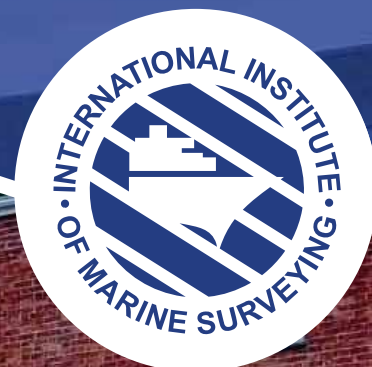


THE REPORT

MARCH 2016
ISSUE 75

The Magazine of the International Institute of Marine Surveying



**LIGHTNING
PROTECTION
SYSTEMS
EXPLAINED**

**NEW MANDATORY
ENCLOSED SPACES
REGULATIONS**

**WARRANTIES
NOW AND IN THE FUTURE**

**25th Anniversary Conference
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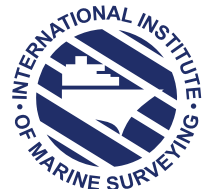


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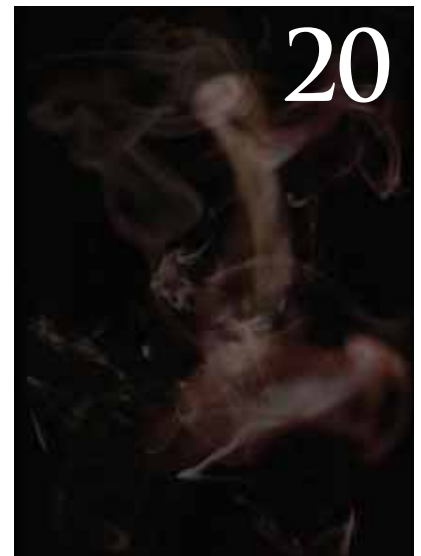
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EDITOR'S LETTER

Welcome to the March 2016 issue of the Report Magazine at the start of what is already shaping up to be a very special year as the Institute celebrates its 25th anniversary and silver jubilee. I recommend this issue to you for its breadth and depth of information and feature articles.

"Twenty five years! Is it really twenty five years?" Those words were spoken to me by none other than Capt William MacDonald. You can be forgiven if you do not know or recall Capt. Bill (as he is known to his friends). He was the very first President of the IIMS when it was formed in 1991. But more than that, Capt. Bill was very much the visionary and motivator behind the founding fathers of the Institute. I tracked down our first President, now in his 70's, at his office in Houston. Still a practicing surveyor, he had plenty to say, much of which has been reproduced in his interview about the early days on page 20.

Continuing on a similar vein, I hope you may be encouraged to participate in the 25th Anniversary London Conference and also the Silver Jubilee Awards. My colleagues and I would love to see you in London later this year. The AGM also takes places during these two days. If you have not experienced an IIMS

Conference, this is your chance to be part of a history making event. And your nominations for the Silver Jubilee Awards, to be presented during the Conference, are required by 30 June. Full details about the events, some cracking venues and the speakers who will educate and inform can be found on page 17.

In this edition there is an interview with Monday Ogadina, who is the IIMS Regional Director for Nigeria and West Africa. Due to the strong growth in Nigerian members over the past couple of years, the Management Board has granted the country branch status. In his interview, Monday reflects on this news as we start the process to formalise the branch, which will be the seventh within the IIMS family.

The article by Dr Wesley Tucker looks at how to understand and detect gasses in enclosed spaces and reviews the new mandatory regulation that comes into force from July 2016. Please heed its content!

With the new EU Watercraft Directive coming into play, I am grateful to Barbara Fountoukos, who has written the article entitled, 'ICOMIA and the Recreational Craft Directive', a subject which many surveyors are still vexed by.

Simon Stonehouse argues why machinery remains a key problem for the underwriter and gives an insight into what is a rather opaque and often misunderstood world.

The feature by Andy Ridyard, entitled 'An approach to a modern Lightning Protection System' is both a fascinating and scary read in equal proportions. Andy, himself a victim of a lightning strike whilst onboard a yacht, is perfectly placed to write about this complex and not to be overlooked, important subject.

I am grateful to veteran surveyor, Jeffrey Casciani-Wood, for providing a technical article, which first appeared in the Institution of Diagnostic Engineers magazine, entitled 'Engine crankshaft deflection measurement'.

There is just enough space left for me to thank everyone else who has contributed to what is a cracking issue of the Report Magazine, one which I very much hope you will enjoy reading.

Survey well!

Mike Schwarz
Chief Executive Officer
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THE PRESIDENT'S COLUMN

E-learning for seafarers, or other professionals working in the maritime industry, has been considered as cost effective, good quality and affordable.

IIMS is considered as a specialist in e-learning for surveyors, but could also be a strong partner for e-learning of seafarers in the field of continuous training.

STCW certificates are revalidated generally every five years, but only when the seafarer can prove he has been working under the conditions of the certificate that he is trying to revalidate.

STCW 2010 has thoroughly implemented revalidation of many certificates of proficiency from 1 January 2016. For a seafarer still working on board ships, this is not a problem at all. But if, due to circumstances such as unemployment or rehabilitation ashore, some seafarers are confronted with the necessity of finding a revalidation training session before embarking this is very often the start of their problems.

In fact, the problem is not really to find a training session for revalidation, the issue is who will pay for it? Getting the best quality refresher training course could be costly and on the other

hand the knowledge acquired after a training course belongs to the person. Some companies, or shipowners consider that if the benefit is mainly for the seafarer, the cost should be borne by the seafarer himself. For shipowners paying wages for the seafarer at school and at the same time paying wages for the back-to-work on board seems today too costly!

The danger of low cost and low quality courses, or refresher courses, has already been highlighted by IMO and shipping company organisations. E-learning by professional training organisations is one of the solutions.

In fact it is not only useful for the on board continuous training, but also for training at home by the internet for giving a better professional level, or simply by getting enough for revalidation of former STCW certificates.

It seems shipping is not the only industry facing these problems in modern times and many others must set up a continuous development programme financed by the individual instead of the companies too.

STCW 2010 (Manilla amendments), or the ED 35/2012, has already

defined most of the revalidation conditions of perishable certificates. The only thing missing is sometimes the contents of the refresher courses! The problems of cost and the quality level of the refresher courses could be easily solved by institutes like IIMS on the condition that they are approved by a 'white list approved' IMO member.

France has approved some training centres for e-learning for some certificates and their renewal after a very tight verification of conformity to meet the training conditions, eg. the contents of courses, equipment, performance of trainers and quality management of the centre.

As a trainer myself, I hear and agree with your possible remarks that not all certificates can be revalidated via an e-learning course. Practical components as well as an exam should be required.

The coming years will be important for the training centres I guess.

A handwritten signature in black ink, appearing to read 'B. Apperry'.

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

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- Mr Paul Homer, Chairman Standards
- Mr John Excell, Chairman of Small Craft Surveying
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DNV GL ISSUES ADVICE ABOUT COMBATING CORROSION DUE TO BOX COOLER

A technical newsletter has been written and published by DNV GL to give an insight and to make recommendations on how to avoid safety risks due to severe corrosion of vessel's steel structure by way of the box cooler. In the most severe cases that DNV GL has encountered, the bolted flange of the top plate of the cooling box was involved. This led to increased risk of collapse of the top plate.

Extent of damage
A box cooler eliminates the secondary cooling water circuit of sea water inside the engine room. The cooling effect is achieved by natural circulation of the surrounding sea water and is considered to be a cost-effective alternative.

There are two main challenges related to box coolers:

1. Aggressive galvanic corrosion due to more noble material in the box cooler compared with the ship steel

2. Marine growth on the cooler tubes, which can reduce the cooling effect

The main drivers of corrosion damage are: The natural circulation around the cooling elements causes warm sea water to rise towards the top of the sea chest (top plating), creating environmental conditions which increase both corrosion rates and marine growth.

Exposed noble materials (corrosion resistant) in the box cooler tubes impose galvanic currents between the cooler tubes and the sea chest, causing galvanic corrosion of the adjacent steel structure, if proper electrical insulation is not maintained.

The corrosion protection systems applied (coating of U-tube bundle, if applicable; coating of the surrounding steel structure, sacrificial anodes and/or impressed current cathodic protection) are not able to suppress the corrosion rate of the sea chest. This

can occur due to poor design, damage during installation or in service, or lack of necessary inspection and maintenance.

Incorrect settings of the impressed current system. This system has been installed to prevent marine growth and maintain the high efficiency of cooler tubes. Possible adverse galvanic corrosion effects on a ship's steel structure may have been given low priority by the manufacturer.

FAIRLINE YACHTS ESTABLISHED FROM FAILED FAIRLINE BOATS

Fairline Boats, which had seemed to be on the verge of disappearing just a few weeks ago, has been saved following the intervention by two Russian investors.

A new company, Fairline Acquisitions, funded by two UK based Russian investors with a background in the marine sector, is to take on the failed company's order book and initially plans to recruit around 100 of the 380 staff who were made redundant before Christmas following the collapse. The new company plans to trade as Fairline Yachts.



The new business will be run by Russell Currie. He has been a Fairline dealer for the past 18 years.

Russell Currie said: *"I am delighted to have been appointed managing director for Fairline Yachts. With the resources of the investors, coupled with the expert knowledge of the management team and our energy and passion for the brand, the structure is in place for a great future for Fairline Yachts."*

"We will focus on creating high quality luxury motor yachts that boaters will want to own and dealers will want to sell," he added.

Fairline Acquisitions will take responsibility for finishing and completing any outstanding boats orders and expects to resume production after completing an assessment of the range of boat models.

At this stage, not much is known about the Russian buyers, though they are thought to be Alexander Volov and Igor Gyanenko, who are both listed as shareholders in Fairline Acquisitions. There are no plans to move Fairline Yachts from its current locations and the new firm will operate from Oundle, Northamptonshire, where its manufacturing facilities are situated.

Swedish P&I Club makes new proposals following an accident caused by leaking hatch covers



NEW MEASURES PROPOSED FOLLOWING ACCIDENT CAUSED BY LEAKING HATCH COVERS

The Swedish P&I Club has issued its Monthly Safety Scenario for February 2016 that relates to an accident caused by leaking hatch covers. As a result it recommends preventive measures.

About the accident
The vessel comprised loaded up wire coils. When loading was complete the crew taped across the transverse beams of all the cargo holds with Ram-Nek. During the vessel's transit it sailed through heavy weather that lasted for about two days. During this time the vessel was pitching and rolling and the cargo hatches were covered in water.

While discharging in port it was found that the steel coils in the top tiers were corroded. The steel coils below the centreline and folding seams were the most affected.

A surveyor in attendance observed that the cargo hatch covers were not in an adequate condition. The greatest amount of rusted coils were in holds 1 and 3. The surveyor

tested the water integrity of the cargo hatch covers with an ultrasonic device which detected significant defects to the sealing arrangements. The gaskets were in poor condition and the hatch covers tested positive for chloride which indicates that saltwater has leaked. The non-return valves for the drain channel were also in a poor condition as they were clogged and the ball inside was not moving.

The transverse packing on the hatch covers was leaking and there were some cracked corners and leaking side joints. The surveyor also found a number of leaking ventilation covers.

The consequences
The cargo hatches were in a poor condition, which caused seawater to enter the cargo holds. The gaskets were also in poor condition and the cleats could not be tightened beyond hand tightening.

Recommended preventive measures

It's strongly recommended to do an ultrasonic test instead of a hose test for testing the cargo hatch covers.

The cargo hatch covers and other essential equipment should be

inspected at continuous intervals. It is especially important that non-return valves for the coamings are inspected.

These jobs should be included in the planned maintenance system.

The planned maintenance system should also be inspected during internal audits and it should be logged if specific jobs have not been completed.

VANISH: THE FIRST FEADSHIP LAUNCH OF 2016

Feadship launched the 66.25 metre superyacht Vanish in a rock 'n' roll ceremony at Kaag Island. Hundreds of invited guests enjoyed a performance by a band and the delighted owners treated all yard personnel to a tour of their pure custom creation.

Highlights on this latest scion of the Feadship fleet include a free-standing staircase flanked by a glass wall over three decks, an ingenious extendable balcony for the owner's stateroom and a highly innovative transom design.

Like every Feadship, Vanish reflects the wishes and requirements of her owners to an exceptional

degree. On this particular build, Feadship has teamed up with Eidsgaard Design on a yacht which is a lifestyle statement par excellence.

"This launch party encapsulates the energy with which the owners have embarked on fashioning their Feadship," explained Feadship director Jan-Bart Verkuyl. "They are excited about enjoying all the options involved in being close to the water, from the exquisite transom sea terrace to the inviting sun deck bar. Vanish has been designed to suit the way they like to spend time onboard with a wide array of watersports options. With helipads on both the sun deck aft and bow area, she serves as a springboard to a world of adventures for the owners and their guests."

The owners of Vanish were very involved in the project and had tremendous fun creating this timeless beauty. Their appreciation for the perfect craftsmanship carried out on their behalf was made clear when they offered to give all the personnel of the yard and their partners the chance to take a comprehensive tour of the finished yacht. *"It is very unusual for all the people from the myriad disciplines involved*



The latest superyacht from Feadship, Vanish, awaits its formal launch

in a superyacht build to actually get to see how everything came together in the end," adds Verkuyl. "Vanish is a showcase example of a holistic superyacht, and it is wonderful that everyone involved can experience the fruits of their collective labour in this way."

From the overall concept to the smallest detail, everything onboard Vanish is designed and executed to achieve the most functional and aesthetically pleasing solutions. Her modern and powerful exterior profile is softened by harmonious lines and the use of varnished teak, including cap rails with a diameter of more than 25 centimetres. The unusual transom was designed to provide intimate contact with the water while meeting the owner's desire not to feel intimidated by the hull's bulk when arriving by tender or swimming from the sea terrace.

SKY-FUTURES COMPLETES FIRST EVER DRONE OIL AND GAS INSPECTION

Sky-Futures, the leading provider of drone inspection services for the global oil and gas industry, has completed the first ever oil and gas inspection by drone in the Gulf of Mexico for a leading global oil and gas service and drilling company.

The inspection is the first ever legally carried out in the Gulf of Mexico by a drone for the oil and gas industry. It comes just over 10 months after Sky-Futures received the 46th Section 333 Federal Aviation Authority (FAA) Exemption Certificate to operate drones in the USA, and opened their first North America office in Houston, Texas. The inspection scope requested by the client included the Derrick, a heli-deck and 4 cranes

on a Drill ship and was completed in 2 days. Current inspection methods would have taken 17 days to inspect the same scope of work. Offshore, Sky-Futures provided a highly experienced crew consisting of an inspection engineer and remote pilot, who had both completed oil and gas drone inspection training at Sky-Futures specialist training centre in the UK.

The planning, execution and work flow was supported by Sky-Futures 5 years of oil and gas expertise delivering work offshore globally in the North Sea, Offshore Malaysia and in the Baltic Sea. This experience, including 1,760 hours of drone inspections delivered offshore in 2014, has seen Sky-Futures deliver work globally for leading companies such as Apache, ConocoPhillips, Shell, Statoil and Petronas.

This inspection marks Sky-Futures first inspection offshore in the GOM, following on from highly successful onshore work completed in the USA for a leading American oil and gas company in September 2015.

Jay Forte, Vice President Operations said: "Since receiving our FAA Exemption 10 months ago we have made considerable progress; opening our office in Houston, growing our team by hiring and training Remote Pilots and Engineers, and completing our first onshore contract in September 2015. We have now established ourselves as the leading drone inspection service provider in the Gulf of Mexico. We have proven that drones can be successfully used for more efficient and safe inspections in the gulf, just as we have already done across the world."

James Harrison, Co-founder and CEO said: "We are now proven in providing safe and efficient inspections in the world's largest single market, both on and offshore in the USA. We are focussed on aggressively expanding our operations in the Gulf of Mexico and North America in the coming year."

Inspections completed by drone are safer, faster and more cost efficient than other inspection techniques used at onshore and offshore installations, including rope access and helicopter fly-bys. Inspections prevent personnel being put at risk and allow savings to be made by



A sign of the changing technology as Sky-Futures carries out its first ever drone inspection

preventing unnecessary shutdowns. Inspections completed offshore for other clients by Sky-Futures have saved over US\$4M+ in operational efficiencies and avoiding unscheduled shutdowns.

URGENT CLARITY ON CONTAINER WEIGHING SOUGHT BY OPERATORS

The implementation of the new Safety of Life at Sea (SOLAS) container weighing rule is due to come into effect on 1 July 2016, yet there is still a lack of information on their application, which is causing terminal operators to request further clarity as a matter of urgency.

Private port federation FEPORT has called on national authorities to develop guidelines that protect the efficiency of the logistics chain and do not create competitive distortions between Member States.

Jasper Nagtegaal, Chairman of the Customs and Logistics Committee, said: "From July 1, 2016, all containers to be loaded on a vessel will need to be accompanied by a verified gross mass (VGM). As of

now, industry actors have released guidelines on the implementation of SOLAS requirement, but guidance from national authorities is still absent in many cases."

"A lack of national guidelines will ultimately lead to confusion in implementation and will have an adverse impact on operations and lead to possible competitive distortion."

FEPORT strongly encourages Member States, if not already done so, to draft guidelines which adopt a pragmatic approach and do not lead to competition distortion between Member States.

FEPORT and its members are ready to cooperate with Member States and with the other actors in the logistics chain to elaborate national guidelines which are commonly accepted and implementable.

There are currently two methods available for weighing containers: the first would involve weighing a container and its contents together, while the second would see the contents and the gross mass of a container weighed separately.



Clarification is being sought by operators on the upcoming new container weighing regulations



On the back of a strong order book Oyster Yachts is set to recruit up to 50 new staff

OYSTER YACHTS SET TO EXPAND ITS WORKFORCE

Oyster Yachts has started 2016 with a better order book than the same time last year with contracts totalling £70m. There are 15 yachts currently in fit-out – ten in Oyster Yacht's Norfolk shipyard, five in its Southampton yard – and 11 others waiting to start.

The moulding of the first Oyster 118 commenced late in 2015 and fit-out will start in the Southampton shipyard in a few months' time. This pioneering project, the largest Oyster ever built in the UK, together with a pipeline of three Oyster 825s, two Oyster 745s and two 'Raised Deck' versions of the Oyster 885, means that Oyster is now expanding its team in Southampton by 25%, recruiting 50 staff across all trade skills over the next 3–6 months.

With more than 85% of capacity also sold for 2016 in its Norfolk shipyard, Oyster starts the year with a positive view of the market and future prospects. Three recent orders for the new Oyster 475, the build of the exciting 'First of Class' Oyster 675 at the same time as the last of

the much loved classic Oyster 72/725 and several Oyster 545s, 575s and 625s in the pipeline for the Norfolk yard, gives a good indication of the wide spectrum of Oyster's success in the market during 2015.

David Tydeman, Oyster Yachts CEO, commented, "I am delighted that we are continuing to appeal to owners across the whole of our range from the 475 to the 118 and are keeping both shipyards busy. For our USA team, 2015 was our best year in more than a decade for new yachts and brokerage sales, with nine yachts sold from 47ft to 72ft and ranging from \$0.5m to \$2.5m. We have nearly 40 entries for the amazing 27-month Oyster World Rally (which starts in January 2017) and have had great success from our investment in an Oyster Service Centre in Palma. These all emphasise how we listen to our owners and respond to their needs. In parallel with the strong order book for Oyster yachts, our custom and refit business goes from strength to strength and we completed a significant refit of Cambria – the beautiful 1928 built 140ft Fife Classic – in the

autumn and we are now 70% through a detailed refurbishment of the Farr designed, UK built Sojana, a wonderful Carbon/Titanium lightweight 115ft ketch. These two projects, together with the new 118ft Oyster, are a great example of the versatility of Oyster in the superyacht market."

MCA ISSUES HOVERCRAFT CODE MARINE GUIDANCE NOTE

UK MCA has issued a Marine Guidance Note to introduce the new Hovercraft Code which has been developed for Light and Small hovercraft operating in the United Kingdom or United Kingdom Waters (both at sea and on inland waterways).

Currently all hovercraft used for reward must be built to the requirements of the High Speed Craft (HSC) Code. The Hovercraft Code introduces a voluntary set of standards appropriate for small commercial hovercraft, which are equivalent to the HSC requirements.

Where a hovercraft is surveyed and certificated under, and continues to comply with, this Code, it is exempted from those parts of the Hovercraft (General) Order 1972 and the Merchant Shipping (High Speed Craft) Regulations 2004 which require the hovercraft to be surveyed and certificated against the British Hovercraft Safety Requirements (BHSR) and the IMO High Speed Craft Code. The General Exemption is annexed to this MGN.

The Hovercraft Code may be voluntarily applied, from the date of publication, to Small Hovercraft, which are those under 24m in length hard structure and carrying no more than 12 passengers and no more than 15 persons in total.

The Code also provides standards for Light Hovercraft, a sub set of Small Hovercraft further limited to hovercraft that are less than 1,000kg unladen weight, less than 12m in length and carrying no more than 8 persons in total.

Light Hovercraft used for Reward but deemed not to be "engaged in navigation" because of their tightly constrained operations may come under the definition Ultra-Light Hovercraft.

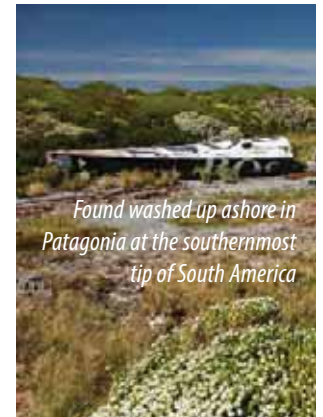
The Hovercraft Code provides standards for Ultra-Light Hovercraft which are of less than 500kg unladen weight, carrying a crew of not more than 4 and no passengers or cargo (other than activity related equipment).

The Code also provides standards which, in opinion of the industry working group, may be appropriate for operators to select to use for Ultra-Light Hovercraft being used as "Work Equipment" under the terms of the Work Equipment Regulations 1998 (SI 1998 No 2306).

Large Hovercraft of 24 metres length and over or any other craft carrying more than 12 passengers, including Light and Small craft, fall outside the scope of this Code and are covered under the Merchant Shipping (High Speed Craft) Regulations 2004.

Independent Rescue Boat organisations using hovercraft for commercial purposes should use the Rescue Boat Code for all aspects of Survey and Certification, but they may use the technical standards of this code relevant to the hovercraft type.

Light Hovercraft (those below 1,000kg unladen weight), not used for reward need not comply with the requirements for registration or certification.



