (including premium); disclosure should be in a reasonably clear and accessible way; and insured's should insure that every material representation of fact is substantially correct, and that every material representation of expectation or belief is made in good faith. Provided you as an insured comply with the requirements of fair presentation you have a right to be indemnified by insurers if they have not made sufficient enquiries after you gave them adequate information to do so. In these circumstances they can no longer then decline to pay a claim on the grounds of non-disclosure. Critical information must be true and accurate at time of inception of the insurance contract.

What are you expected to know?

If an Insured is an individual, what is known to the individual and anybody who is responsible for arranging his or her insurance policies.

If an Insured is not an individual, what is known to anybody who is part of the Insured's senior management; or anybody who is responsible for arranging the Insured's insurance.

Whether an Insured is an individual or not, what should reasonably have been revealed by a reasonable search of information available to the Insured. The information may be held within the Insured's organisation, or by any third party (including but not limited to the broker, subsidiaries, affiliates or any other person who will be covered under the insurance). If an Insured is insuring subsidiaries, affiliates or other parties, the Insurer expects that the Insured will have included them in its enquiries, and that the Insured will inform the Insurer if it has not done so. The reasonable search may be conducted by making enquiries or by any other means.

Breach of warranty is now suspensory

If an Insured breaches a warranty in an insurance contract, the Insurer's liability under the contract shall be suspended from the time of the breach until the time when the breach is remedied (if it is capable of being remedied). The Insurer will have no liability to an Insured for any loss which occurs, or which is attributable to something happening, during the period when the Insurer's liability is suspended. Once the breach is remedied you have the right to cover for losses occurring or attributable to something happening after the remedy date.

Failure to comply with terms not relevant to the actual loss does not give the right to insurers not to pay.

Where: (i) there has been a failure to comply with a term (express or implied) of this insurance contract, other than a term that defines the risk as a whole; and (ii) compliance with such term would tend to reduce the risk of loss of a particular kind and/or loss at a particular location and/or loss at a particular time, the Insurer cannot rely on the breach of such term to exclude, limit or discharge its liability if the Insured shows that the failure to comply with such term could not have increased the risk of the loss which actually occurred in the circumstances in which it occurred.

Fraudulent claims clause

If an Insured makes a fraudulent claim under an insurance contract, the Insurer is not liable to pay the claim; and may recover from the Insured any sums paid by the Insurer to the Insured in respect of the claim; and may by notice to the Insured treat the contract as having been terminated with effect from the time of the fraudulent act.

Remedies for breach of the duty of fair presentation
If, prior to entering into this insurance contract, an Insured breaches the duty of fair presentation, the remedies available to the Insurer are set out below.

> Deliberate or reckless breach:

- The Insurer may avoid the contract, and refuse to pay all claims; and,

- The Insurer need not return any of the premiums paid.

> Not deliberate or reckless,

The Insurer's remedy shall depend upon what the Insurer would have done if the Insured had complied with the duty of fair presentation:

If the Insurer would not have entered into the contract at all, the Insurer may avoid the contract and refuse all claims, but must return the premiums paid.

If the Insurer would have entered into the contract, but on different terms (other than terms relating to the premium), the contract is to be treated as if it had been entered into on those different terms from the outset, if the Insurer so requires.

In addition, if the Insurer would have entered into the contract, but would have charged a higher premium, the Insurer may reduce proportionately the amount to be paid on a claim (and, if applicable, the amount already paid on prior claims). In those circumstances, the Insurer shall pay only X% of what it would otherwise have been required to pay, where X = (premium actually charged/ higher premium) x 100.

> Breach of duty of fair presentation prior to entering into a variation of contract,

The remedies available to the Insurer are:

- If an Insured's breach of the duty of fair presentation is deliberate or reckless the Insurer may by notice to the Insured treat the contract as having been terminated from the time when the variation was concluded; and the Insurer need not return any of the premiums paid.

- If an Insured's breach of the duty of fair presentation is not deliberate or reckless, the Insurer's remedy shall depend upon what the Insurer would have done if the Insured had complied with the duty of fair presentation:

- If the Insurer would not have agreed to the variation at all, the Insurer may treat the contract as if the variation was never made, but must in that event return any extra premium paid.

- If the Insurer would have agreed to the variation to the contract, but on different terms (other than terms relating to the premium), the variation is to be treated as if it had been entered into on those different terms, if the Insurer so requires.

- If the Insurer would have increased the premium by more than it did or at all, then the Insurer may reduce proportionately the amount to be paid on a claim arising out of events after the variation. In those circumstances, the Insurer shall pay only X% of what it would otherwise have been required to pay, where X = (premium actually charged/higher premium) x 100.

- If the Insurer would not have reduced the premium as much as it did or at all, then the Insurer may reduce proportionately the amount to be paid on a claim arising out of events after the variation. In those circumstances, the Insurer shall pay only X% of what it would otherwise have been required to pay, where X = (premium actually charged/ reduced total premium) x 100.

Karen Brain
Managing Director – solicitor non-practising

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Lloyd's of London started in the 17th Century in a coffee house near the River Thames. The first class of business was marine insuring against things such as storms and piracy.

A day in the life of...

James Renn

Q1.
What first drew you into marine surveying and what experience or expertise did you bring into the field from your earlier career(s)?
A.
I was drawn into Marine Surveying after having been involved in marine diesel propulsion engineering for Volvo Penta from Gothenburg Sweden. After leaving Volvo Penta as Applications Engineer for North America and somewhat adrift I was called to assist in series of problems with a powerboat fleet in the Caribbean. Upon arriving the introduction was made as in "the surveyor" has arrived. After two days and having corrected the problems the project manager called the vessel's owners and stated "the surveyor has found the problem and we are back working". That was when it was quickly evident that there existed a need for mobile technicians or trouble shooters. Hence "Marine Forensic Technicians". Nearly 30 years later there is still a need- perhaps more than ever. Note: The vessel's problem was that the main engines fuel returns did not go to the bottom of the tanks and would air/spray into the tanks as they got low causing the fuel to air lock.

Q2.
Typically what area of surveying would you describe as your 'core business'?
A.
The "core" of my business would now be in commercial and partly recreational loss investigation for Clients, Attorneys, Military and Constabulary parties. This is largely focused on heavy machinery losses and electrical issues however has branched out to third party and wrongful death/injury investigations.

Q3.
What do you most enjoy about your job?
A.
What I enjoy most about my job is the diversity. One cannot know very much about what will happen the next day except that just like in any possible conflict the first casualty will be the truth. Sorting out the fact and fiction changes with each situation will always be a gambit.

Q4.
And which aspects challenge you most about your role as a surveyor?
A.
I feel the most challenging role in my aspect of surveying is having a clear understanding of the client's needs and expectations. It is often obvious that the client(s) do not recognize that what we may find may not be beneficial. It is paramount to be absolutely certain the hiring body understands that we will express what we believe in a completely unvarnished manner. Too often it is heard that "We are paying you to find..." Once the bell is rung, if asked by another party, the bell cannot be unrung. Any statement with intentional omissions is an untruth and the client must understand that before going in.

Q5.

We read so much about rapidly changing technology in the maritime world, but how do you think this is likely to impact the role of the next generation of marine surveyors?

A.

With changing technologies I feel the next generation will be far more academically impacted then past or current generations. There is so much more to be aware of. New materials, coatings, systems will prove more daunting and will result in more specified fields some of which are just emerging. New tools for surveying activities from drone programs and wireless monitoring to flat plate Radar will need to be part of a surveyor's understanding and standard training. While there are more programs of training and access to that training there are many more avenues of study. Additionally the next group of surveyors will need be far more focused on their own education as older surveyors that might have been mentors may not have kept up with new technologies.

Q6.

What is the strangest, or most dangerous thing you have experienced or witnessed as a surveyor?

A.

The strangest and most dangerous single activity noted was the near instant collapse of a ferro cement vessel's deck as she was being rolled up on a rail way. With two surveyors aboard so that we might monitor changes to a 40 meter formerly square rigged sailing vessel that was being pulled up a marine rail. The steel grid for the hull was not seen as it was imbedded in the cement of the hull. We quickly realized the vessel was spreading from its own weight as we left the water and we could hear the steel frame work snapping. In amazement from the wheel house we could see the main deck pull away from the hull sides. It took a moment to radio the operator and by that time the wheel house deck was actually sagging-something out of a movie. Now what do we do? The hull was cracked and bulged amidships just above the water line for several meters. We were quite relieved to get off what would become an addition to a fishing reef.

Q7.

What regulatory changes have you seen over the past decade and which have been the most challenging to oversee?

A.

The regulations I find most challenging have to do with bilge water and ballast water management. There is nothing too complex except that operators are resistant to comply and frustrated by reporting.

Q8.

When you stop surveying at the end of the day, how do you like to relax and what hobbies or pastimes do you enjoy?

A.

At the end of the day in order to sweep out the mental clutter, I would find myself again out on the water but with a fishing rod. The attempt is to find that trophy Striped Bass that somehow ends up on the other fisherman's line.

Q9.

Please tell readers of The Report Magazine one interesting fact about James Renn that they are unlikely to know.

A.

Really do not know if this is interesting but after the hammering and welding my first wish was to be a classically trained Chef. Actually had two years of some of the first on line training. These days fancy myself a fairly well trained amateur saucier.

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