Found washed up ashore in Patagonia at the southernmost tip of South America

ALEX THOMSON'S YACHT TURNS UP NEARLY 10 YEARS AFTER BEING ABANDONED

The IMOCA 60 HUGO BOSS, which was abandoned in the singlehanded 2006-7 Velux 5 Oceans Race by Alex Thomson, has been found washed up ashore in Patagonia at the southernmost tip of South America. British skipper Alex Thomson, who had to be rescued from the yacht by competitor Mike Golding, had lost his keel some 1,000 miles from Cape Town in the Southern Ocean in November 2006. The section of the canting keel head that attached the rams snapped off so that the keel was swinging freely.

With the finding of the yacht, this translates to it travelling nearly 13,000 miles over 10 years across the Southern Ocean. The yacht was found during a kayak expedition by Chilean adventurer Cristian Donoso.

Whilst the hull appears to have survived, it is clear that the keel did detach from the hull. The cockpit area has also been destroyed and there are no signs of the mast or rigging either.



The UK MCA has released a Marine Guidance Note to introduce the Hovercraft Code



AHTS Magne Viking is in compliance with the new IMO Polar Code following a survey by DNV GL

FIRST VESSEL TO COMPLY WITH IMO POLAR CODE APPROVED BY DNV GL

After a successful survey, DNV GL and the Danish Maritime Authority have confirmed that the AHTS Magne Viking, owned by Viking Supply Ships, is in compliance with the new IMO Polar Code.

“Having followed the development of the Polar Code for some years, it is a great achievement to finally survey the first vessel to comply with the Code,” said Morten Mejlænder-Larsen, who is responsible for Arctic and Polar activities at DNV GL – Maritime.

Based on long experience from Arctic operations in low temperatures and ice covered waters, Viking Supply Ships saw the value in the IMO Polar Code and decided to implement it early on. The process has included updates of vessel and equipment, as well as providing the required documentation.

“As this vessel was already winterized and built for operation in cold climate, most of the additional requirements in the Polar Code were already fulfilled

before we started the implementation process,” says Andreas Kjøl, Project Director at Viking Supply Ships.

The IMO Polar Code is mandatory for all SOLAS vessel entering Arctic and Antarctic waters from 1 January 2017. The Code is an add-on to existing IMO codes where the main requirements are related to safety (SOLAS) and protection of the environment (MARPOL). DNV GL will, on behalf of the Flag Authorities, issue the Polar Ship Certificate for vessels complying with the new code.

Magne Viking is an ice-classed AHTS vessel capable of operations in harsh environment offshore regions, as well as Arctic/Sub-Arctic operations. The DNV GL classed vessel is owned and operated by Viking Supply Ships.

CONTRACT AWARDED FOR THE FIRST PHASE REBUILD OF THE MAID OF THE LOCH

The first contract to be awarded in the £5.5 million project to rebuild the Loch Lomond (Scotland) Paddle Steamer, the Maid of the Loch, has

been signed. The contract ahead of the actual rebuild has been awarded to OSD-IMT Ltd, of Dundee, and is for marine consultancy services. OSD will provide the necessary naval architecture, engineering, structure, and outfitting expertise to produce all the required calculations, drawings, and designs to ensure that the rebuild meets all regulatory requirements.

John Beveridge, founder of the Loch Lomond Steamship Company, the charitable trust that owns the Maid of the Loch, said, *“This is a landmark event for us. It is almost exactly 20 years since the charity took ownership of the Maid of the Loch, and we are now able to start work on returning this unique ship back into steam operating condition. It is hugely exciting for everyone and our thanks for all the wonderful support we have had. This is a major investment for Loch Lomond.”*

Managing Director of OSD-IMT Ltd, Neil Patterson, said *“We are pleased to be able to support the Loch Lomond Steamship Company with this exciting and*

challenging project and look forward to assisting them in returning ‘Maid of the Loch’ to operation”.

Maid of the Loch is the last paddle steamer built in Britain in 1953, and she sailed on the loch until 1981, carrying notable people such as Queen Elizabeth II and Queen Salote of Tonga. She lay neglected and deteriorating at Balloch until rescued by the charity in 1996.

Last year Maid of the Loch was awarded a Stage 1 pass by the Heritage Lottery Fund worth £230,400, which allows this professional work to be carried out. HLF has promised a further £3.8 million if the charity can raise the balance of £1.7 million.

“Of course, the Maid is not just an historic steamship”, added John Beveridge. *“She represents jobs, training, added value for visitors and will be an icon for Loch Lomond. A refurbished Maid of the Loch will embrace 21st century safety and comfort, with 20th century Scottish engineering, using 19th century technology. How brilliant will that be?”*



The march to rebuild the Maid of the Loch is finally underway

MEMBERS' NEWS



IIMS TO HEAD UP UK CERTIFYING AUTHORITY STANDARDS PLAN WORKING GROUPS

The annual meeting of the UK's Maritime & Coastguard Agency's (MCA) Certifying Authority Committee took place in Southampton during early February. Most of the UK Certifying Authorities were represented in person. Lloyd's Register had put forward a paper about how CA's continue to have a range of different interpretations on the level of survey needed for both new build and in-service craft and suggested that there is a need for a more level playing field and a more common approach to all aspects of CA work. Fraser Noble, Chairman of IIMS Certifying Authority, had tabled a similar recommendation, expressing his concerns with about inconsistent standards applied by between CA's and citing various examples.

Last year, John Fearnley (Mecal) chaired a working group to look at CA surveyor standards and how proof of competency could be potentially applied to all coding

surveyors to raise standards, no matter which organisation they worked for. His findings and suggestions were fed back to the MCA meeting.

There are two factors for consideration that are driving this agenda. Firstly it is simply bad practice that all surveyors are not working to an agreed minimum standard and level of competency. And secondly, the IMO Assembly adopted the Triple I Code (IMO Implementation of IMO Instruments Code or III Code) and this is now looming large, forcing both the MCA and its contracted CA's to take action to bring their houses into order to comply with this new code.

The outcome from the meeting is that IIMS (represented by Fraser Noble and Mike Schwarz) and Lloyd's Register have been jointly invited by the MCA to head up this important piece of work and to develop and motivate a working group of all CA's to consider both the application of common standards across the all Certifying Authorities how best to assess coding surveyors' standards. As

a result, Mike Schwarz has accepted the role of Chairman of the MCA's Certifying Authorities Professional Standards Working Group (CAPSWG).

JOIN THE IIMS WESTERN MED CERTIFYING AUTHORITY AND SCWG TRAINING DAYS IN PALMA

Details have been announced for the next IIMS Western Med training event (28-29 April), which will take place in Palma, Majorca at the same time as the Palma Superyacht Show.

The event will take place over two days and follows a different theme to past events as it incorporates some Certifying Authority and tonnage education mixed with some small craft surveyor training.

Day One (Thursday 28 April) will be of interest to IIMS Certifying Authority surveyors and any members wanting to become accredited to do tonnages. John Excell, IIMS Chairman of Small Craft Surveying and a

member of the Certifying Authority committee, will lead the proceedings and training.

All present will be invited to complete a tonnage test form. These will be assessed after the event and those successfully completing the form can put themselves forward as an approved IIMS tonnage surveyor.

Day Two (Friday 29 April) Free entry is offered to the Palma Superyacht Show as part of your training course fees. Meet at the show at 10.00am one hour before it opens at 11am. Mike Schwarz, IIMS CEO, will talk about head office activities and discuss the importance of surveyor standards and competency. Head off to enjoy complimentary entry to the Superyacht Show and then assemble at the venue by the show after your lunch for an afternoon of small craft surveyor training.

Full details and agendas are available of the web site. To reserve your place at either or both days call Tania Bernice on +44 (0) 23 9238 5223.



CMID AVI ACCREDITATION SCHEME HITS THE 200 MARK

Only launched in the summer of 2015, the number of applications for accreditation through the IMCA CMID AVI scheme has reached the 200 mark. The programme, run by IIMS subsidiary the Marine Surveying Academy (MSA), is starting to gain traction throughout the offshore industry and is seen as a highly worthwhile and valuable initiative. The oil majors are starting to take a keen interest in the scheme, which was developed to assess the competency of those carrying out a Common Marine Inspection Document (CMID) audit.

To date, MSA has run several one day AVI Accreditation courses for those coming through the process in places as far afield as Houston, Aberdeen, York and Amsterdam. Future courses are planned in Bergen, Singapore and Southampton. Dates will be announced soon for the second half of 2016.

In the CMID & AVI update published in February, IMCA reported;

“The challenge of putting a scheme in place that not only assures the competence of existing inspectors, but which could also be rolled out on a world-wide basis, was not straightforward. One particular challenge was in making the initial accreditation process an objective rather than subjective one.”

“The impact of the AVI scheme has already been felt in the inspector community. At the recent Offshore Windfarm Vessels



Conference in London there was considerable support for CMID and MISW and a recognition that inspectors need to have accreditation. It is seen as a requirement for a professional service which, essentially, deals with occupational health and safety onboard vessels. Not to have accreditation would raise serious questions over safety assurance.”

Commenting on the progress so far, MSA Business Manager, Hilary Excell, said,

“I am very pleased with how the scheme is coming together. We have expanded our assessor pool to handle the steady flow of accreditation applications and it is working well.”

“We have now fine tuned how we deliver the day long AVI Accreditation course and these are well received and proving popular.”

SUCCESSFUL ULTRASONICS SMALL CRAFT TRAINING DAY

A group of 20 plus IIMS members and non members braved the worst that storm Imogen, which was blanketing the south of the UK during early February, could throw up for the first small craft training day of the year.

John Excell, IIMS Chairman of Small Craft Surveying, welcomed guests and scoped out the day ahead. He introduced veteran marine surveyor, Jeffrey Casciani-Wood, who put his many years of experience to good use as he gave a detailed and invaluable presentation about the theory of ultrasonics, what to do and what to avoid. The most important point Jeffrey made was to remind surveyors that an ultrasonics test must never take the place of a hammer test and the two should go hand in hand with each other for the best and most accurate results.

Jeffrey’s presentation was followed by one from Jon Sharland from Tritex NDT Ltd. In his talk, Jon spoke about how to use the ultrasonics equipment, the types of couplants that can be used and some of the pitfalls to avoid.

After lunch, the group headed over the road to P&S Marine. They spent a couple of hours playing with and using Jon’s testing kit and gauges as well as their own. Jeffrey was on hand to give an overview of the various vessels and their condition that were available in the yard.

IIMS would like to thank the following for helping to make the day a great success:

Ralph Kitts of P&S Marine for allowing IIMS to use his yard and facilities; also to Jeffery Casciani-Wood for delivering the morning’s theory presentation; Alan Broomfield for providing the equipment and; Jon Sharland of Tritex for giving a demonstration and then allowing all present to play with his gauges.

IIMS CANADA SPRINGS TO LIFE

In early February, the final annual general meeting of the Association of Marine Surveyors British Columbia (AMSBC) took place in Vancouver. The majority of former AMSBC members have chosen to be amalgamated within the IIMS.

In the afternoon following the AGM, Capt Andrew Korek, IIMS Canada Regional Director, addressed the group and formally welcomed new members in to the Institute.

The process of amalgamation between AMSBC and IIMS has taken much longer than expected, but the Institute extends a warm welcome to its newest members. The inaugural IIMS Canada branch AGM will be arranged very shortly and elections of officers to the new committee will be undertaken.

SAFETY FIRST

Safety notices, guidance and advice to surveyors

Since the start of 2016 there have been a number of safety related stories making the news, which can be found on the IIMS web site. But if you missed them when they were released, here is a roundup of the most important ones with links to the full articles on the web.

CLOSER INSPECTIONS FOR CORROSION OF KILL CORD METAL COMPONENTS ESSENTIAL

One third of skippers has experienced kill cord or kill switch failure, according to the results of a recent survey. The survey also showed that closer inspection of the emergency engine cut-outs is needed to reduce the likelihood of failure.

The reasons given for kill cord failure demonstrate a need for closer inspections to identify weakening of this vital piece of equipment. Kill cords failed because they came apart as a result of rusty metal components; they had no inner cord and snapped; they lost elasticity and stretched, or the outer cord perished leaving the inner core exposed.

Read the article in full at: <http://www.iims.org.uk/closer-inspections-for-corrosion-of-kill-cord-metal-components-essential>

SKULD P&I CLUB WARNS OF DANGERS OF ENTERING AN ENCLOSED ZINC CONCENTRATE CARGO HOLD

Recently the Skuld P&I club noted a crew fatality incident caused by entering an enclosed zinc concentrate cargo hold. A chief officer of a bulk carrier was found lying unconscious in the cargo hold after he entered the hold

alone without ventilation and tragically lost his life. It was later established that the cause of death was asphyxiation. Measurements performed the day after the accident showed that the level of oxygen in the air at the stairwell was 2.6%. Due to the cargo's nature of oxidation, ventilation and atmosphere tests are vital before entering holds and breathing apparatus is needed.

Read the article in full at: <http://www.iims.org.uk/skuld-pi-club-warns-of-dangers-of-entering-an-enclosed-zinc-concentrate-cargo-hold>

NEW PUBLICATION FROM LONDON P&I CLUB ON DECK CRANE INSPECTIONS AND MAINTENANCE

The London P&I Club has published an article on deck crane inspections and maintenance in its newsletter LP Focus, which looks in detail at particular claims issues prompted by the Club's experience and feedback from Members.

Deck cranes are an important item of a ship's equipment and when they break down this can result in loss of hire claims. Furthermore, failure of a deck crane can result in serious injury or death. Depending on the trade of the ship, the cranes may be used in every port or they may be used infrequently.

Read the article in full at: <http://www.iims.org.uk/new-publication-from-london-pi-club-on-deck-crane-inspections-and-maintenance>

US COAST GUARD ISSUES POLICY LETTER ABOUT SEA STRAINERS ON SMALL PASSENGER VESSELS

The US Coast Guard issued a policy letter concerning sea strainers constructed of nonmetallic materials for use on small passenger vessels.

Sea strainers containing nonmetallic components have been installed on small passenger vessels for several decades without incident.

However, the regulations were amended to require vital piping systems to be made of a ferrous material on board new small passenger vessels.

Read the article in full at: <http://www.iims.org.uk/us-coast-guard-issues-policy-letter-about-sea-strainers-on-small-passenger-vessels>

ABS ASSESSES THE ISSUES ASSOCIATED WITH JACKUP SAFETY

The key to jackup safety operations is constant risk management and with this in mind, the American Bureau of Shipping (ABS) has released a white paper to present some of the challenges facing the global jackup fleet along with the research and development (R&D) efforts.

ABS highlights that reliable technology, a strong safety culture and effective operational procedures are critical to creating a safe work environment. Jackup incidents during rig moves are more frequent than incidents while the rig is elevated, and they result in substantial cost to the industry.

Read the article in full at: <http://www.iims.org.uk/abs-assesses-the-issues-associated-with-jackup-safety>

MAIB ISSUES SAFETY WARNING ABOUT CLOSE FITTING JACKETED SYNTHETIC FIBRE ROPES

The Marine Accident Investigation Branch is carrying out an investigation into the mooring line failure on board LNG tanker Zarga while alongside South Hook LNG terminal, Milford Haven on 2 March 2015, which resulted in serious injury to a deck officer.

Close fitting jacketed synthetic fibre ropes with low twist constructions are more prone to failure under normal operating conditions than other mooring rope constructions. This is especially the case where the diameter to diameter (D:d) ratio between

a ship's deck fittings and its mooring ropes, is less than that recommended by the rope's manufacturer.

Read the article in full at: <http://www.iims.org.uk/maib-issues-safety-warning-about-dose-fitting-jacketed-synthetic-fibre-ropes>

ADVICE ISSUED ABOUT THE ROUTINE FUMIGATION OF AGRICULTURAL PRODUCTS ON SHIPS

North P&I Club has published a new free-to-download loss prevention briefing warning its members of the hazards associated with routine fumigation of agricultural products on ships.

The warning follows an explosion of pesticide gases on a panamax vessel, loading corn at Paranagua, Brazil, at the end of December 2015. This resulted in significant structural damage and was one of number of similar incidents reported during the last five years in Brazil and the USA.

Read the article in full at: <http://www.iims.org.uk/advice-issued-about-the-routine-fumigation-of-agricultural-products-on-ships>

MAIB REPORT ON COLLAPSE OF A MEZZANINE DECK ON BOARD RO-RO PASSENGER FERRY PUBLISHED

The report relates to the MAIB's investigation of the collapse of a mezzanine deck on the Wightlink ferry St Helen, at Fishbourne ferry terminal, Isle of Wight, on 18 July 2014. The passengers and vehicles on board the cross Solent roll-on roll-off passenger ferry St Helen were in the process of disembarking at Fishbourne ferry terminal on the Isle of Wight when the vessel's starboard forward mezzanine deck collapsed. The deck collapsed because one of its steel wire lifting ropes parted. The lifting rope parted because it had not been routinely lubricated and the mezzanine deck had not been properly maintained.

Read the article in full at: <http://www.iims.org.uk/maib-report-on-collapse-of-a-mezzanine-deck-on-board-ro-ro-passenger-ferry-published>

DNV GL ISSUES ADVICE ABOUT COMBATING CORROSION DUE TO BOX COOLER

A technical newsletter has been written and published by DNV GL to give an insight and to make recommendations on how to avoid safety risks due to severe corrosion of vessel's steel structure by way of the box cooler. In the most severe cases that DNV GL has encountered, the bolted flange of the top plate of the cooling box was involved. This led to increased risk of collapse of the top plate.

Read the article in full at: <http://www.iims.org.uk/dnv-gl-issues-advice-about-combating-corrosion-due-to-box-cooler>

NEW MEASURES PROPOSED FOLLOWING ACCIDENT CAUSED BY LEAKING HATCH COVERS

The Swedish P&I Club has issued its Monthly Safety Scenario for February 2016 that relates to an accident caused by leaking hatch covers. As a result it recommends preventive measures. While discharging in port it was found that the steel coils in the top tiers were corroded. The steel coils below the centreline and folding seams were the most affected.

A surveyor in attendance observed that the cargo hatch covers were not in an adequate condition. The greatest amount of rusted coils were in holds 1 and 3. The surveyor tested the water integrity of the cargo hatch covers with an ultrasonic device which detected significant defects to the sealing arrangements. The gaskets were in poor condition and the hatch covers tested positive for chloride which indicates that saltwater has leaked. The non-return valves for the drain channel were also in a poor condition as they

were clogged and the ball inside was not moving.

Read the article in full at: <http://www.iims.org.uk/new-measures-proposed-following-accident-caused-by-leaking-hatch-covers>

MEASURING METHANE GAS LEVELS IN CARGO HOLDS

The West of England P&I Club has issued its loss prevention bulletin to advise how to measure methane gas levels in cargo holds when unloading coal cargoes.

Some coal cargoes can produce methane (CH₄). Since methane is a flammable gas, the International Maritime Solid Bulk Cargoes (IMSBC) Code requires vessels loaded with coal to monitor the concentration of methane inside the cargo holds via external sampling points. Portable gas detectors are carried for this purpose. However, in the Club's recent experience it would appear that some crew members may not be aware that the readings for methane may be incorrect if the amount of oxygen inside the hold is low.

Read the article in full at: <http://www.iims.org.uk/measuring-methane-gas-levels-in-cargo-holds>

NEW EU WATERCRAFT DIRECTIVE TO REPLACE RCD IS NOW APPLICABLE

The new EU Watercraft Directive (formerly known as the Recreational Craft Directive or RCD) 2013/53/EU has become applicable from Monday 18 January 2016.

As a result, the European Boating Industry and International Council of Marine Industry Associations' (ICOMIA) invaluable 'RCD Guide' is now applicable to boating professionals intending to manufacture, import, distribute and sell products on the EU single market as well as Iceland, Norway, Lichtenstein and Switzerland (as part of the European

Economic Area/European Free Trade Association), and Turkey (candidate EU member).

In order to comply with the new EU Watercraft Directive on the relevant markets, boats, engines, personal watercraft and certain components (whether imported or domestically produced) will have to be assessed according to the new EU rules.

Read the article in full at: <http://www.iims.org.uk/new-eu-watercraft-directive-to-replace-rcd-is-now-applicable>

AMSA ISSUES MARINE NOTICE ON EMERGENCY TOWAGE CAPABILITY

The Australian Maritime Safety Authority (AMSA) has issued a Marine Notice on emergency towage capability in an attempt to remind masters, owners and agents of ships of their responsibilities for reporting and resolving maritime incidents. AMSA may well seek to reclaim costs incurred in the event of an intervention by them in a maritime incident from the vessel's owners.

The MERCOT is an AMSA officer responsible for coordinating and managing serious maritime incidents who is vested with powers under the Protection of the Sea (Powers of Intervention) Act 1981 (the Powers of Intervention Act).

Read the article in full at: <http://www.iims.org.uk/amsa-issues-marine-notice-on-emergency-towage-capability>

MCA ISSUES HOVERCRAFT CODE MARINE GUIDANCE NOTE

UK MCA has issued a Marine Guidance Note to introduce the new Hovercraft Code which has been developed for Light and Small hovercraft operating in the United Kingdom or United Kingdom Waters (both at sea and on inland waterways).

Currently all hovercraft used for reward must be built to the requirements of the High Speed Craft (HSC) Code. The Hovercraft Code introduces a voluntary set of standards appropriate for small commercial hovercraft, which are equivalent to the HSC requirements.

Where a hovercraft is surveyed and certificated under, and continues to comply with, this Code, it is exempted from those parts of the Hovercraft (General) Order 1972 and the Merchant Shipping (High Speed Craft) Regulations 2004 which require the hovercraft to be surveyed and certificated against the British Hovercraft Safety Requirements (BHSR) and the IMO High Speed Craft Code. The General Exemption is annexed to this MGN.

Read the article in full at: <http://www.iims.org.uk/mca-issues-hovercraft-code-marine-guidance-note>

CLASSNK RELEASES AMENDMENTS FOR STEEL SHIPS SURVEY AND CONSTRUCTION

ClassNK has released amendments to its rules and guidance for the survey and construction of steel ships, including structural strength requirements of container carriers. In response to a large container ship casualty in June 2013, ClassNK established The Investigative Panel on Large Container Ship Safety, which comprised of shipbuilders, shipping companies, and people with relevant knowledge and experience, to investigate the possibility of casualty occurrence and the structural safety of large container carriers. The results from the investigation and ClassNK's action plan were released in the Investigation Report on Structural Safety of Large Container Ships in September 2014.

Read the article in full at: <http://www.iims.org.uk/classnk-releases-amendments-for-steel-ships-survey-and-construction>



25th ANNIVERSARY CONFERENCE 2016

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

THE CONFERENCE AT A GLANCE...

WEDNESDAY 31 AUGUST

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

09.00 to 12.20: Exhibition, networking and five
technical workshops

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

14.45 to 16.30: IIMS Annual General Meeting 2016

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

19.00 to 23.00: The IIMS 25th Anniversary Gala Dinner

THURSDAY 1 SEPTEMBER

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

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

08:30: Registration

09:25 to 10.55 Session 1

11:10 to 13.15: Session 2

14.00 to 16.20: Session 3

WEDNESDAY 31 AUGUST
(09.00 TO 16.30)

**EVENTS TAKING PLACE AT
REGENT'S UNIVERSITY,
REGENT'S PARK, INNER
CIRCLE, LONDON NW1 4NS**

**EXHIBITION, NETWORKING AND
TECHNICAL WORKSHOPS**

- 09.00: Small exhibition opens and networking in Herringham Hall
- 09.30: Technical Workshop 1. Nick Smith: 'Commonly breached warranties for small craft and their implications for insurers and insured.'
- 09.30: Technical Workshop 2. Luc Verley: 'Dredging Technology. An interactive workshop that will give an insight into the world of dredging contractors, projects and equipment.'
- 10.30: Technical Workshop 3. (Speaker to be confirmed).
- 10.30: Technical Workshop 4. (Speaker to be confirmed).
- 11.30: Technical Workshop 5. Carol Powell: 'Marine alloys, their corrosion behaviour and how to avoid it. An overview of metals and their relative resistance to seawater, covering general and localised corrosion, velocity effects, de-alloying, stress-cracking, galvanic behaviour and biofouling.'
- 12.20: Exhibition and networking finishes

IIMS SILVER JUBILEE AWARDS CEREMONY

- 12.30: Awards stand-up buffet lunch in Herringham Hall
- 13.15: Awards ceremony and presentations
- 14.00: Awards ceremony finishes

Dress: Lounge suits

The cost of this session only to include the exhibition, networking, technical workshops, awards ceremony and stand-up buffet lunch is £110 + VAT per delegate.

IIMS ANNUAL GENERAL MEETING 2016

- 14.45: IIMS Annual General Meeting 2016 – reassemble in the Herringham Hall
- 16.30: Annual General Meeting closes.
- The AGM is free to attend.

Muscavado Hall set at the heart of the Museum of London Docklands that will host the IIMS Gala Dinner



The main entrance to Regent's University

WEDNESDAY 31 AUGUST
(19.00 TO 23.00)

**THE IIMS 25TH ANNIVERSARY GALA
DINNER (WITH SURPRISES) IS TAKING
PLACE AT THE MUSEUM OF LONDON
DOCKLANDS, NO.1 WAREHOUSE, WEST
INDIA DOCK ROAD, LONDON E14 4AL**

IIMS 25TH ANNIVERSARY GALA DINNER

- 19.00: Meet for a celebratory drinks reception in the Museum's special designated area 'Sailor Town'.
- 20.00: Dinner served in Muscavado Hall
- 21.15: Speeches
- 23.00: Carriages

Dress: Lounge suits (black tie optional)
Half a bottle of wine will be provided on a complimentary basis. There is also a cash bar.

The cost of the drinks reception and dinner only is £95 + VAT.





*The Old Library at
Lloyds of London*



SESSION 3

- 14:00: Case study of the the m/v
Happy Star Big Lift project by Drew Korek:
- 14:35: To be confirmed
- 15:10: To be confirmed
- 15:50: To be confirmed
- 16.20: Close

The full cost of all three sessions over the two days to cover all the above events for IIMS members if booked singly is £335 + VAT. But if you choose to book all events, the cost is just £315 + VAT.

To reserve your place please use the online booking form:

**[www.iims.org.uk/whats-on/
25th-anniversary-conference-2016/](http://www.iims.org.uk/whats-on/25th-anniversary-conference-2016/)**

**THURSDAY 1 SEPTEMBER
(08.30 – 16.30)
MARINE SURVEYING:
THE NEXT 25 YEARS
25TH ANNIVERSARY
CONFERENCE DAY.
ALL PRESENTATIONS
WILL BE MADE AT THE
OLD LIBRARY, LLOYDS OF
LONDON, 1 LIME STREET,
LONDON EC3M 7HA**

- 08:30: Registration
- 09:10: Opening remarks
- 09:15: Welcome by the IIMS President

SESSION 1

- 09:25: 2016 at a glance and the future of the IIMS by
Mike Schwarz, IIMS CEO
- 09:50: Crisis management by John Guy
- 10:20: Maritime professionals or automatons?
Brave new world or not?
by Philip Wake OBE, Nautical Institute CEO
- 10:55: Coffee

SESSION 2

- 11:10: The next generation of marine surveyors by
Peter King
- 11:40: The impact of future technologies by Chris Hull
- 12:10: Galleon Insurance: Chris Curran
(topic to be confirmed)
- 12:40: To be confirmed
- 13.15: Luncheon

The cost of the full day's IIMS 25th Anniversary
Conference only to include luncheon is £130 + VAT.



25 YEARS ON...

AN INTERVIEW WITH CAPT. BILL



Capt. William MacDonald, (or Capt. Bill to those who know him), was the very first President of the International Institute of Marine Surveying (1991-1993). He was one of the leading visionaries and founding fathers who fought hard to get the organisation off the ground, despite opposition from some quarters. Therefore, it is fitting some 25 years on, as IIMS celebrates its Silver Jubilee, to get the thoughts of one of the men who had the vision to develop such an organisation. The Report Magazine tracked down Capt. Bill, now in his seventies, at his offices in Houston, Texas and put some questions to him about those early, ground-breaking days.

QUESTION 1

Looking back Capt. Bill, what was it that drove you and your colleagues to want to establish a professional body for marine surveyors 25 years ago?

At that time, some 25 years ago now, it was not at all uncommon to find oneself working alongside 'Marine Surveyors' who were totally unqualified and inexperienced. Their only motivation was to accept employment on a part time, ad hoc basis, simply to supplement their incomes provided by their day jobs, such as taxi drivers, restaurant staff and other professions completely

unrelated to the marine world. We observed that these men would frequently, upon receiving a telephone call from a marine survey company instructing them to attend a vessel, simply leave their leave full time occupation, rush to the vessel, fill in pre-prepared questionnaires and take a few photographs. I have to say that I am of the opinion that unfortunately, the industry has never wholly addressed and corrected this issue.

I found myself, as did my contemporaries, competing for work with people who at best could only be described as unqualified laypersons. I am not exaggerating when I say they often did not know the forward from the aft end of a ship. We had invested many years of our lives in both training and successful exam taking to gain our knowledge, through related experience. Mine included attending Liverpool John Moore's University, as well as attending courses whilst at sea such as Tanker Safety, Tanker Operations, Firefighting and many more too numerous to list. I served at sea from a humble Deck Boy to a Captain.

The professional standards of most professions, for example law, accounting, medicine teaching are safeguarded by having codes of ethics and a governing body.

QUESTION 2

What were your hopes and aspirations for the organisation at that time?

My hope was that establishing the Institute would be the beginning of marine surveying and consultancy being recognised internationally as a leading profession, particularly throughout those countries that have a shipping and trading background. I believed that the Institute would attract likeminded professionals, who would support our objectives because they recognised the benefits both to themselves personally and to the profession as a whole.

QUESTION 3

How did you engage with surveyors and get them to become part of your vision and journey?

Because I always believed that I needed to take an international approach when sharing my vision and aspirations, I wanted the founding membership to be spread across as many countries as possible. I therefore wrote a personal letter to some 35 surveyors from all parts of the world. I subsequently received a positive reply from each one I had written to. My next task was to arrange for us all to meet. Firstly I decided upon a date, then I found

CONFERENCE PRICE OPTIONS

OPTION 1

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

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

OPTION 2

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

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

a suitable venue and then I sent invitations to everyone. It was one of my most satisfying week's work of my life when I was able to welcome them all at the Queens Room in the Baltic Exchange in London. It was from this meeting that the final decision was taken to move forward with the foundation of the Institute.

QUESTION 4

What were the key hurdles and obstacles you had to overcome in what can be a sceptical industry at times?

There were numerous hurdles to overcome; many of the part time unqualified surveyors adamantly did not want the Institute to be formed. Then there were those from other countries pointing out that there was a majority of British based members.

Some negative things were being said, such as Capt. Bill had formed this Institute for himself. At the start the Institute's address was my head office address in Birkenhead, Merseyside. I immediately had that changed in order to prevent those who opposed us being able to claim that the Institute was undemocratic and that it had been formed and was being run by Capt. Bill and his staff for their use only.

*Thank you for your time
Capt. Bill and for sharing
your thoughts for the
Report magazine.*

QUESTION 5

What are your recollections of the first gathering of marine surveyors back in 1991?

My recollections of the first meeting were of it being a friendly meeting, which lasted three days. There was a set agenda which was strictly followed. All matters on the agenda were discussed. 90% of those present voted in favour of the Institute being formed.

Question 6

Knowing that IIMS now has about 1,000 members in over 90 countries must make you extremely proud. Had you any idea what you were starting all those years ago?

I knew from feedback of the attending members that there was a real need and enthusiasm for the Institute. But following the formation of the professional body for marine surveyors, I did not, at the time, foresee it having members in over 90 countries by 2016.

It is indeed a great achievement and all those who have helped build the Institute in to what it is today should be praised for their continuous good work. We need new blood, to attract younger members as the industry is changing day by day. Shipping has changed dramatically since I was third mate in the Blue Funnel Line. Marine surveying must move forward in the same manner.

I am extremely proud that it was I who laid the foundations and the first bricks. I sincerely send the

Institute my very best wishes for the future.

QUESTION 7

What do you believe should be some of the key objectives for IIMS for the next 25 years in an ever changing world for marine surveyors?

I believe that the key objective for the IIMS for the next 25 years should be training, government recognition and acceptance of the IIMS as the leading worldwide professional body for marine surveyors. If the Institute is ever to attain status as a governing body, setting the standard and examinations for future seafarers who want to become deck and engineering officers and start on the pathway to becoming competent marine and cargo surveyors, IMO must be approached and consulted. Then the opportunity should be taken to begin explaining and demonstrating the Institute's values to IMO in order to gain their support.

QUESTION 8

What message do you have for IIMS members and indeed marine surveyors around the world?

My message for IIMS members and marine surveyors all around the world, no matter what type, shape or size of vessels they survey, is to encourage the young people to join. Take every opportunity to spread the word of the benefits of being a member of the IIMS both personally and to the profession.

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

OPTION 3

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

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

OPTION 4 (FULL PACKAGE):

Attend all events on both days: Exhibition, Technical Workshop, Awards Ceremony and Lunch, Gala Dinner and the full day's conferencing at Lloyds.

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



SILVER JUBILEE AWARDS

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

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

Location: **London**

Venue: **Regents University**

Who can enter?
Open to all IIMS members

Nominations close:
Thursday 30 June 2016

You may nominate as many as you wish.

THE AWARDS AT A GLANCE

Open to yacht and small craft surveyors ONLY:	<ul style="list-style-type: none"> • Outstanding Contribution to the Yacht & Small Craft Marine Surveying Industry Award • Marine Surveying Project of the Year Award (Yacht & Small Craft)
Open to commercial ship surveyors ONLY:	<ul style="list-style-type: none"> • Outstanding Contribution to the Commercial Shipping Marine Surveying Industry Award • Marine Surveying Project of the Year Award (Commercial Shipping)
Open to BOTH yacht and small craft and commercial ship surveyors:	<ul style="list-style-type: none"> • Most Effective Use of Social Media Award • Rising Star Award • Best Web Site Award • Customer Focus Award • Innovation Award

THE AWARDS CATEGORIES

Open to yacht and small craft surveyors ONLY:

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

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

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

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

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

Kindly sponsored by: **Galleon Marine Insurance Agency**

Open to commercial ship surveyors ONLY:

Outstanding Contribution to the Commercial Shipping Marine Surveying Industry Award

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

Kindly sponsored by: **Henderson International Asia Pacific Group**

Marine Surveying Project of the Year Award (Commercial Shipping)

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

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

Sir Alan Massey to present IIMS Silver Jubilee Awards

Sir Alan Massey, Chief Executive Officer of the UK Maritime & Coastguard Agency (MCA), has agreed to present the IIMS Silver Jubilee Awards for Excellence at the IIMS 25th Anniversary Conference on Wednesday 31 August 2016 at Regent's University, London.

Sir Alan became the Chief Executive of MCA in July 2010. Prior to that appointment he was in the British Royal Navy, where he was Second Sea Lord and Commander-in-Chief, Naval Home Command, in the rank of Vice Admiral. During his seagoing years, he commanded four warships, including the aircraft carriers HMS Illustrious and Ark Royal. He was appointed a CBE in 2003 and a KCB in 2009.

The IIMS Silver Jubilee Awards for Excellence have been created to specifically celebrate the 25th Anniversary of the Institute by recognising excellence in marine surveying around the globe. There are nine awards categories and direct nominations are being accepted from IIMS members for five of the categories. Nominations will close on 30 June 2016.



Sir Alan Massey will present the 2016 IIMS Silver Jubilee Awards for Excellence

THE AWARDS CATEGORIES

Open to BOTH yacht and small craft and commercial ship surveyors

Most Effective Use of Social Media Award

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

Rising Star Award

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

Customer Focus Award

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

Best Web Site Award

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

Innovation Award

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

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

THE JUDGING PANEL:

Chairman: **Mike Schwarz**,
Chief Executive Officer

Bridget Hogan, Director of
Publishing & Marketing,
Nautical Institute

Niamh Cullen, Proprietor,
Hoot Marketing

Fraser Noble, FIIMS,
Certifying Authority Chairman

Lee Warltier, MIIMS

Jeremy Knight, AssocIIMS,
CEO of Clipper Ventures Plc

Captain Andrew Korek,
MIIMS, Regional Director -
IIMS Canada Branch

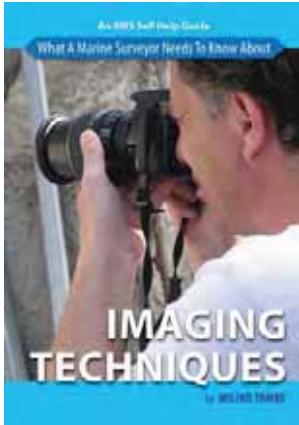
TO MAKE A NOMINATION
Email your nomination(s) to
awards@iims.org.uk by 30
June 2016. Ensure you state
which category you are
nominating for and attach
the supporting evidence for
the judging panel.

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

Final judging will be
completed by Friday 12
August 2016.

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

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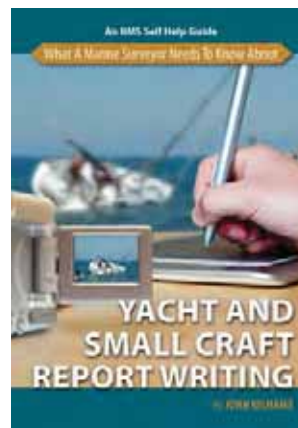
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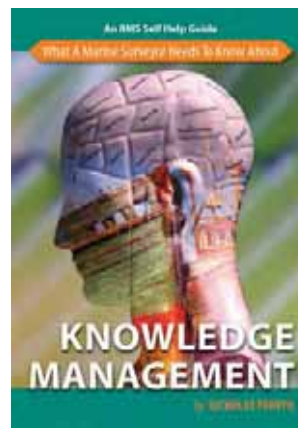
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The risk of Enclosed Space Incidences: How to understand and detect gasses. New mandatory regulation in 2016

In the modern day shipping industry there sadly remains the stubborn problem of closed space incidences which often take lives. This is especially regretful considering recent advances in preventative technologies such as portable gas detection and personal protective equipment. It is therefore promising that the IMO's Maritime Safety Committee (MSC) has approved SOLAS regulation XI-1/7, which mandates ships to carry gas detecting equipment which is capable of determining hydrogen sulphide, carbon monoxide, oxygen, and flammable gasses *prior* to closed space entry. Notice the operative word *prior*, which importantly implies the necessity for pump facilitated remote detection as opposed to belt worn personal gas alarms. The regulation and its accompanying guidance are written for all ship types and highlight the hazards of

dangerous packaged goods, liquid and solid bulk cargos, nitrogen gas inerting, oxygen-depleting cargo, and fumigations. The now voluntary SOLAS XI-1/7 will enter into mandatory force on 1st July, 2016, but has been voluntarily implemented already by the Maritime and Port authority for Singaporean flagged vessels starting 1st July, 2015. Importantly, the regulation references the accompanying documents MSC.1/Circ.1477 and resolution A, 1050(27), which provide guidance for the selection of instruments and protocol for enclosed space entry, respectively. This development is a positive step towards decreasing closed space incidences, but will only have teeth with proper implementation and an increased understanding of closed space gasses. Hence, we herein discuss common ship gasses, cargoes that produce or deplete them, and ways they can

be detected – all in the spirit of honoring the new regulations and increasing safety standards.

Dangerous Gasses and Oxygen Depletion

Because the source of individual gasses could be different depending on the situation (i.e. carbon dioxide could come from either combustion, self-heating, or inerting), it is somewhat difficult to draw categories for the common closed space gasses on ships. It should also be realized that toxicity varies wildly between individuals making threshold levels difficult to set accurately. Furthermore, life sustaining oxygen is in a category of its own and is probably the most important gas to consider especially when one realizes its hand and hand relationship with the many gasses which displace it. Nonetheless, the following table

This article was first published on the **Swedish P&I Club website** and it is reproduced here with their permission.



by **Dr. Wesley Tucker**
Consultant Scientist,
TCI Scientific

classifies sixteen gasses which are common to ship spaces in the interest of providing context. Gasses that derive from volatile organic chemicals (i.e. benzene, plastics precursors, alcohols) and fuels which are relevant to tankers are left off the table because they are too numerous to summarize here, but it should be mentioned that as a general category these substances are more often than not some combination of toxic, flammable, and carcinogenic. Carcinogenicity is not shown as a category in the below table because the gasses on this list are not known to be carcinogenic. Instead, the column categories reference other important United States Occupational Safety and Health Association (OSHA) standards as benchmarks, with units conventionally measured in parts per million (ppm) with the exception of oxygen which is measured in percent. The gas attributes listed in this table are important from a health and safety perspective for various reasons and should be understood by crew as best as reasonably possible:

Time Weighted Average (TWA)

Described by OSHA as: “An employee’s exposure to any substance shall not exceed the 8-hour Time Weighted Average given for that substance any 8-hour work shift of a 40-hour work week”. To calculate TWA, one would measure gas levels for several time points over a 8 hour period and take the average, which should not exceed the limit on any day of a 40 hour week.

OSHA Ceiling

Also known as *Short Term Exposure Limit (STEL)*, this is described by OSHA as a value that: “Shall at no time exceed the exposure limit given for that substance. If instantaneous monitoring is not feasible, then the ceiling shall be assessed as a 15-minute time weighted average exposure which shall not be exceeded at any time during the working day”. Hence, when ceiling levels are detected, no length of exposure time is considered safe.

OSHA Immediately Dangerous to Life or Health (IDLH)

This high level threshold is described by OSHA as: “Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual’s ability to escape unaided from a permit space.” [29 CFR 1910.146]. In other words, this number is a rough estimation of the ‘incapacitating’ concentration where the affected person would not physically have the ability to attempt escape.

Specific Gravity (SG)

Defined for gasses as the ratio of the density of the gas to the density of the air – meaning that gasses with an SG below 1 are lighter than air and those above 1 are heavier. This is important on ships because heavy gasses may settle at lower portions of spaces and vice versa. Given that some relevant gases from the table are substantially heavier or lighter

Category	Chemical	Name	OSHA TWA (ppm)	OSHA Ceiling (ppm)	OSHA IDLH (ppm)	Specific Gravity	Smell Threshold (ppm)
Fumigants	PH ₃	Phosphine*	0.3	1.0	50	1.214	.02 min-2.0 max
	CH ₃ Br	Methyl Bromide	1	20	250	1.73	Varies highly
Inerting agents	CO ₂	Carbon Dioxide	5000	30000	40000	N/A	N/A
	Ar	Argon	SA	SA	SA	N/A	N/A
	N ₂	Nitrogen	SA	SA	SA	N/A	N/A
Combustion Products	NO ₂	Nitrogen Dioxide	0.2	1.0	20	2.62	0.1 to 0.4 min
	SO ₂	Sulphur Dioxide	2	5	100	2.26	2.0 min
	CO	Carbon Monoxide	50	200	1200	.97	None
Cargo/ Biological Related	O ₂	Oxygen**	N/A	N/A	<19.5 %**	N/A	N/A
	H ₂	Hydrogen	SA	SA	SA	.07	N/A
	H ₂ S	Hydrogen Sulfide	10	20	100	1.19	.0047 min
	CH ₄	Methane	SA	SA	SA	0.55	N/A
	NH ₃	Ammonia	25	35	300	.66	5.0 min
	HCl	Hydrogen Chloride	5	5	50	1.27	.26 -10 min
	Cl ₂	Chloride	1	1	10	2.49	.31 min
Welding	C ₂ H ₂	Acetylene	SA	SA	SA	0.91	226 min

SA denotes “Simple Asphyxiant” – meaning the gas is only harmful as a displacer of oxygen.

* Auto ignition at 38°C and 1800 ppm. Other gasses on the list are capable of auto ignition but only at extremely high temperatures.

** Oxygen differs from all other gasses in that it has minimum requirements and is conventionally expressed as a percentage in contrast to toxic gasses which are expressed in ppm.

than air (i.e. nitrogen dioxide or hydrogen), it should be easy to imagine sub-sections of closed spaces accumulating higher concentrations, and thus a need to check levels in zones and sections where appropriate.

Smell Threshold

The terms *smell* or *odor threshold* are most often used to mean detection threshold, which identifies the concentration at which 50 percent of a human panel can identify the presence of an odor or odorant without characterizing the stimulus. Smell perception, just like toxicity, varies wildly among individuals. Odor thresholds can greatly exceed toxic levels and some gasses have no inherent smell without additives or contaminants. It is therefore no surprise that safety guidance always states that the assessment of gas by smell is an illegitimate detection practice.

Cargoes That Affect Atmospheres

Certainly the most prominent causes of dangerous gas levels relate directly or indirectly to cargoes in holds or tanks. Obvious exceptions to this are: 1) Atmosphere changes which occur in ballast tanks due to biological oxygen depletion or methane formation, 2) Gasses that result from fires or reactions, or 3) welding gasses such as acetylene – all of which should not be discounted. Nevertheless, with cargo related incidences being a persistent problem, we herein list common cargo categories that have a high likelihood of producing gas or depleting oxygen. The list is far from exhaustive and instead serves as a general overview.

Agricultural:

i.e. grains, oilseeds, copra, wood, fish products, guano, fumigation gasses

– respiration in the plant/animal materials themselves may deplete oxygen while the microorganisms that inhabit them may further alter the atmosphere. Additionally, one should realize that fumigation gasses, such as those used to treat some of these products during a voyage, were originally selected because of their particularly high toxicity and ability to pervade spaces as an effective fumigant. In fact, the history of fumigants coincides with that of chemical weapons and some gasses have been used for both purposes. In general, phosphine is used to fumigate bulk stored grains while methyl bromide is used to fumigate containers.

Ores/Concentrates:

i.e. zinc blende (zinc concentrate), Directly Reduced Iron (DRI) – these cargoes may produce hydrogen sulphide, hydrogen, and deplete oxygen. Unfortunately, the exact category and composition of concentrates is often ambiguous or misdeclared, so a professional characterization of the cargo may be necessary to really understand the relative dangers.

Dry Fuels:

i.e. coal, lignite – these cargoes may produce methane, carbon monoxide (when heating) and other volatile organic gasses, and are also capable of oxygen depletion.


Dry Chemicals:

i.e. "NPK" fertilizers (Ammonium and/or nitrate based fertilizers) – these cargoes may produce ammonia, nitrogenous gasses, chlorine, and hydrogen chloride if heated, and may also deplete oxygen. It should generally be understood that nitrate is oxidizing

and ammonium is unstable, so knowing the relative proportions of these components in the cargo formulation is essential.

Liquid Organic Chemicals/ Fuels:

i.e. phenol, Vinyl Chloride Monomer (VCM), naphtha – these cargoes produce volatile organic chemical fumes which are most likely toxic, flammable/explosive, and/or carcinogenic. Additionally, the atmospheres above chemical cargoes are often purged with inert gas to mitigate oxidation and flammability. When one realizes that a safe minimum of oxygen is considered to be



19.5% while atmospheric oxygen is approximately 21%, it is easy to see how inert gasses could make a space unsafe.

Liquid Inorganic Chemicals:

i.e. ammonia, hydrochloric acid – may produce ammonia and hydrogen chloride gas which are both toxic.

Detection of Gas Levels Prior to Entry

As mentioned in the intro of this article, it is essential that dangerous gasses and oxygen levels are revealed before a space is entered, which is why the Maritime Safety Committee (MSC) made sure the equipment guidance (MSC.1/Circ.1477) calls for electrochemical sensor based detectors that can sample from a distance. Such detectors are widely available from safety equipment suppliers and typically include sensors for the four gasses listed in the regulation - oxygen, carbon monoxide, hydrogen sulfide, and explosive gas. The unit must include a pump and extension tube to sample remotely through portals such as sounding pipes, and should be the type that can not only alarm at certain thresholds, but also determine an actual gas concentration value.

In addition to the portable sensor based detectors called for in the regulations, colorimetric detection tubes are also available for a surprisingly vast range of gasses in wide ranges of concentrations. Instead of being based on an electrochemical sensor, the tubes work instead by reacting with the gas to produce a color that is proportional to the concentration when sampled by a calibrated pump. These types of detectors, which are well known by their brand names *Dräger* (Germany) and *Gastec* (Japan), are disposable,

inexpensive, convenient and pre-calibrated. Similar to the electronic detectors, they can be extended into remote spaces with accessory tubes. The tubes are excellent for detecting suspected gasses that are not covered by the electronic unit, while some tube types can even identify unknown gasses from a panel. Copious information is available online for both detector types.

Personal Protection From Gaseous Dangers

Incidences have been documented where crew entered dangerous spaces with a simple filter type mask specific for particulates or certain gas types. Not only does this practice fail to protect against unexpected gas types, but even if the appropriate filter type was selected, it would be impossible to estimate when it will reach capacity. Worse yet, no mask provides assistance regarding depleted oxygen. This practice should therefore be considered next to worthless as a safety measure, and these type of cartridge filter face masks should be used only for applying epoxies, cleaning, loading/discharging, or inspecting tanks **after** the space has been confirmed safe. Spaces which do have the potential to have atmospheric dangers cannot be entered without a self-contained breathing apparatus (SCBA), and even this should be avoided unless it is a dire situation such as a rescue. Imagine entering a cargo hold wearing the last remaining SCBA and breaking a leg while in the space, only to wait for the inevitable. When the harsh realities of rescue are considered, an ounce of prevention truly is worth a pound of cure, and as we described above – an ounce of prevention for closed space incidences takes the form of inexpensive, accurate, practical, and user friendly equipment that should be used judiciously.

WARRANTIES NOW AND IN THE FUTURE



By **Nick Smith**
Director, The Yacht Practice (London)
at Charles Taylor Adjusting Limited

On 11 August 1956, Elvis Presley released the track “Don’t be cruel”. There can be very few who have not heard this forlorn track; melancholy Elvis sitting glumly at home inconsolable as his love ignores his pain.

Under the Marine Insurance Act, 1906, any breach of a policy warranty gives insurers the option to walk away from any loss. That is any loss whether related to the breach or not. Worse still insurers are “off risk”, from the date of the breach. Coverage cannot be reinstated by remedying the breach.

An insured cannot wander in and out of coverage as if he or she is calling in for a cup of tea. Very little has been as divisive and resented as breaches of warranty since the Marine Insurance Act came into effect 110 years ago. Like Elvis, many Insureds have felt abandoned by their insurers. The current (some say harsh) treatment of breach of warranty ends on 11 August 2016, sixty years to the day that Elvis sang, **“Please let’s forget the past, the future looks bright ahead”.**

So what is a warranty? The Marine Insurance Act 1906 says this...

Nick joined Charles Taylor Adjusting in February 2007. Between 1986 and 1999, Nick was Head of Yacht Claims at Lloyd's Claims Office. In 1999, he formed Global Claims and Co. with offices in London, Tortola, Fort Lauderdale and San Diego. The business serviced both London and US domestic yacht insurers. Nick lectures on matters relating to yacht insurance claims and writes extensively for the trade press and international media.

The Insurance Act 2015 received Royal Assent in the UK on 12 February 2015. When it comes into force in August 2016, it will represent the greatest change to insurance contract law in this country in over 100 years. It will amend certain key sections of the Marine Insurance Act 1906 including warranties, although it is worth noting that the 1906 Act has not been repealed.

"A warranty ... is a condition which must be exactly complied with, whether it is material to the risk or not. If it be not so complied with, then, subject to any express provision in the policy, the insurer is discharged from liability as from the date of the breach."

The full text can be found at Section 39 of the Act. The implications for insureds is patent-breach a warranty and you lose your insurance cover for the remainder of the term of the policy.

Although apparently inflexible the Act does allow excusable breaches of warranty. Say an insured was sailing from Antigua to Florida. He knows that a major hurricane is barrelling towards him. He puts into a port in Cuba as a port of refuge. Cuba is outside of his navigating warranty, in fact it is warranted no entry into Cuban waters. His actions are an excusable breach. The Act explains:

"Non compliance with a warranty is excused when, by reason of a change of circumstances, the warranty ceases to be applicable

to the circumstances of the contract, or when compliance with the warranty is rendered unlawful by any subsequent law."

Oddly this appears at Section 34 of the Act, five sections before "Warranty" is defined.

There are only two types of warranty; express and implied. Let's deal with "Express" warranties first as by their nature they are easier to follow.

An express warranty is written into the policy. It may appear more

than once. It may appear in the schedule of the policy and in the policy wording. There may be more than one express warranty. The most common express warranties that readers of this journal may encounter are some or all of the following:

- ***Class warranties. These may warrant that a yacht was built to the rules of a particular IACS classification society. The warranty may or may not require the yacht to be classed and class maintained.***
- ***Full compliance with any pre-risk survey recommendations either before policy inception or within a period stipulated by insurers.***
- ***Minimum crew qualifications and experience and in compliance with local laws in the waters the yacht is navigating.***
- ***Maximum design speed.***
- ***Private pleasure use only.***
- ***Laid up (not under refit or repair).***

Two express warranties that have led to litigation in the last few years are manning warranties and refit and repair.

In the case of the “RESOLUTE” the policy had an express warranty that stipulated that the vessel (a fishing boat) should be manned at all times. Whilst the entire crew was ashore the vessel caught fire and was a Constructive Total Loss. The assured claimed under the policy. The insurers declined the loss for breach of warranty. It was held that there was an excusable breach as there was virtually no accommodation on the boat. It would have been impossible for crew to live on board.

The reverse occurred in the case of “NEWFOUNDLAND EXPLORER”. Her policy also contained an express warranty that required at least one crew member on board at all times. Unlike “RESOLUTE”, “NEWFOUNDLAND EXPLORER” had considerable accommodation. When the writer took a statement from the captain he was told that at the time the fire alarms were activated he was fifteen miles away, ironically having a barbecue at home. It was held that insurers were entitled to avoid the claim.

Refit and repair clauses may appear as express warranties, subjectivities or conditions precedent. The latter two are topics for another article and other songs by the King. However express refit and repair clauses have the same requirements. If a yacht enters a yard for more than routine maintenance or hot work is involved, the insurers must be told. The insurers will also want to see any contracts with the yard. Other than ICOMIA contracts, usually lurking somewhere on the back of the contract in very small print, are words that restrict the rights owners and insurers have should the yard damage the yacht. Often next to this is a woefully inadequate sum (tens of thousands against values of tens of millions) that limits the yard’s liability if the limitation language can be defeated. Insurers usually sign up for navigating risks. They are not in the business of insuring yard liabilities.

“There is an implied warranty that the adventure insured is a lawful one, and that, so far as the assured can control the matter, the adventure shall be carried out in a lawful manner.”

In the case of the “DORA” the yacht had been used for smuggling. The assured had breached the implied warranty above which can be found at Section 41 of the Act. Incidentally this is the only breach of warranty that cannot be waived by insurers.

“In a time policy there is no implied warranty that the ship shall be seaworthy at any stage of the adventure, but where, with the privity of the assured, the ship is sent to sea in an unseaworthy state, the insurer is not liable for any loss attributable to unseaworthiness.”
(Section 39.5 MIA)

Proving “privity” is notoriously difficult particularly where a yacht is corporately owned.

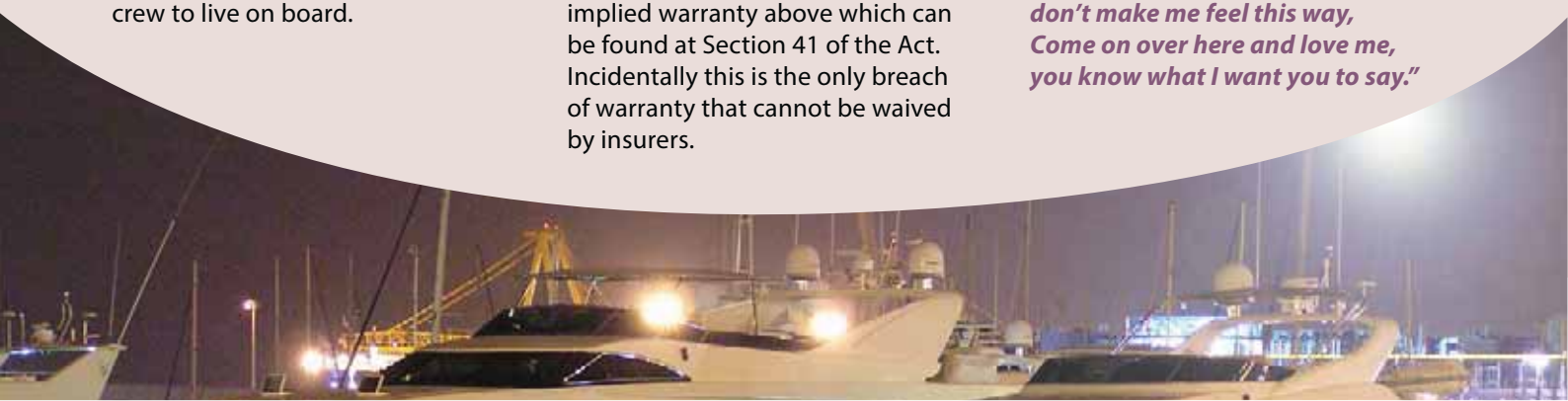
So what changes on 12 August 2016 when the Insurance Act 2015 comes into force? Quite a lot is the answer! Under the new Act a breach of warranty has a “suspensory” effect on coverage. There is still no cover for losses during the breach, but unlike under the current system, cover resumes once the breach is remedied. This change potentially benefits insureds enormously.

Under the current system statements made by insureds can be turned into warranties under what is known as “Basis of Contract” claims. Under the new Act these have been abolished.

Only time will tell if the new Act reduces the number of disputes between insureds and insurers. There is not the space to discuss the case here but had certain aspects of the “GALATEA” case been decided under the Insurance Act 2015 rather than the Marine Insurance Act 1906, the result would have been in the insured’s favour rather than insurers.

To summarise, there is a major change in marine insurance, at least in England, in the summer of 2016. The result should be to reduce the number of breach of warranty claims insurers can walk away from. As the King crooned:

“Don’t stop thinking of me, don’t make me feel this way, Come on over here and love me, you know what I want you to say.”



Machinery, what is the underwriter's problem?

By **Simon Stonehouse**, Head of Marine at **Asia Capital Reinsurance Group** (Asia Capital Re)

Simon is a familiar name to the international marine insurance market and the shipping community. He currently leads the development of Asia Capital Re's marine portfolio. Previously from Lloyd's syndicate, Brit Group Services Ltd, Simon has especially strong grounding in statistical research, analysis and risk management. A former chairman of the Joint Hull Committee

representing the London market's marine hull insurers, Simon was also on the Joint War Committee and IUMI (International Union of Marine Insurance) committees as well as the founding member of the IUMI Salvage Forum.



We are hemorrhaging money! Machinery is the biggest cost in terms of overall claims amount that insurers pay. Machinery incidents amount to over 40% of the overall claims paid by underwriters. To give some background, insurers cover the cost of replacing machinery which has broken as a result of negligence by the crew providing such loss or damage has not resulted from want of due diligence by the insured, owners or managers. This is very wide coverage and effectively acts as warranty insurance for the machinery. Obviously it is open to abuse and insurers trust the owners to be open and honest when presenting a claim for machinery damage.

I have been in the insurance industry for over 30 years and have benefited from the Braemar's, previously the Salvage Association, monthly reports. The top four causes of casualty are always machinery, grounding, fire and collision in that order. This is also backed up by the International Union of Marine Insurers (IUMI), where the data is kindly provided by Lloyd's List Intelligence.

If you break down the losses by cost, main engine damage accounts for over 60% of the claims cost, followed by auxiliary engines (20%) and turbo chargers (10%). The table below shows some examples of engine damage claims. This is not small change!

Table 1 - Engine Damage Claims

CASUALTY	COST (USD)
Main Engine Crankshaft Failure	5,500,000.00
Turbocharger Failure (large main engine)	800,000.00
Engine Room Fire – (cruise ship)	28,000,000.00
Rudder Damage (bulk carrier, US Flag)	975,000.00
Boiler - Loss of Water (tanker)	1,200,000.00
Reduction Gearbox Damage (push tug)	480,000.00
Auxiliary Engine Failure	525,000.00
Cargo Crane Slew Ring	700,000.00

I enjoy playing with figures and statistics! So let me work through an interesting statistic with you. The annual marine hull premium for all insurance markets is USD7.6bn. (Source IUMI). The average loss ratio over is approximately 85%. Loss ratio is the percentage of the premium that insurers pay out in claims. Therefore on average insurers pay out USD6.5bn in claims. Machinery claims as explained above account for 40% of the overall claims. I think that figure is generous and consider the figure to be nearer 50%. Let's go with 40%, therefore insurers are paying out USD2.6bn a year for machinery damage claims.

Pause. The average engine costs around USD1.5m. Divide USD2.6bn by USD1.5m that amounts to 1,733 new engines. In 2015 there were around 1,600 new deliveries in terms of new buildings. Therefore the insurance industry is paying out more for machinery claims than it costs to fund all the new engines being installed in the new buildings in one year! Aren't we nice chaps!

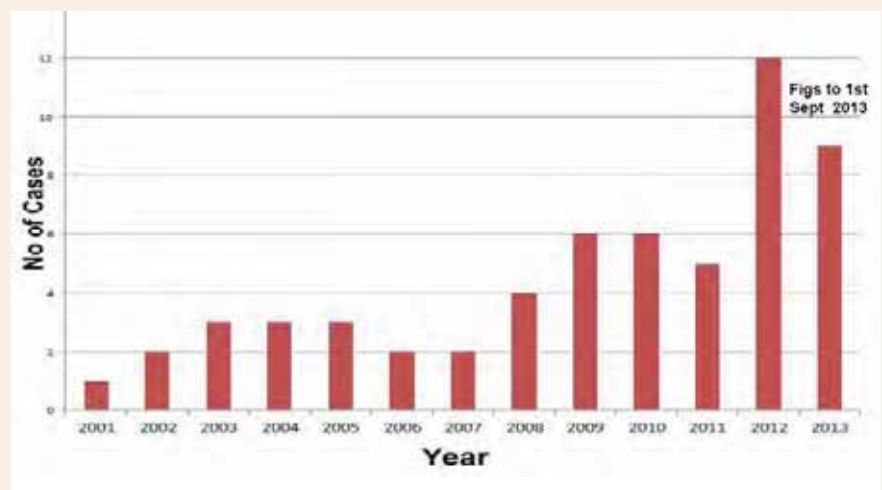


Figure 1 - Number of cases of confirmed cat fine engine damage seen by Braemar (inc The Salvage Association) over the last 12 years

The issues with engine casualties need to be identified. I consider strongly that the insurance industry has funded a lot of the research and development costs related to engines. Take low sulphur fuels (LSF) issues for example. The number of claims the insurers have paid out because of LSF have been increasing. I was assured by a major engine manufacturer a few years ago that this was not an issue and the engines can happily run on HFO or LSF without any risk. Who is kidding who? You only need to analyse the graph below to see the manufacturers' assurances are worthless!

The London Joint Hull Committee and Braemar produced an excellent paper on LSF and cat fines in 2013 and I seriously recommend that anyone with an interest should study it. The paper culminated with the introduction of a new to tackle the cat fine issue, but sadly I have rarely seen it used.

To give an example...

A 54,000 DWT bulk carrier built in 2005. Engine damage. The alleged cause of the damage was the supply of poor fuel oil bunkers with excessive levels of cat fines. The cost of repairs was in the region of USD 1,500,000.



Human factors are still the major cause of loss. You can design machinery to mitigate the loss and put regulations in place, but this still may not be good enough. Shipping companies must adopt safety cultures to ensure the crew are not breaking the rules and are adhering to best practices. This is becoming more and more difficult with the pressures on crews these days. If you take a large container ship there may only be three or four technical staff on board. There is more emphasis on outside engineers for repair and maintenance. However the technical staff still needs to be able to fix the engine and understand the issues in deep sea when the outside personal are unavailable.

I support the crew. I object to the finger always being pointed at crew when things go wrong. More often than not it is not their fault because they have not been trained properly, or they are under great pressure and sometimes fatigued. In some cases it is a convenience to blame the crew when actually it is covering up a serious breakdown in management responsibility. For example when

a ship transfers to LSF it is often when a ship is about to enter port. This is the busiest time on board as the crew prepares the ship for all the inspections to comply with the regulations and prepares for loading/discharge of cargo. Switching to LSF is not straight forward and is not a matter of turning one switch off and the other on. If something is going to go wrong this is the time. Why are the crews fatigued? Have they not been trained properly? Is the crew inexperienced and been promoted too quickly in order to comply with regulations? Was the LSF laboratory tested for cat fines, and so on. These are management responsibilities. Why should underwriters pay for this?

I believe crews have to be trained up to 'airline pilot' standard these days. It is all very well engine manufacturers designing more technical engines and systems, but if a crew member has not been trained then it is a recipe for disaster and the insurers end up paying. I have been involved in a number of incidents where the crew do not understand

the warning systems and turn them off, sometime resulting in catastrophe simply because the crew has not been trained. This is not fair on the crew and I consider in the event of a casualty everyone should share the burden of responsibility including the onshore management.

There are commercial pressures with the owners trying to remain solvent in a very poor freight market. Therefore pressures will be put on maintenance, spare parts, procurement and training budgets. Spare parts are a key issue. In the past engines could be fixed relatively easily with OEM or a third party manufacturer parts. Now the engines are so sophisticated that the getting the right spare part with the correct tolerances is fundamental and also expensive.

I also consider that insurers are partly to blame for the situation that we are currently in. That is because when there is claim the insurers focus on the proximate cause which I consider to be a too higher a level. We should be asking our surveyors, i.e. you, to

investigate more of the root cause of the claim, the multiple prime causes that contributed to the proximate cause. There may be a generic link between the root causes. Then the surveyors deliver recommendations to how systems and so on can be changed in order for the incident not to reoccur. Additionally the surveyors and/or insurers may be able to identify trends and take appropriate action.

It is the insurer's responsibility to ask the surveyors for this information rather than just delivering the proximate cause which is satisfactory from a claims viewpoint. Insurers are leaving a lot on the table in terms of loss prevention. The aviation and offshore industry has moved forward on this basis sadly the shipping and marine insurance industries have been left behind.

These concepts were suggested at the IUMI 2015 in Berlin by John Walker, Braemar Chief Surveyor America, and I whole heartedly support him. I thank him for his very valuable contribution to the conference. I also consider the insurance marine insurance industry should take note and do something.

I wish to touch on Big Data. I appreciate it is trendy phrase at the moment. I do believe that marine hull insurance will start using data in their pricing models. Motor insurance has already gone down that route and the management with 99% confidence level is able to predict the profitability, or loss of a motor portfolio. If you take the derivative of motor insurance being warranty insurance, when you purchase a second hand car you can buy warranty insurance which covers the spare parts when they go wrong. It is interesting and obvious that the parts covered get less and the car gets older. This is because the insurers know with a high level of confidence which parts will go wrong and when, hence excluding them for cover when the car reaches a certain age. Consider the number of engines of cars. It is phenomenal!

Take this to marine insurance. Marine engines are basically supplied by 11 manufacturers, of which 3 are dominant. There are only a limited amount of models. I am sure given time and money an insurer will do the analysis to work out which parts of the engine will go wrong within a set time period. This will then become a factor of the underwriting pricing model. I consider up to now, and in the near future, that underwriters have been blissfully unaware of the risks they are taking on in terms of machinery damage cover. Once one insurer starts doing this and gets it right the other insurers will follow. It is not as if the insurers are making a lot of money! I consider the marine engine manufacturers have had it easy up now with the insurers, but within the next 10 years the manufacturers will have nowhere to hide.

To be an underwriter you have to understand the clauses and the technical issues. However I firmly believe that a lot underwriting skill lies in the common sense of the underwriter. If something does not look right it probably is not and do not be afraid to follow your instincts, or to ask questions. Many a time in my career I have asked the obvious question and no one knew the answer. Therefore for the final part of this article I will pose some obvious questions about machinery and ships which have not been answered to my satisfaction.

Ship builder guarantee. A lot of casualties appear to happen when a vessel is new. This is only natural until the issues are ironed out. However it appears to be insurers who are at the wrong of casualty paying out. Where are the shipbuilder guarantees? What is the period of the guarantee and what is the small print? Underwriters really should be asking these questions and guarantees differ from build country to build country and yards within the country. I suspect there is an awful lot of recoveries out there which potentially the insurer could claim against the yard.

Engine Guarantees. Similar to the above. You buy a new car and often get at least a two year guarantee against parts. How come this does not work with marine engines? Insurers seem to pay first and struggle to get anything back from the engine manufacturer. Yet again I suspect insurers could have claimed back an awful lot from the manufacturers, but all too often the crew conveniently get blamed absolving the manufacturers of any responsibility.

Spare part commission to the yards. The yard receives commission from the manufacturers for the distribution of spare part that often which forms part of a claim against the insurers. Is this not a conflict? It also pushes up the claim amount. Should insurers have access to the manufacturers directly to access the spare parts rather than pay an increased cost because of the commission?

Engine notices from manufacturers are kept 'confidential'. A few years ago I spoke to a classification society about engine claims. They said the manufacturers are very helpful and in the event of fault the manufacturers produce a notice distributed to the classification societies, owners and ship yards.



I enquired as to whether the insurers should have access to such notices. The answer was very clear No! The manufacturers do not want to worry the insurers about such things as to what can or will go wrong! The classification society did say if they passed these notices on then the manufacturers will stop supplying them. Surely there is a safety issue here and the more people know, the better the safety of the ship and more importantly the crew?

Engine manufacturers' accountability. In shipping, as with most aspects of any industry, there is a third party, who audits or grades the quality of the operation or unit. In shipping you have the classification society for ship structure, the flag for crew and regulation compliance, SIRE surveys for tankers, Rightship for all vessel types, but with special focus on bulkers and even the IIMS acting in a positive role to improve the quality of marine surveying.

However within the marine engine arena this is sadly lacking. There does not appear to be a third party to turn to in order to get some comfort as to the quality, or why a certain engine part malfunctioned. So for example if a part malfunctions the engine manufacturer says it needs to be replaced. I would like to be

able to appeal and confront a third party regulator as to why it broke down, will it happen again and does the manufacturer bear some responsibility and therefore contribute towards the cost of replacement. The manufacturers seem to be masters of their own destiny whereas most of us have to justify ourselves to a third party when it goes right or wrong!

Ship records. Put simply. When you buy a secondhand car most people would insist on having the log book. In shipping this does not appear to be the case. IUMI published a position paper in September last year which I whole heartedly support. The first paragraph reads:-

There is an increasing tendency for the outgoing technical managers to remove all records from the ship when a vessel changes ownership, leaving the incoming crew and management with very little information on the condition of the ship and the machinery.

During the first few weeks of ownership there is an increased risk without the possession of ship records from machinery breakdown which could impair navigation, lead to fire and explosion and ultimately lead to personal injury. During the build up to purchase the new owner teams are usually only allowed to observe and at best, when the transfer happens, the new owner is given the running hours. Loss of the maintenance reports also means there is no documentation of the conduct of a repair and whether manufacturers or non-standard replacement parts were used.

Let me translate this into real life. Two years ago I insured a ship owner who had his fleet third party managed by one of the major management companies. The owner decided to change the management company to a more local one where he had a financial interest, understandably. However within the first three months of the transfer three vessels had engine claims

arising from the cylinder liners. When I quizzed the owners about the records of the main engine cylinder liner calibrations from the previous manager the answer was there were none and they had not been passed over to the new manager. If the new manager had the cylinder calibrations the loss could have been avoided. The outcome was an overall insurance claim of around USD1.5m.

There is no standard obligation to hand over records but I support the IUMI stance that the present situation is not satisfactory and transfer of records should form part of the ISM code. The IUMI stance is summarised as below and the more support we can get from the surveying industry the better.

IUMI remains sure that a significant improvement in the risk profile would be achieved by requiring the maintenance records, operating reports, and spares inventory to be part of the permanent service history of the ship and covered by the regulatory regime, possibly through additional clauses in the sale and purchase agreement. However, early resolution cannot be expected through either IACS or implementation in the ISM code.

In conclusion, machinery is one of the biggest cost burdens to the shipping and insurance industry. Whilst appreciating each industry has to make an adequate return to their shareholders, it appears that the machinery manufacturers have the unfair advantage and I consider it is time to have more equality between all parties to the marine adventure.

Simon Stonehouse would like to add, ***"I would like thank IIMS and Constellation Marine Services for letting me to express my thoughts at their Dubai conference in November 2015, which lead to this article. Finally I thank Captain Irani of Constellation for his kind contribution to the Sailors Society in recompense for my presentation, which is a charity I personally support."***



An approach to a modern lightning protection system (LPS)

BY ANDY RIDYARD



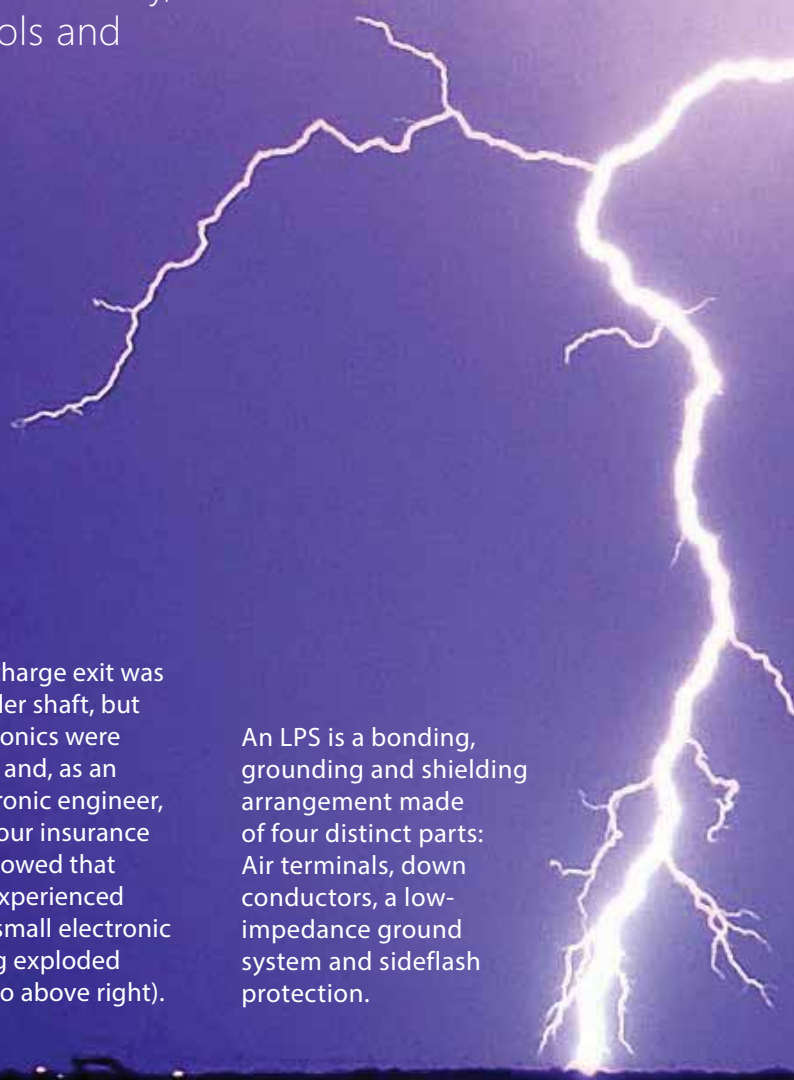
Andy Ridyard has been a professional electrical and electronics engineer for more than 35 years and started SeaSystems in 2008. His business is dedicated to providing troubleshooting, repair and installation services to superyachts internationally, specialising in controls and

instrumentation. He lives with his wife in Falmouth, UK, but works mostly in the Mediterranean. SeaSystems has fixed countless intractable problems with marine control systems, marine electronics, Programmable Logic Controllers (PLCs) and marine electrical systems.

We were lucky when we were struck by lightning on our small 35' GRP cruising sailing boat in Turkey in 2013, but without an LPS. All the plastic and some of the metal gear at the top of the mast exploded (see photo) and simultaneously the headlining in the saloon exploded downwards with a loud bang. So much smoke that we initially thought we were on fire; but my wife and I survived unscathed to tell the tale.

The most likely discharge exit was through the propeller shaft, but practically all electronics were violently destroyed and, as an electrical and electronic engineer, my assessment for our insurance claim afterwards showed that most devices had experienced severe arcing with small electronic components having exploded internally (see photo above right).

An LPS is a bonding, grounding and shielding arrangement made of four distinct parts: Air terminals, down conductors, a low-impedance ground system and sideflash protection.





The best LPS cannot **guarantee** personal **protection**, or protection from damage to sensitive electronic equipment. Also it is not a lightning prevention system. I knew the private owner of one large blue water catamaran which has been struck three times in its life and it is not an old boat. Fortunately no one was hurt on any occasion, but many electronic systems on that complex boat were effected and had to be replaced on each occasion. Unfortunately catamarans are many times more likely to be struck than mono-hulls and records in the USA, where certain locations are particularly prone to electrical storms (e.g. Florida where boat ownership is high), show that mono-hull sailing boats are about 25 times more likely to be struck than motoryachts.

Lightning is very hard to study and to accurately predict its behaviour is almost impossible, but it is driven by the simple fact that a massive potential difference (voltage) exists between the highly charged clouds of a brewing thunderstorm and the surface of the Mother Earth. Eventually, a path is found through the atmosphere down to ground for some of the accumulated charge to discharge and the creation of a discharge path first requires the creation of so called 'streamers' [1],[2]. Bear in mind that air breaks down at **3 million Volts per metre**, and you get some inkling of the enormous voltage differences involved.

In the middle of a large body of water, with your sailing yacht in it, the top of the mast, being the highest point around, looks like a handy point to discharge through. So the LPS is designed to control the first point of discharge and then make the onward path to 'ground' – in this case the sea – as direct as possible and capable of conducting very high currents for a very short time during the discharge.

In 2006, the American Boat and Yacht Council (ABYC) technical information report TE-4 [3], [4] recommended the following:-

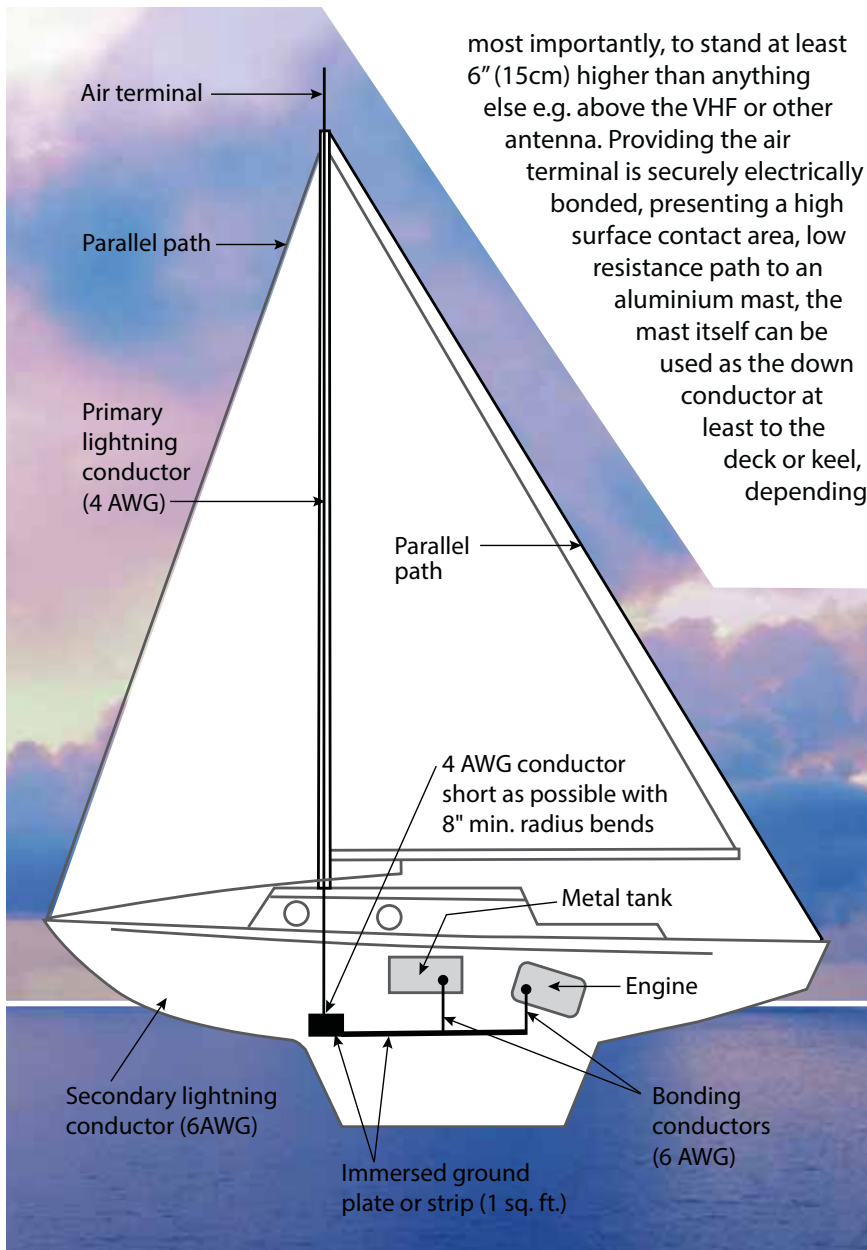
- LPS conductors must be straight and direct and capable of handling high currents. The main 'down' conductor is recommended to be 4AWG, or 25mm² in European sizing; see diagram.
- A large enough area ground must be provided between the vessel and the water to offer an adequately low resistance path (ABYC recommends 1sq.ft. {0.1m²} in salt water; much larger in fresh water. NB this is not adequate for acting as the SSB counterpoise). Metal-hulled vessels naturally offer a large ground contact area with the sea, but the connection between the hull and all other electrical systems needs careful consideration.

[1] <https://www.youtube.com/watch?v=TaPgSWdcYtY> – Top 10 best lightning strike (USA) by Pecos Hank, with rare photo of an upward streamer.

[2] http://marinelightning.com/index_files/SFMEchanism.gif for a graphic showing the formation of negative streamers.

[3] ABYC (US) technical report TP-4 "Lightning Protection".

[4] Nigel Calder – "Boatowner's Mechanical and Electrical Manual: How to Maintain, Repair, and Improve Your Boat's Essential Systems"



most importantly, to stand at least 6" (15cm) higher than anything else e.g. above the VHF or other antenna. Providing the air terminal is securely electrically bonded, presenting a high surface contact area, low resistance path to an aluminium mast, the mast itself can be used as the down conductor at least to the deck or keel, depending

on where the mast is stepped. In the case of wooden, or carbon composite masts they present too high electrical resistance and a 4AWG cable must be run straight down the mast as the main down conductor. From the bottom of the aluminium mast or down conductor, the 4AWG onward path needs to be as direct and short as possible to the ground plate, or the metal hull.

The size of the ground plate as the main electrical discharge route out of the vessel is important and there is evidence that the shape is important as well: A long, 1ft² {0.1m²} area copper strip, in contact with the water is believed to be more effective than a square of copper of 1ft² as it is believed lightning will exit from the edges rather than the face of the ground plate.

It is actually better to leave through-hull metal fittings electrically isolated if they are already insulated from the rest of the boat by dint of their attached rubber or plastic hoses and their insulating mounting plates – decent quality bronze alloy seacocks and engine intake strainers will not unduly corrode if left submerged for extended periods of time without needing connecting to the vessel's earth bonding. However, in the US it is more normal to bond everything metal below the waterline, use a tinned copper bus bar running the necessary length of the vessel, above any bilge water level, to connect each through-hull fitting to, which is then connected at one point only to the main grounding route out of the boat. This bonding arrangement is gaining in popularity outside the US with consideration of a lightning protection system.

- Heavy metal objects such as fuel tanks and engines must be bonded to the ground bonding arrangement to reduce the risk of 'side flashing' where the lightning literally can jump from one conductor to another, seemingly better path. Similarly, it can jump out of corners in cabling, so if bends must be made, then they should not be more than 90° and with as large a bend radius as possible.

The basic arrangement is as depicted in the diagram, where the 'air terminal' is a rounded end (circled in photo, right) metal wand mounted at the top of the mast to 'attract' lightning to it and,



Note in the diagram that all tie-ins, including fore- and back-stay (unless insulated) must use at least 6AWG (16mm² European) cable. All large metal objects within 6ft (2m) of the lightning down path also need tying in with 6AWG (16mm²) cable. Examples are metal fuel tanks, main engines (despite them

usually already being connected to the water via their prop shaft) and generators; this is to minimize the risk of 'side flashing' where lightning can literally jump from conductor to metal object, looking for a better path to ground, even if one does not exist.

In considering of the creation of a ground plate of sufficient size, a metal hulled vessel is ideal, but nevertheless only one electrical connection point to the hull should be made from the main 4AWG down conductor. This same point should have all the other earth bonding made to it alone. The DC main negative bus in turn should be connected to the earth bonding in only one place, though European boats generally have their DC system isolated from any bonding system to discourage DC earth faults, the US differs in this respect, preferring direct bonding. One solution to this dilemma is to use a suitably rated surge capacitor between the DC negative busbars and the bonding system for the LPS. In the case of a non-metal

hulled sailing vessel, the attraction of using the keel as a discharge point should be resisted as it is in contact with the water some distance below the surface where already a lot is going on with respect to charge balancing, so an alternative point is likely to be sought out by the discharge, nearer the surface. It seemed clear to our very experienced (and ancient) marine insurance surveyor that, during our own strike in Turkey, the discharge was out through the propeller shaft.

So far, so good, but recent thinking and good practice [5],[6] has modified the above ideas to take into consideration the danger of side flashing much more. A side flash is an uncontrolled spark that carries current to the water and can do extensive damage to hulls and equipment. The good practice and standards for a LPS relating to marine situations, such as they exist (see NFPA 780, latest version, especially chapter 8, 'Protection for Watercraft', [7]) are tending to treat a boat more and more like a building to exploit those well tried

and tested techniques used in a land based situation. Rather than a 'cone' below the air terminal, the 'zone of protection' is now more reliably envisaged to be formed from a 'rolling sphere' of 30m radius, as shown below for a larger yacht [7],[8]:-

With a large building, the down conductors from the various air terminals run down the outside of the building to a number of grounding stakes; not so with a yacht where, as we have described, we've now concentrated the discharge right in the middle of the boat, where the danger of side flashing into other metal parts is very real; if these parts are not bonded and protected by a properly designed, low impedance path there's are very real further danger of the side flash finding its way onwards and out through the side of the boat to the surrounding water surface. This has indeed been experienced by an American friend of mine on a high-tech, all carbon racing sailing boat on its way back to Newport, which after

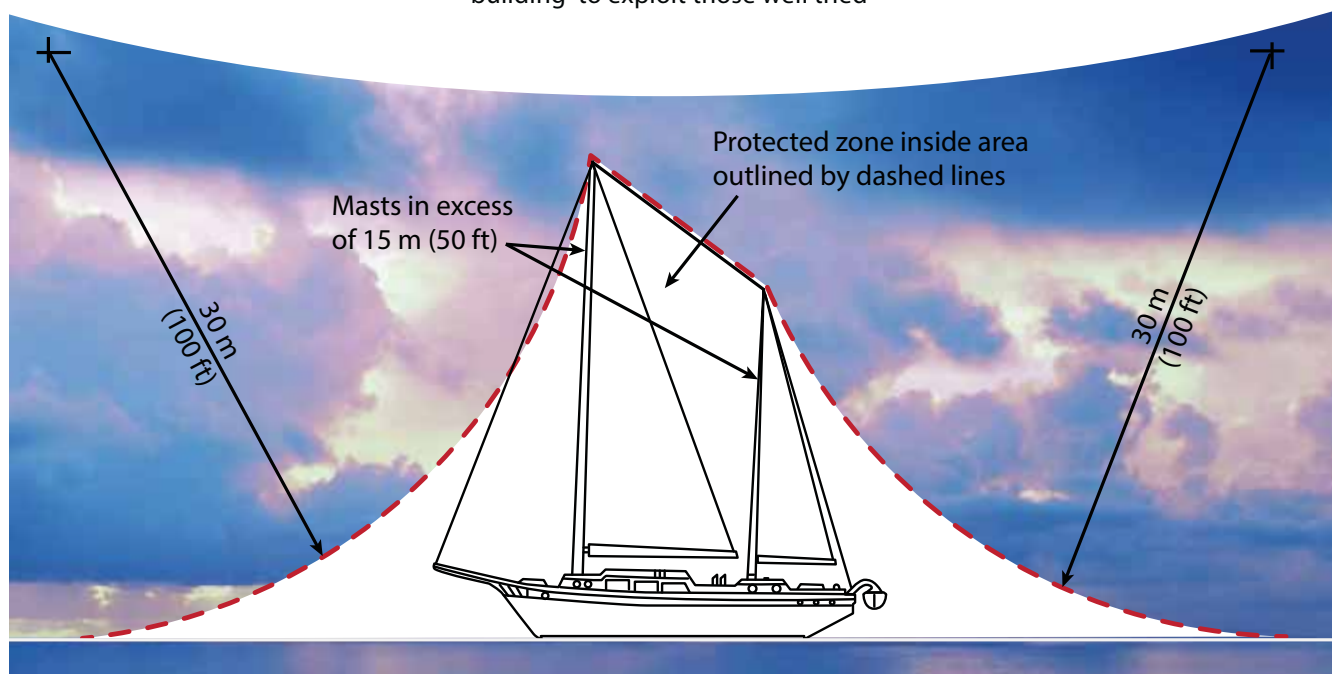


Diagram of Boat with Masts in Excess of 15 m (50 ft) Above the Water; Protection Based on Lightning Strike Distance of 30 m (100 ft).

[5] "Complexities of Marine Lightning Protection", By Ron Brewer, EMC/ESD Consultant, April 2011

[6] "A New Concept for Lightning Protection of Boats - Protect a Boat like a Building" Ewen M. Thomson, Ph.D.; published in the October 2007 edition of Exchange

[7] National Fire Protection Association (US) document NFPA 780-2014 "Standard for the Installation of Lightning Protection Systems" – see especially chapter 8 'Protection for Watercraft'.

[8] "Evaluation of Rolling Sphere Method Using Leader Potential Concept - A Case Study" P.Y. Okyere, Ph.D & *George Eduful - Proceedings of The 2006 IJME – INTERTECH Conference

being unavoidably struck several times in a violent storm, put in to New York and immediately hauled to find literally a thousand or more tiny holes around the waterline when the discharge had exited! Apparently lightning does not always take the straightest path to the water, but rather has an affinity for the waterline.

The latest version of this NFPA 780 standard recognises this danger and, in a departure from the older versions, provides for multiple grounding terminals to provide the shortest path to the surrounding water surface. These 'supplemental grounding electrodes' conduct lightning current into the water in addition to that conducted by a main ground plate. The new standard provides for a continuous conducting loop outboard of crewed areas, wiring and electronics. Placing the loop conductor well above the waterline, outboard, and with grounding terminals below it retains the advantages of an equalization bus, whilst correcting for its weakness with side flashes having nowhere else otherwise to go.

Finally – what does an LPS do to protect sensitive electronic equipment? The simple answer is very little. The huge potential difference between sky and Mother Earth in a thunderstorm can cause an electrical discharge of immense energy, with huge current flows, but only lasting fractions of a second. If that current is running down your aluminium mast and safely out of the ground plate and supplemental grounding electrodes of your boat through the Lightning Protection Scheme measures you have taken, without blowing a seacock off the bottom, without starting a fire and without injury to anyone on board, that is the primary consideration and what the system is most hoped to achieve. However, in the controlled (as much as possible) passage of that enormous current, your electrical cables connected to sensitive electronic equipment should be as separated as possible from the

discharge route, and if you can ensure those cable runs are at right angles to the discharge path direction to minimise large induced currents, then you are beginning to understand the correct philosophy. Some additional measures are offered on the market – for instance surge arrestors, and special in-line VHF aerial suppressors – but the best insurance of all is to completely isolate the most sensitive electronic devices when a thunderstorm is brewing i.e. turn off and completely disconnect such devices from any installed piece of wire or cable on the vessel.

Protection of electronic equipment by a hermetic system on larger yachts

So much electronic equipment on board a yacht struck by lightning is very susceptible to permanent damage. The only safe way to fully protect electronic equipment is to have it completely disconnected from all other circuits when thunder and lightning are nearby, and I still to this day do that as much as possible, but how practical is complete protection really?

A recent idea I had whilst discussing the problem with a 30m ketch owner may have some merit, and I call it a 'hermetic system', so suggesting that it is sealed from the outside world: If the most critical and/or sensitive electronic equipment can be enclosed within its own quite separate power and cabling set, separate from the rest of the boat's electrical and electronic wiring, then it is possible that it could be saved in the event of a lightning strike. One way to do this would be to run all those systems required to be protected effectively off an Uninterruptable Power Supply (UPS), powered from the AC bus (via the generator), then down converted to the necessary 24/12VDC electronics supply. In the event of a lightning storm, all AC connections to the UPS and any



signals, power or ground returns outside the hermetic system must be open circuited by large clearance contactors. The electronics contained within the hermetic system can still continue to operate, for a limited time (depending on the capacity of the UPS batteries) and further choices can be made about what to shut down within the hermetic system to extend the battery life, leaving for example just the absolute minimum electronics to continue to safely navigate e.g. Depth, GPS, Chartplotter. Very careful consideration must be given to cable runs.

The VHF antenna on the main mast may be protected by a surge arrestor from one of several suppliers e.g. www.nexteklightning.com. No guarantee is likely to the effectiveness of this as a protection device in all cases of lightning strike and the manufacturers should be consulted for further information.

I certainly now resort to the marvel of a GPS chart plotter on my mobile phone when there's a nasty electrical storm about and I'm out at sea!



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UPDATED

THIRD GENERATION SILICONE FOULING RELEASE COATINGS

Research & Development Department, Hempel A/S, February 2016
(Original paper published in 2008)

Traditional fouling release coatings consist of a silicone elastomer (PDMS) and rely on a low surface tension (hydrophobic) and a low modulus of elasticity, usually with a good initial foul free performance. With time, the coatings ability to self-clean is lowered, which results in a higher hull skin friction. The invention behind the 3rd generation fouling release coatings is a unique blend of silicone polymers that has and maintains a more hydrophilic surface, with fouling release performance that lasts. The foul free period is longer, and required speed for self-cleaning is lower. This results in a lower hull skin friction over time with potentially lower fuel consumption.

INTRODUCTION

Marine biological fouling, usually termed marine biofouling, can be defined as the undesirable accumulation of micro-organisms, plants and animals on artificial surfaces immersed in sea water. The adverse effects caused by biofouling are higher frictional resistance with subsequent speed reduction or higher fuel consumption, loss of manoeuvrability and higher frequency of dry-dockings.

The ban of the TBT-based paint products has been the catalyst of a major change in the antifouling paint industry. Several antifouling products have already reached the commercial market to meet the new generation TBT-free antifouling requirements. The antifouling properties in these paints have to be managed by biocides mixed into the paint formulation. This is traditionally done by addition of cuprous oxide (Cu₂O) as a pigment,

and in addition organic co-biocides to provide the necessary biocide activity replacing that previously obtained from TBT.

It is stated that fouling does not take place significantly at speeds higher than six knots (water flow rates) [Rascio, 2000], the influence of speed on the formation of bacterial films has also been reported [Egan et al., 1987]. However, the nature of the substrate, which clearly affects the adhesion mechanisms, depends on the coating surface properties.

This constitutes the basis for the fouling release and "easy-to-clean" concepts, presently the most promising non-toxic alternative. With some exceptions, the majority of fouling release systems are based on pure poly (dimethylsiloxane), also known as PDMS. The PDMS polymer is flexible, it has a low surface energy and it is smooth – all parameters that facilitate easy cleaning, each in its own way.



TRADITIONAL FOULING RELEASE COATINGS

Non-stick fouling release coatings are based on a technology which prevents the adhesion of fouling organisms by providing a low-friction, ultra-smooth surface on which organisms have great difficulty in adhering. The coatings do not inhibit the fouling settlement, but provide self-cleaning when sailing at a certain speed at a certain activity, typically minimally 15kn. at minimum 75% of the time.

Fouling release coatings have their origin in the desire for a biocide free system and they were conceived almost simultaneously with self-polishing copolymers, which means that it has been under observation the past 30 years. On these types of coatings fouling is not prevented from settling, as in the case of traditional antifouling, but in practice the bond between the fouling organisms and the coating surface is so weak that it breaks by the weight of the organism itself or by the water pressure and current it is exposed to.

Generally speaking, fouling organisms are very different and known types, such as barnacles, mussels, algae,

all possess their own type of glue which is secreted during the attachment to a surface. The glue is typically protein based and undergoes a chemical cross linking. An early attempt to avoid attachment of fouling organisms was to create a surface with a very low surface tension using certain fluoropolymers in order to obtain the lowest possible surface tension and thus a good release effect. Poly (tetrafluoroethylene), [Brady et al. 1994] has been described as such. One of the features of PTFE is a low surface tension, 16-20 mN/m, nevertheless the coating failed to serve its purpose, as it became apparent that several other properties of the coating were important to show release properties. A low micro roughness

is important to prevent biological adhesives from creating mechanical interlocking in pores and a low elastic modulus combined with the coating thickness, controls the fracture mechanics of the interface, and was found very early to be equally important. This is expressed in equation (1) [Brady et al. 2000].

Equation 1:

$$P = K * \left(\frac{E * \gamma_c}{t} \right)^{1/2}$$

P = dimensionless adhesion
K = constant
E = modulus of elasticity
γ_c = the surface tension
t = coating thickness

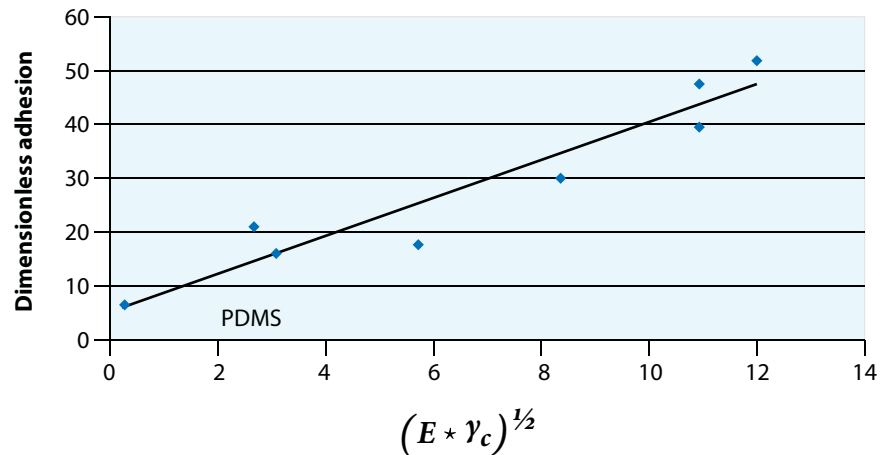


Figure 1: A low elastic modulus and a low surface tension provide fouling release properties. [Brady et al. 2000]

	Relative adhesion	Critical surface tension, γ_c (mN/m)	Elastic modulus, E (GPa)	$(E * \gamma_c)^{1/2}$
PHFP	21	16.2	0.5	2.85
PTFE	16	18.6	0.5	3.05
PDMS	6	23	0.002	0.21
PVF	18	25	1.2	5.48
PE	30	33.7	2.1	8.41
PS	40	40	2.9	10.77
PMM	48	41.2	2.8	10.74
Nylon66	52	45.9	3.1	11.93

Table 1: The physical properties of a number of common polymers. [Brady et al. 2000]

Using data from table 1, Brady [Brady et al. 2000] outlined this relationship graphically, as illustrated in Figure 1.

Brady's work concluded that PDMS based fouling release coatings, which have low surface tension, low modulus of elasticity and a low micro roughness, favoured easy release when considering the self-cleaning.

Baier proposed that the minimum adhesion of protein fouling is exhibited at a surface tension of 24 mN/m [Baier et al.1971], which is the surface tension of pure PDMS. However, this equation only embraces the adhesion, and does not describe the settlement of fouling in a general perspective.

Multiple publications [Finlay et al. 2002] report that the ideal

substrate for one fouling type may not be the same for another. The Ulva zoospore was shown to have a higher affinity to hydrophobic substrates, but with very weak adhesion to such, while diatoms showed strong adhesion to hydrophobic surfaces. Thus, solving the problem with adhesion for one species may not be the ideal solution for another.

Andrade [Andrade et al. 1973] claims that hydrogels shows resistance towards platelet adhesion. A hydrogel consist mostly of water attracted by an insoluble, hydrophilic polymer. The use of hydrogels is common in medical applications [Henriques et al. 2005], though it is typically combined with some sort of antibiotic or biocidal agent [Wirtanen et al. 1998, Ahearn et al. 2000].

LOW ACTIVITY AND IDLE PERIODS

While traditional PDMS exhibit excellent fouling release behavior at speeds above 15kn and high activity, the coating does not inhibit fouling settlement when the coating is exposed to idle periods, and has a tendency to obtain slime fouling after such exposures. Slime fouling poses a particular challenge because of its very low surface profile, and can be difficult to remove by sailing, even at high speed. Since slime fouling induces a lower fuel saving [Schultz, 2007] than would be expected from a clean PDMS coating, the general solution to this problem has been underwater hull cleaning to renew the fuel saving potential, but ideally the slime fouling should never settle.

SILICONE HYDROGEL

Hempel A/S has taken the traditional fouling release coatings one step further. Recent findings have shown that a PDMS coating with a hydrogel introduced in the water interface of the coating provides an improved resistance towards algae and slime fouling, while the intrinsic properties of pure PDMS, such as release mechanisms and drag reduction, remains.

EXPERIMENTAL RESULTS

Contact angles with distilled water were measured on different compositions. Table 2 shows the contact angles of a traditional fouling release coating and the Silicone Hydrogel. Substrates prepared by drawdown method.

Composition	Contact angle (deg)		
	Advancing	Receding	Static
Traditional Fouling Release Composition	105±1	54±1	104±1
Silicone Hydrogel	96±1	23±1	96±1

Table 2: Contact angles measured using distilled water, temperature kept at 22.5°C

Results show, that the silicone hydrogel has a lower contact angle with water, especially receding contact angle. The lower receding contact angle measured on the silicone hydrogel indicates that the water has a larger affinity towards this surface than towards a traditional FR surface.

A test site in the Mediterranean has been used to evaluate the slime formation over time. Panels coated with experimental paint compositions are placed in near vicinity of each other and evaluated at regular intervals. The location offers substantial algae and slime

fouling, which makes it ideal for the development of fouling release coatings. Figure 2 shows a clear reduction in slime coverage after one year of static immersion.

PRACTICAL RESULTS

Real life dynamic testing also reveals improved performance compared to traditional copper based, self-polishing antifouling as observed on Figure 3. The vessel has been in service for 25 months trading worldwide with 60% activity and an average cruising speed of up to 13kn. with idle periods.

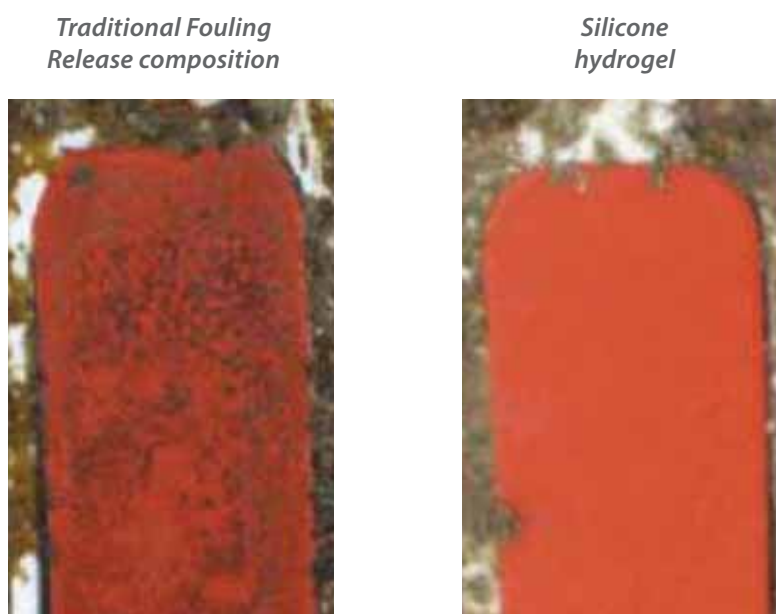


Figure 2: Performance of silicone hydrogel compared to traditional Fouling Release paint at a Mediterranean immersion site. 1 year of static exposure.



Figure 3: Silicone hydrogel test patch (left) observed completely free from fouling. Algae and slime observed on self-polishing A/F.

CONCLUSION

It can be concluded, that a surface modification of a pure PDMS can improve the resistance towards the settlement of fouling on traditional fouling release coatings, particularly slime and algae fouling. The more hydrophilic character of the hydrogel silicone compared to a standard fouling release silicone will clearly make it a difficult substrate for marine organisms to settle on. Both static and dynamic tests have proved that this new technology is performing better than earlier generations of fouling release coatings.

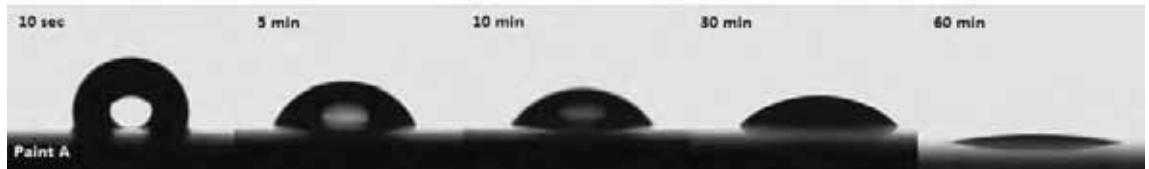
THE EVOLUTION TO HEMPASIL X3+

Hempasil X3 was launched by Hempel in 2008, a concept based on a unique blend of copolymers that create a hydrophilic surface atop the silicone coating. This surface is referred to as a hydrogel, a revolutionary shift in technology that resulted in a significant improvement of the fouling release performance. In December 2015, Hempel went one step further and launched Hempasil X3+, which is built on the industry proven Hempasil range and optimized further to give even better protection of the immersed vessel with longer lasting performance.

Hempel further developed and fine-tuned the hydrogel of the Hempasil range to give a stronger bond of the water molecules and consequently a better and longer lasting resistance towards fouling settlement.

WHY HYDROGEL?

Effect of the hydrogel: The surface of a PDMS based coating will change from hydrophobic (below



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left) to hydrophilic (below right) once the hydrogel is formed.

A hydrogel is a layer of water trapped in or around a network of hydrophilic polymers. For an organism to settle on a hydrogel-covered surface, it will need to first identify the surface as a substrate. As the surface is covered in a gradient of increasingly bound water, most organisms simply do not recognise the surface as a substrate for settlement.

Furthermore, in order to apply its adhesive, the organism would need to first remove the entrapped water. This requires energy since the water is strongly bound in the hydrogel. Therefore fouling organisms such as bacteria and cyprids will be effectively prevented from settling.

Hydrogel is formed on the surface of a PDMS coating. Water molecules are entrapped in the hydrophilic polymer and fouling organisms will not settle on the surface.

For more information visit www.hempel.com

ENGINE CRANKSHAFT DEFLECTION MEASUREMENT

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



At some time in his career the Diagnostic Engineer may well have to examine the running of a compression ignition engine. Many of the defects that occur on such units are down to wear in the main bearings causing the crankshaft to change its longitudinal straightness. Usually the first diagnostic test on such an engine is to take a series of measurements between the crank webs at various points round the circle of rotation called somewhat in correctly crankshaft deflections. If a driving engine is of the compression ignition type with a cylinder bore above about 250 mm (10 inches), it is also necessary to consider the alignment of its crankshaft. Below that size, the overall stiffness and small size of the unit and the fact that the crankshaft itself is an integral forging make the measurement of crankshaft deflections both extremely difficult and unnecessary. The crankshaft of a large compression

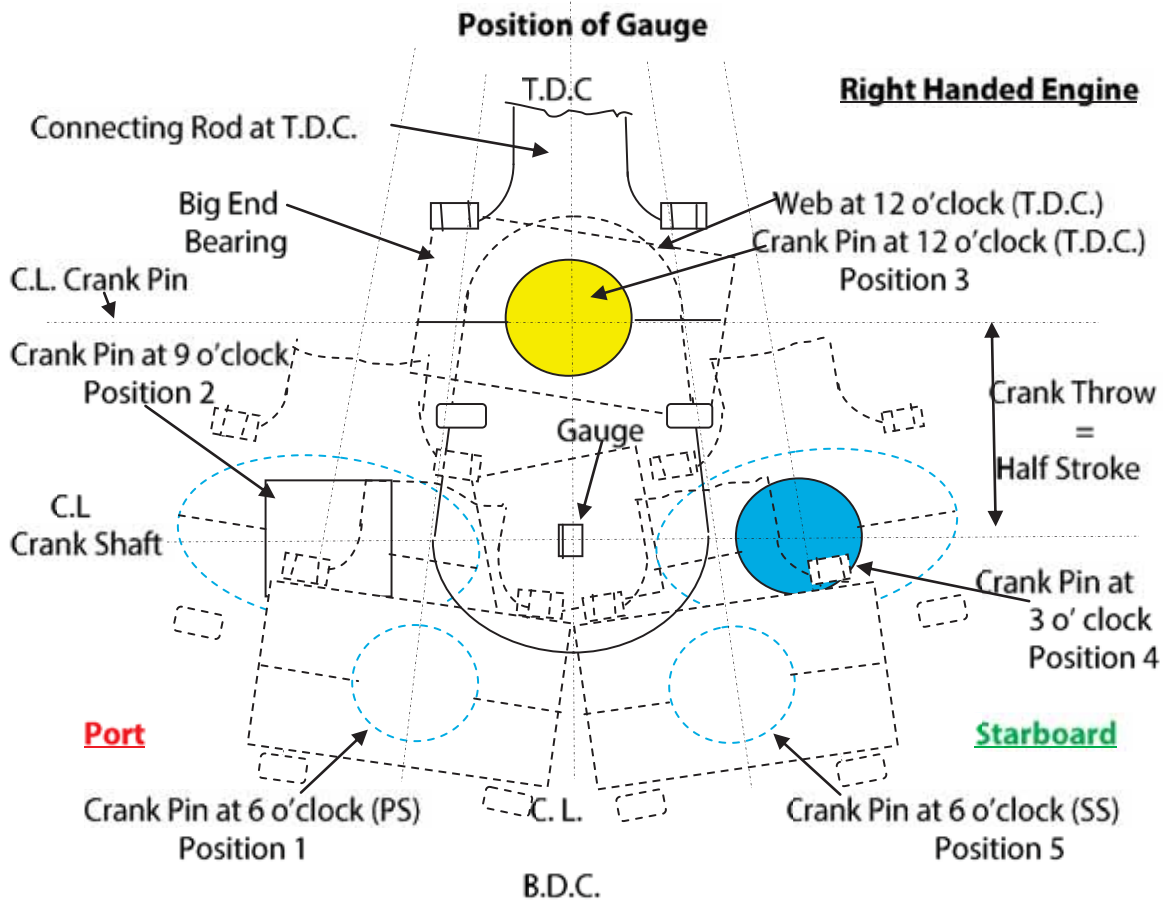
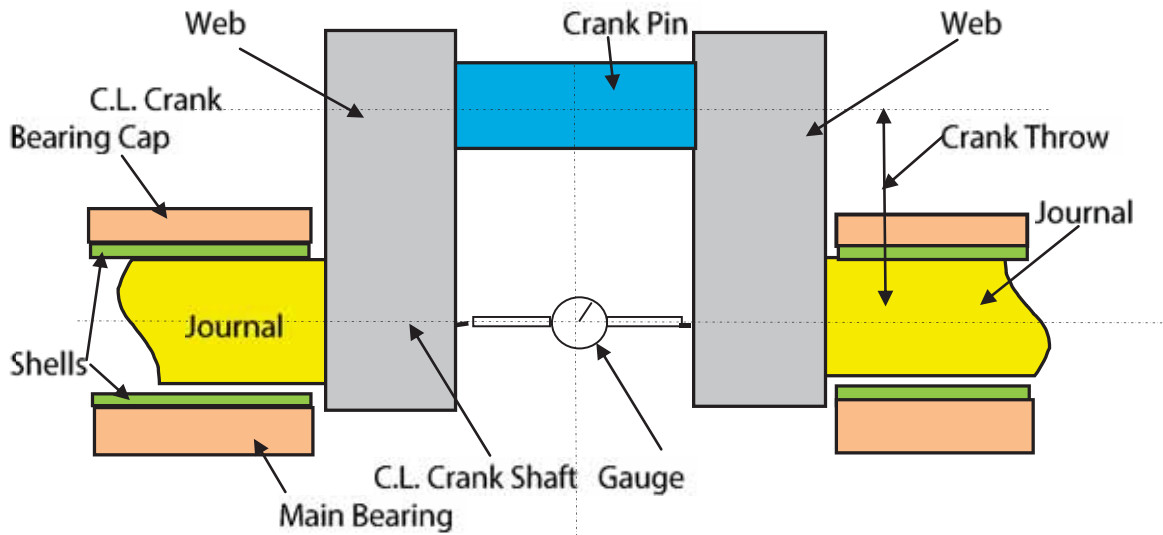
ignition engine is a huge, bulky components usually built of a number of separate forgings interference fitted together which should remain as straight as possible during operation as otherwise it could lead to serious damage to the bearings and thence to the engine. The crankshaft is built up of crank webs, crank pins and journals along its length and its weight is supported by the main bearings at the journals. Over a period of time as the engine keeps running, the wear in the bearings may not be uniform across the entire length of the crankshaft. That means that the crankshaft will not remain in the initial straight line but will get bent either upward

or downwards to a slight degree which may not be visible with the naked eye but could be sufficient to cause dangerous levels of fatigue in the crank webs. Compression ignition engine crankshaft breakage or over bending, for example, may be the result of excessive bearing clearances. Excessive clearance in one main bearing may place practically the entire load on another main bearing and may be brought about by the same factors that cause journal bearing failure. Flexing of the crankshaft under load may result in fatigue and eventual fracture of the crank journal. The Diagnostic Engineer should also be aware that off centre and oval

journals tend to scrape off bearing material which leads to excessive wear and to the increase of the clearance between the shaft and bearing. Excessive bearing wear usually shows up as some form of fretting corrosion of the bearing surface or scoring of the shaft journals. The possibility of journal

ovality can be minimized by taking measures to prevent improper lubrication, journal bearing failure, overspeeding or overloading of the engine, excessive crankshaft deflection and misalignment of parts. Crankshaft bending breakage may also result from excessive crankshaft deflection

and which is usually caused by an improper alignment between the driven unit and the engine and can result in a broken or bent shaft along with considerable other damage to bearings, connecting rods and other parts. Overspeeding an engine may also cause excessive crankshaft deflection.



Position of Readings at Different Crank Positions

Figure 1 Taking Crankshaft Deflection Readings

Hence there is a good maintenance requirement of measuring the crankshaft deflections at regular intervals to ensure that the alignment of the shaft remains within permissible limits and those deflections can be measured as described in the next sections. Crankshaft deflection readings are an excellent method of determining engine to drive alignment and main bearing wear. They should be taken in accordance with any planned maintenance system when an engine survey is conducted. In a marine installation, for example, the measurement is usually done when a problem is suspected, say, following an accidental grounding or collision or after a prolonged dry docking period. On the smaller engines *i.e.*, those with a bore of under, say, 250 mm (10") it is not practical to take crankshaft deflection measurements. With engines over such a size it is always advisable and should be carried out regularly. The measurements should be recorded and analysed and the results of the analysis also recorded. The amount of deflection of a crankshaft may be determined by the use of a straight gauge which is simple to apply. The straight gauge is merely a dial reading inside micrometer used to measure the variation in the distance between adjacent crank webs when the engine shaft is rotated by barring the engine over.

Figure 1 gives an idea of which measurement is taken to find the deflections of the crankshaft. The sketch indicates the aftermost cylinder unit (No. 1) looking forward. The solid line shows the top dead centre (T.D.C.) position (3) and the dotted lines the 3 o'clock and 9 o'clock positions (respectively 4 and 2) and the position either side of the bottom dead centre (B.D.C.) (1 and 5). The various views of the webs have been omitted for clarity reasons. The latter two readings are taken with the connecting rod swung as close to the gauge as is practical. As can be seen from the sketch a dial gauge is inserted between the crank webs to find out the distance between them.

If the deflection is measured after an interval of time, it is both important and necessary that it is taken at the same point otherwise the reading will not give a real reflection about the degree of deflection. The ends of the indicator should rest in the punch marks in the crank webs. If these marks are not present, they must be made so that the indicator may be placed in its correct position. Normally a centre punch is used to make markings so that each time the deflection is taken at the same point. Ideally the deflection needs to be taken at four points of the crank namely top, bottom and the two sides. In actual practice however the bottom reading is not taken due to chances of fouling by the connecting rod and instead reading is taken on either side of the bottom position, thereby in total five readings are taken from each crank web at the positions stated. Having taken crankshaft deflections the practical work might be considered to be finished but a theoretical analysis and interpretation of those results is certainly required in order to be able to make any meaningful decisions regarding the shimming of the main bearings based on the lifted and recorded data.

The actual method of measurement is easy. With a right hand turning engine, the engine is barred over so that the number 1 unit is just past bottom dead centre (BDC) to port and the micrometer is inserted on the centreline of the shaft and set to zero. The engine is then barred over 90° to in the normal direction of rotation and a reading of the micrometer taken. The process is then repeated with the pin at top dead centre (TDC) and again with the crank pin at 270°. Finally the engine is barred over to as close to bottom dead centre as the micrometer will allow and a final reading taken. The final reading should also be zero. The micrometer is then moved to the next crank and the process repeated. The repetition should be carried out at each unit until all have been measured. The readings

are then set down in a table and analysed. A typical set of readings (1/100 mm) for a six cylinder 300 mm bore marine compression ignition engine is shown in the table below. A little thought will show that, as the crank is turned, the aspect of the gauge also turns making it difficult to read in the confined space inside the crankcase. A mirror and a torch will be found of invaluable use in such circumstances and the Diagnostic Engineer must not forget the five P rule.

Proper Preparation Prevents Pathetic Performance.

Apart from using the same point on the crank web for measuring deflection there are other factors which need to be kept in mind if it is a marine installation and they include the load on the ship, trim, hog, sag *etc.* The vessel *must* be afloat at the time the readings are taken and the Diagnostic Engineer should carefully read the draughts forward, aft and, if possible, amidships (both sides) and record them in his report. Strictly the vessel ought to be unladen if she is a cargo carrying vessel. To some extent those points are a bit like gilding the lily with a vessel under about 60 m (200 ft) in length but, if he to be a professional, the Diagnostic Engineer should note those points down and record them. The report should also include the engine maker and type, its brake power and revolutions, its bore, stroke and the distance between the cylinders. It should also include, obviously, the name of the vessel, the reason for carrying out the work and the place and date of the measurement. Such comments may seem to be obvious but they are, nevertheless, frequently forgotten. The chief engineer should also note the table of deflections and that they were taken – when, where and why - in his engine room logbook.

Cylinder Number	1 Aft	2	3	4	5	6 Forward
B.D.C.	0.0	0.0	0.0	0.0	0.0	0.0
Port	+1.0	+1.0	+1.0	0.0	-1.0	+1.0
T.D.C.	+1.0	+0.5	+0.2	-2.5	+1.0	+1.0
Starboard	-1.0	-1.0	+1.0	-1.0	+1.0	0.0
B.D.C.	0.0	+0.1	0.0	0.0	-0.1	0.0
Difference	+1.0	+0.4	+0.2	-2.5	+0.9	+1.0

people find that the graphical representation of data is more appealing and easily understood than a list of numbers hence the above data is best plotted as a deflection curve. A straight line is drawn representing the length of the crankshaft and the centre lines from each unit are drawn through the line. That now acts as the basic infrastructure upon which to start plotting the deflection curve. Since the first deflection is +1.0 (remember they are normally mm/100 unless otherwise specified) that distance is plotted to scale downwards from the reference line on the centre line of unit 2 (not unit 1) and the line **ab** drawn. That is at an angle proportional to the deflection at the point **a** and is further extended to intersect the centre line of the next unit. The next step is to measure the deflection from the point of intersection (upwards for negative value and

The results are tabulated in a manner shown in the example table. The numbers in the first row represent the unit or cylinder number and the first column shows the position at which those readings are taken. The final row shows the difference between top and bottom readings which gives the vertical misalignment of the crank shaft. The values of the vertical misalignment need to be compared to the maximum

permissible limits specified by the engine manufacturer.

The method of numbering the cylinders *i.e.* whether from forward or aft should also be recorded. Number 1 unit is usually but not necessarily that next to the flywheel. The analysis of the vertical deflections (*i.e.* the difference between those at TDC and BDC) given in the table above are shown in Figure 2 below. A majority of

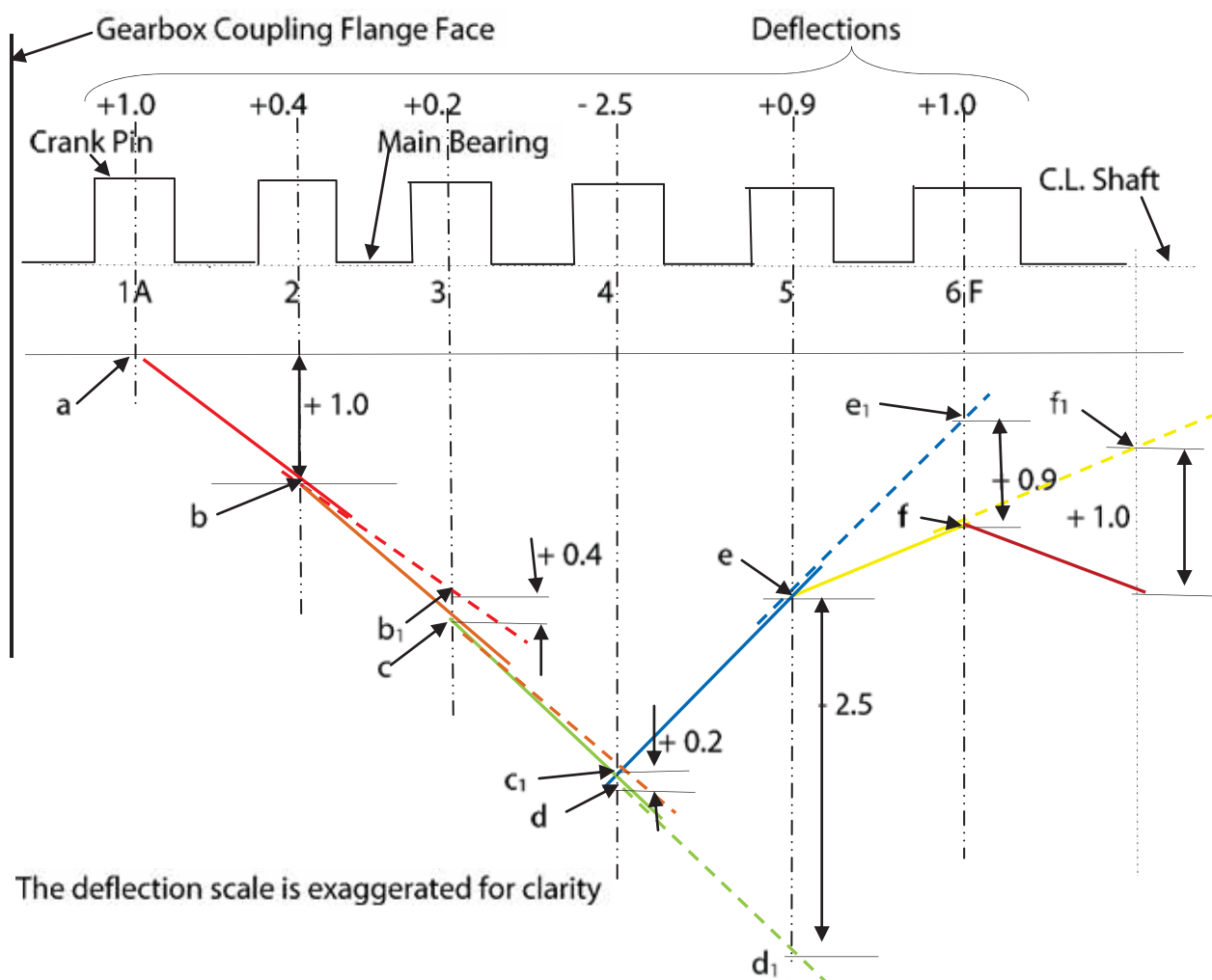


Figure 2 Plot of Deflection Readings

downwards for positive value) and join the point from the previous point which gives rise to the line **bc**. The same step should be repeated until the last unit has been covered. The line through the points should be a fair curve but rarely is.

A smooth curve is drawn between these points and the position of this curve with respect to the base line XY gives an idea about the state of various bearing. For example in this particular example it can easily be made out that the bearings of units 3, 4 and 5 are too far away from the faired acceptable line and hence need attention. The experienced Diagnostic Engineer may have realized by now that why only comparing the values of vertical misalignment against the manufacturer's specifications is insufficient. That is so because even if the values are within limits, the relative wear and tear might be sufficient to cause excessive misalignment. Hence the recommended method gives

an addition assurance about the crankshaft's alignment. After correcting the alignment by means of shims, the Diagnostic Engineer should take another set of deflection readings to check that the adjustment to a catenary curve is satisfactory. The same method of analysis can be used for the transverse deflections but that is usually only undertaken if severe transverse misalignment of the shafting is suspected.

In an engine survey, the following points should be covered.

1. The connecting rods should also be sighted using a straight edge looking for straightness.
2. Check the bearing surfaces for bright areas which usually indicate excessive wear.
3. The condition and wear of both big and little end bearings should be examined and, if wear is found excessive,

the bearing shells should be renewed. The diameter of the crank pins should be calibrated by measuring them with a micrometer and recording the results again looking for ovality.

4. The condition of the crankshaft should be examined paying special attention to the wear of the main bearing journals and, if excessive wear is found, the bearing shells should be renewed. The diameter of the main crankshaft journals should be calibrated by measuring with a micrometer taking two readings at right angles to each other and, again, the measurements recorded and looking for any ovality of the journal and also the crank pin.
5. All items of the engine must be thoroughly cleaned and all oil ways proven clean and clear and the items wiped dry with a soft cloth.

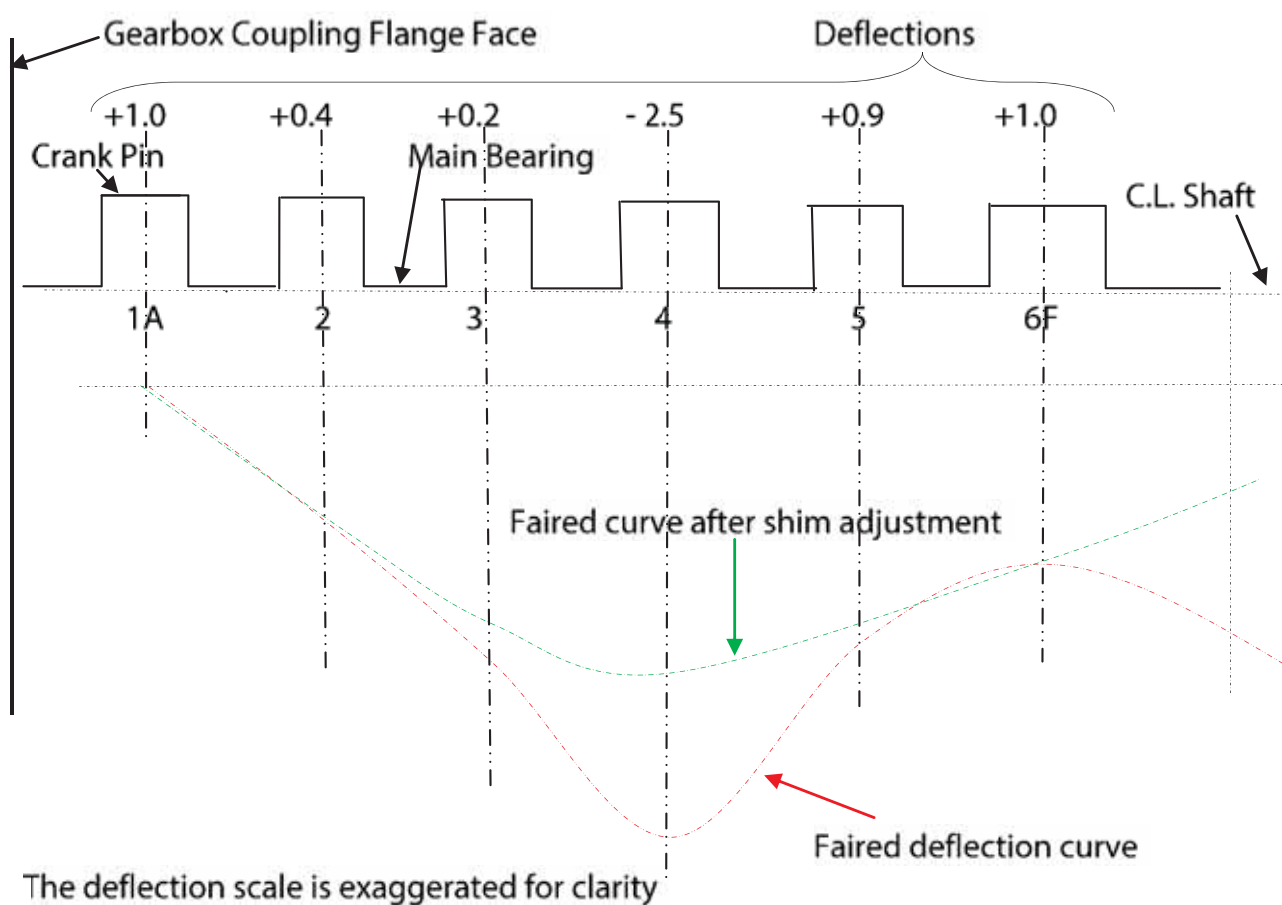


Figure 3 Faired Deflection Curves

Many main and big end bearings effectively cannot be repaired so that when they are heavily scored or show signs of severe wear they must be renewed. The Diagnostic Engineer will find the acceptable levels of wear for a given engine in the manufacturer's handbook. To measure the wear of a crankshaft journal or crank pin a suitably sized micrometer is needed and to make measurements of the inside of a shell bearing a ball ended micrometer is necessary. Split shell bearings can be measured for wear by bolting up the unit on the appropriate part of the crankshaft over a propriety brand of plasticine material, afterward measuring the thickness of that and checking against a chart supplied with the material.

Ovality is checked by taking a pair of micrometered diameters of the journal or pin at the centre of the bearing and at each end and at right angles to each other. The manufacturer's handbook will give the allowable amount of ovality or wear. If there is severe scoring of the crankshaft and bearings at either the main or the big end bearings this must be taken as a clear indicator of the necessity to replace the bearings and to thoroughly wash out and clean the whole lubrication system. Repair of the crankshaft can only be contemplated if there are, at most, two scores which are not part of the general deterioration. Repair is often carried out by regrinding the crankshaft undersize – there are strict limits to the amount of regrinding that may be affected – and then fitting under sized bearing shells. Particles are characterised by their shape, quantity and size which enables the Diagnostic Engineer to decide how far along the stage of wear and breakdown the bearing has progressed. The various stages of wear degradation are shown in Figure 4 below where the surfaces are exaggerated for clarity reasons. Wear as a phenomenon causes changing debris formation through the period of its operation on interacting surfaces changing

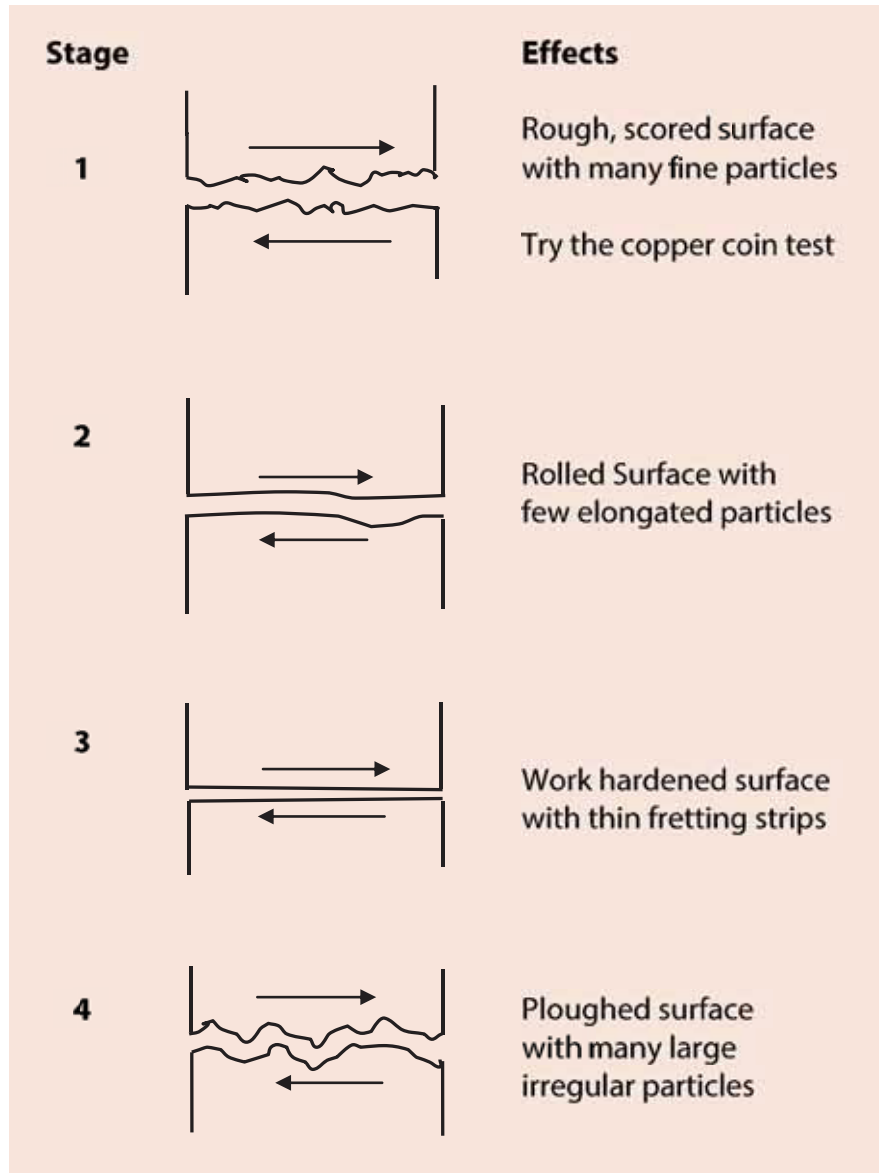


Figure 4 Stages of Wear and Debris Formation

from fine particles during the running in period to a surface reminiscent of the surface of a badly ploughed field at the final stage of deterioration.

Upon completion of all these examinations and tests the engine should be rebuilt using new gaskets and similar consumables, filled with clean lubricating oil and slowly turned over by hand a number of times to ensure that the lubricating oil is reaching all parts of the engine before firing up. After running the engine for, say, an hour to bed the bearings in the gear box flange should be broken, the bolts removed and the clearance taken by feeler gauge at top, bottom and

each side, again rotating the shaft at 90° intervals and taking further measurements until the shaft has been rotated back to its original position. If the alignment is good there should be no more than 0.1 mm difference between the maximum and minimum readings.

The Diagnostic Engineer will know that it is in the nature of things that bearings suffer wear. They are, when the engine is running, highly loaded and subject to constant variations in temperature and the direction in which the load is applied. They also suffer from poor quality lubricating oil which picks up all sorts of metallic and chemical debris on its journey through the engine.

These conditions result in a number of related phenomena which are illustrated in the defects tree in Figure 5 below. Again, the Diagnostic Engineer should be familiar with them as these phenomena are the first visible, audible and tangible signs of trouble to come.

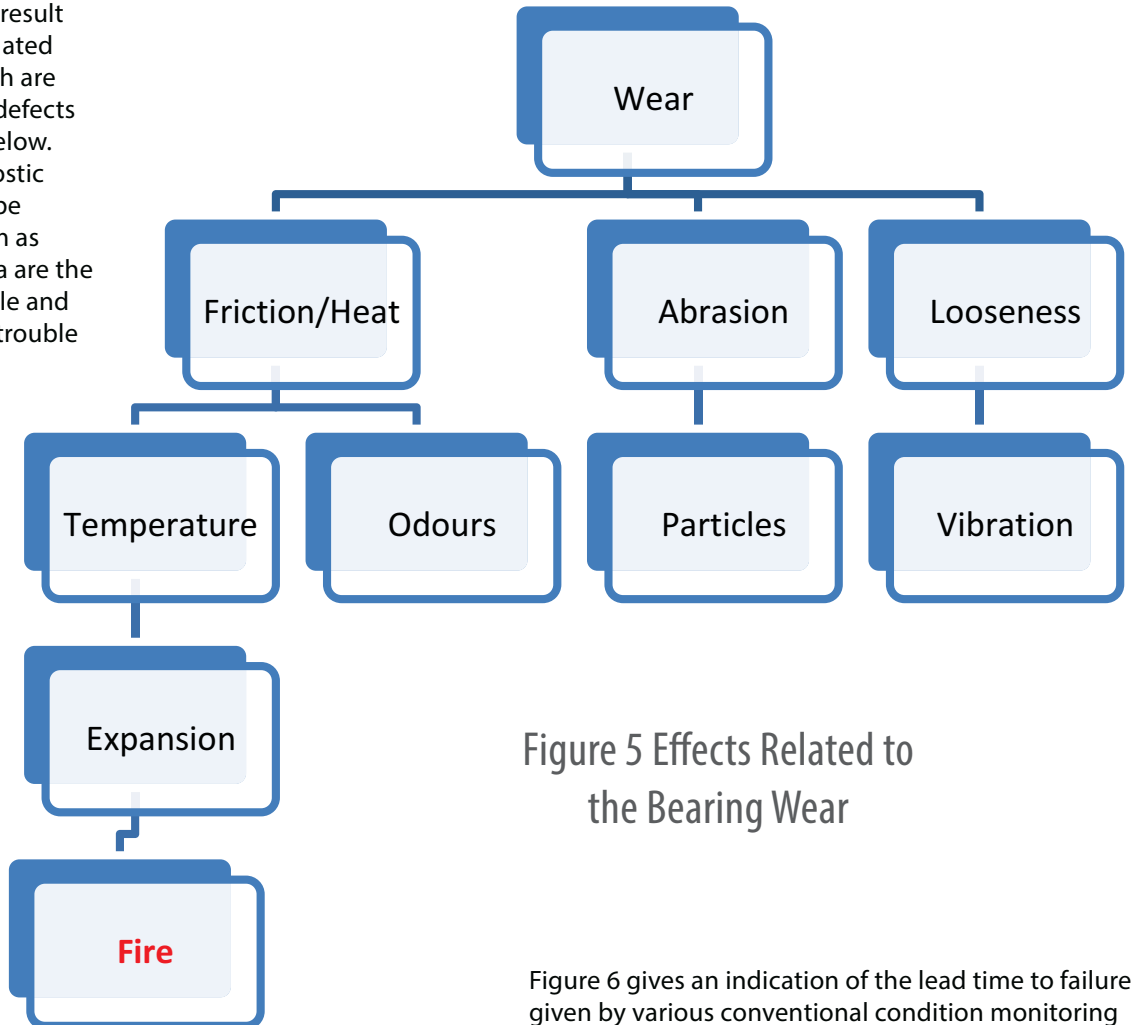


Figure 5 Effects Related to the Bearing Wear

Figure 6 gives an indication of the lead time to failure given by various conventional condition monitoring techniques and the Diagnostic Engineer should be familiar with all of them and their relative value.

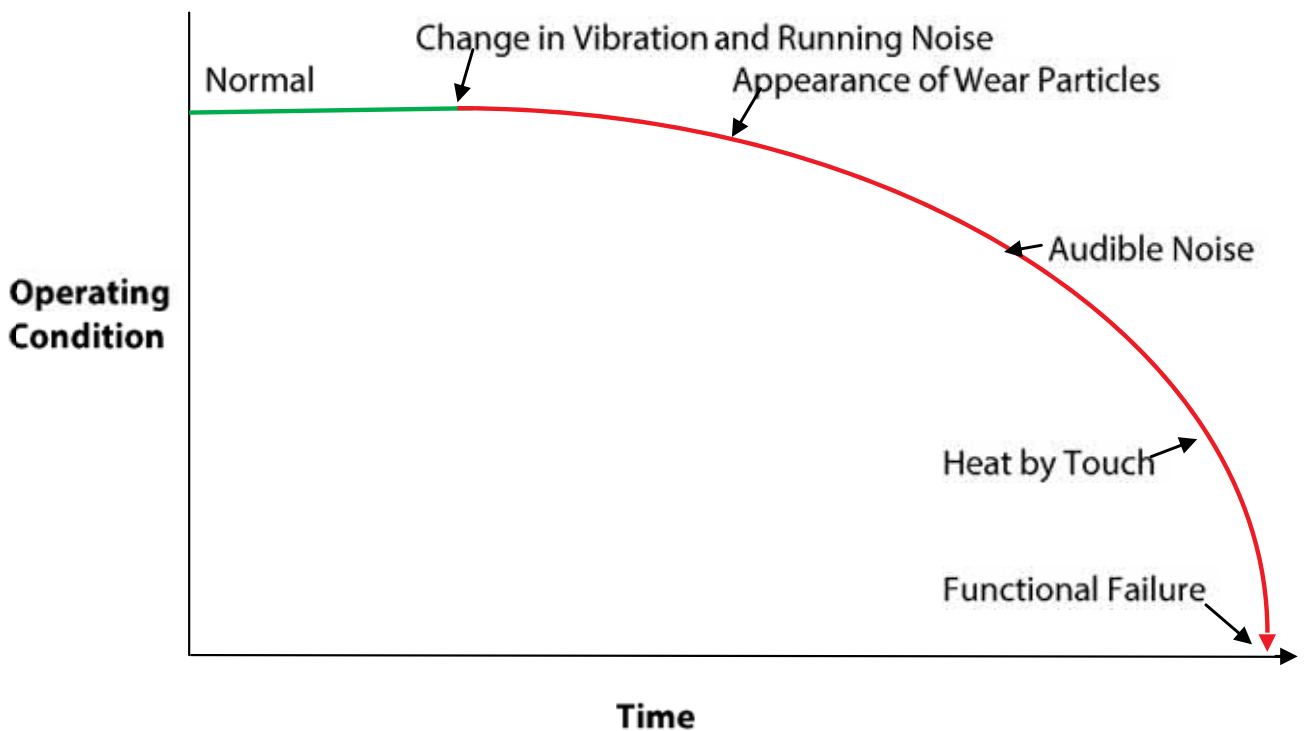


Figure 6 Lead Time to Failure as shown by Various Condition Monitoring Techniques

BRIDGING THE GAP

BETWEEN
TRADE AND
CONFORMITY:

ICOMIA AND THE RECREATIONAL CRAFT DIRECTIVE

WORDS BY BARBARA FOUNTOUKOS

“THE INTERNATIONAL COUNCIL OF MARINE INDUSTRY ASSOCIATIONS
– ICOMIA –
IS THE INTERNATIONAL TRADE ASSOCIATION
REPRESENTING THE GLOBAL MARINE INDUSTRY SINCE 1966”

MEET ICOMIA

ICOMIA brings together national boating federations in one global organisation and represents them at an international level, presenting a strong and united voice when dealing with issues challenging the industry.



No less than 35 national federations across the world are full members of ICOMIA today. Its members include the vast majority of the industrialised countries from North America across to Japan and China and from Finland to New Zealand.

ICOMIA's working committees predominantly consist of its member associations and provide forums where the national associations can share their experiences and most importantly plan collectively to address issues facing the industry worldwide. ICOMIA's objectives are to provide a forum for the exchange of views between the different national marine industry associations; to produce internationally agreed standards to ensure high quality and safety of industry's products; to remove all barriers to trade, wherever they may exist; to promote boats and to give guidelines where appropriate.

ICOMIA represents an agreed international industry opinion on environmental matters related to boating and seeks to minimise any adverse effects of boats on the marine environment. Protection of the marine environment is an ICOMIA core value.

With the support of its members throughout the world and in conjunction with the appropriate associations, ICOMIA lobbies international authorities and major organisations, publishes documents and guidelines and produces tools to facilitate the growth of the industry.

Numerous beneficial improvements within the marine industry are results of ICOMIA's hard work and dedication; not least the quarter century spent refining and safeguarding the EU's Recreational Craft Directive (RCD).

ICOMIA championed the development of the RCD in the 1990s, which was fundamental to opening the EU market and other markets to accept EU-certified boats, and it continues to advise on its development today. The RCD is a European Union Directive setting out minimum technical, safety and environmental standards for the manufacture, import, distribution and trade of boats (between 2.5m and 24m), personal watercraft, marine engines and components

on the EU single market as well as Iceland, Norway, Lichtenstein and Switzerland (as part of the European Economic Area/European Free Trade Association), and Turkey (candidate EU member).

ISO STANDARDS

Linked to the RCD is the development of over 60 ISO (International Organization for Standards) Standards for small craft; spearheaded by the ISO Technical Committee for Small Craft Standards (TC 188) - the committee dedicated to small craft under 24 meters. TC 188 was established over 25 years ago and develops standards for all aspects of small craft design and construction, including safety-equipment, systems and handling. ICOMIA funds the processing of developed and revised Standards within the TC 188 secretariat.

Since the RCD came into force, much of the work within TC 188 has been devoted to developing a set of standards to support the Directive. TC 188 has 16 Working Groups and has published approximately 80 Standards (and continued revisions) - many of which are harmonised and used to demonstrate conformity with the Essential Requirements of the RCD.

ICOMIA remains committed to developing additional ISO standards for the recreational marine industry, to prove their acceptance not only in Europe, but in a global context. To this effect, ICOMIA has produced a 'Small Craft Standards Bulletin', providing industry stakeholders early notification on changes to existing standards and modifications to production methods; as developed and maintained by TC 188.

ICOMIA's Small Craft Standards Bulletin clearly defines the current stage of an ISO Standard depending on whether it is in: Committee, Enquiry, Approval, or Publication. "On completion, Standards that support the RCD

requirements are referenced in the Official Journal of the EU (OJEU)" explains Patrick Hemp, ICOMIA Technical Consultant. "This step leads to a 'harmonized standard' which in turn provides a presumption of conformity for a certain legal requirement. A sensible transitional period is determined during which both the revised standard, as well as the superseded version provide the presumption of conformity".

GLOBAL CONFORMITY GUIDELINES

Conformity is and always will be a challenge for those operating internationally. For years, US companies interested in exporting boats to Europe and European companies wishing to export to the US had found themselves in a difficult situation due to the different sets of standards used on the two continents and the requirement to comply with them both. A globally adopted set of standards did not exist.

In the US, the standards used have been developed by the American Boat and Yacht Council's (ABYC) Project Technical Committees. Each Project Technical Committee is made up of members from all segments of the marine industry including manufacturers, surveyors, boatyards, repair facilities, the US Coast Guard and the general public. Mainly derived from the US Code of Federal Rules (CFR) and other domestic laws, the ABYC system uses the local US approach to defining boat standards. ABYC is also a point of reference for any boat builder unclear about the application of standards.

In contrast, the ISO standards' approach is global and the standards are meant to be self-sufficient. Their use is promoted by the RCD but applicable to all types of boat construction and design, including commercial boats. The two standards systems have different requirements for

the construction of boats, which are based on separate calculations and criteria.

Any boat builder interested in exporting overseas faced a severe challenge in trying to comply with both standards' systems. Initially the comparison was made between the ABYC and ISO standards, but other standards are also being considered.

It was with this in mind that ICOMIA decided to form a dedicated standards' harmonisation working group in 2007.

Made up of partners from ABYC, British Marine, ICOMIA, the International Marine Certification Institute, and the National Marine Manufacturers Association, the working group meets twice a year to compare the different aspects of the two standards' systems in order to develop universal guidelines in order to help boat builders comply with both systems.

For many years, boat manufacturers selling to the global community have had to independently figure out the differences between their own domestic standards and ISO standards developed to support the RCD.

Nine universal guidelines have so far been published by ICOMIA, but many more are in the pipeline.

The launched guidelines include Fuel Systems and Fixed Fuel Tanks (Guideline 1), LPG Systems and Appliances (2), Electrical (3), Windows, Portlights and Hatches (4), Powering (5) Man Overboard Prevention (6) and Boat Capacity Labels (7), Ventilation (8) and Field of Vision (9).

The Global Conformity Guidelines are aimed at boat builders with previous experience of either the ABYC or ISO standards. They are not meant to replace or guarantee compliance with either standard system, but to act as a guide for the user. The guidelines are

available for download from in the ICOMIA Online Library (www.icomia.com/library), as annexes to the ABYC standards or for purchase from www.rulefinder.net.

SCANTLINGS CALCULATOR

Another of ICOMIA's most popular initiatives to bridge the gap between boatbuilders and RCD compliance is its Scantlings Calculator; a calculation method to assist builders comply with ISO Scantling standard 12215 Part 5.

In order to comply with the RCD, builders face challenges when self-assessing scantlings for craft of hull length less than 12m in all design categories. They use the Harmonised Standard which provides the Presumption of Conformity, however the complex nature of these documents often force them into hiring a consultant.

In response to these issues, ICOMIA's Technical Committee initiated a study (sponsored by the International Marine Certification Institute), and with approval from ISO, commissioned Southampton Solent University to develop a series of spread sheets designed to be used in conjunction with this ISO standard. The team developed six modules which cover most of the scope of Part 5; with an emphasis on simplified data entry. A seventh spread sheet, 'Core Helper', provides a link between a number of common trade name cores. The 'Scantlings Calculator' can be accessed for free to legitimate owners of Part 5 at www.icomia.com.

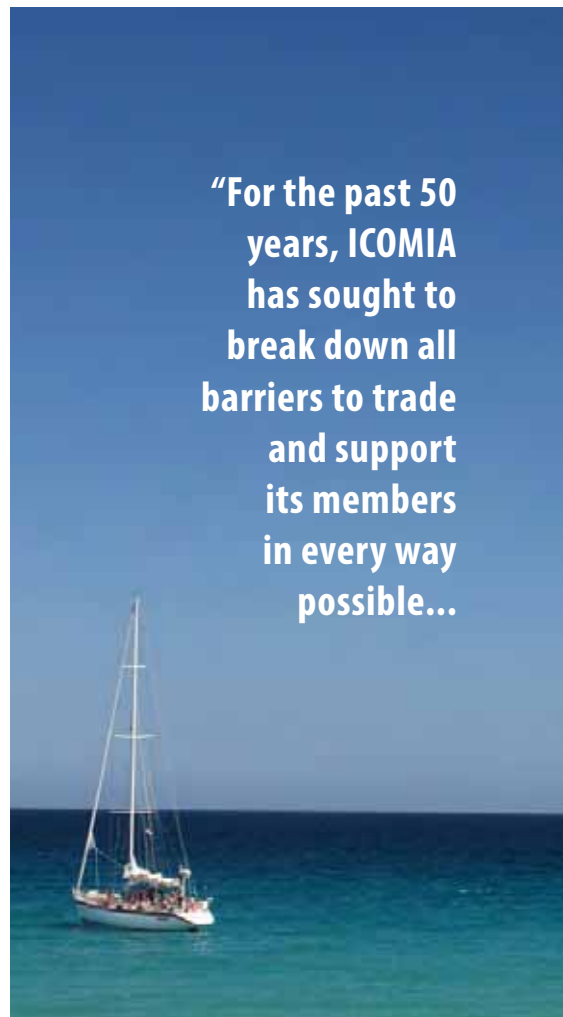
THE NEW RCD

Firstly, the Recreational Craft Directive has changed its name to the 'EU Recreational Craft and Personal Watercraft Directive' – to better reflect its scope which includes personal watercraft and recreational craft. These have now been defined collectively

as Watercraft. Some of Directive 2013/53/EU's key changes to essential safety and environmental requirements to carefully consider are as follows:

- Design Categories (A, B, C, D) no longer have a descriptor and are determined by the wind force (in Beaufort Scale) and significant wave height.
- The composition of the Watercraft Identification Number (WIN), previously called the CIN has been changed and the Manufacturers Identification Code (MIC) needs to be assigned by the national authority of a Member State within the EU. This means that manufacturers located in Non-European countries will no longer be able to apply for this code from the national authority in their own country if exporting to Europe but shall request it from a national authority in the EU.

“For the past 50 years, ICOMIA has sought to break down all barriers to trade and support its members in every way possible...”



- A means of re-boarding a craft after falling overboard needs to be accessible from the person in the water.
- Good all-round visibility from the main steering position on motor, and now also, sailing craft needs to be carefully considered.
- All black water discharge on a craft need to be connected directly to a holding tank or water treatment system
- Emphasises the requirements needed to complete a Post Construction Assessment (PCA) - for private imports only.
- Total engine (both diesel and petrol) exhaust emission limits have been further reduced and are now in-line with USA (EPA & CARB) requirements.

The obligations and responsibilities of all economic operators, i.e. manufacturers, importers (both commercial and private ones) and distributors have been further defined in the new Directive.

...by giving recommendations and providing the necessary instruments needed to navigate bureaucratic choppy seas."



It requires boat, personal watercraft and engine manufacturers to keep a technical file on all relevant data, and to officially declare the compliance of their product using a declaration of conformity template (DoC), to affix the CE marking to it, and to inform users about safe use and maintenance. Importers and Distributors have an obligation to ensure these processes are completed before placing on the EU market and Importers will need to add their name, trademark and contact details to the craft or product.

THE RCD GUIDE

In anticipation of Directive 2013/53/EU, which became applicable on 18 January 2016, ICOMIA, together with European Boating Industry produced an invaluable 'RCD Guide' applicable to boating professionals intending to manufacture, import, distribute and sell products on the EU single market as well as Iceland, Norway, Lichtenstein and Switzerland (as part of the European Economic Area/European Free Trade Association), and Turkey (candidate EU member).

In order to comply with new Directive on the relevant markets, boats, engines, personal watercraft and certain components (whether imported or domestically produced) will have to be assessed according to the new EU rules.

Types and models in production and assessed according to the "old" EU Directive 94/25/EC, as amended by Directive 2003/44/EC, will have until 17 January 2017 until reassessment. There is also an extra transition period, until 18 January 2020, for small and medium-sized enterprises to comply with Stage One exhaust emission limits. This derogation is limited to spark ignition engines with power equal to or less than 15 Kw.

"At our suggestion the new RCD emphasises and clarifies requirements needed to complete a Post Construction Assessment (PCA) for private imports - however issues such as Craft Identification

still need clarification. Our continued commitment is to ensure the supporting standards are in place by the end of the transitional period in January 2017" says Udo Kleinitz, ICOMIA Secretary General, "This is why our Guide is invaluable as it provides practical, easy-to-understand advice on how companies – especially smaller ones without dedicated product compliance staff – can navigate and comply with the Directive".

Featuring a quick guide as well as detailed chapters, the Guide also contains detailed comparisons of both the new and old Directives with reference to the relevant harmonised standards (used to gain the presumption of conformity) and various informative links to further resources.

The Guide, which is currently available in nine languages, is free for ICOMIA and EBI members and available for purchase as a downloadable App on both Apple and Android tablets (for only €3.99) and as a PDF (€2.99) supported by any device.

Further details can be found at www.europeanboatingindustry.eu/appsite or by visiting www.icomia.org and clicking the banner.

For the past 50 years, ICOMIA has sought to break down all barriers to trade and support its members in every way possible by giving recommendations and providing the necessary instruments needed to navigate bureaucratic choppy seas. With ICOMIA monitoring emerging technical regulations and guiding the developments and revisions of ISO standards and the RCD, it remains aware of technical developments across all sectors and is uniquely positioned to act as the voice of the recreational marine industry.

For more information on ICOMIA please visit www.icomia.com or email info@icomia.com

FIFTY SHADES OF INSURANCE: CHAPTER 8

TAMING OF THE STRIFE – BY MEDIATION

In our last chapter we lightly delved into, one could say flirted with, the concept of mediation by considering what mediation means and its advantages. In this chapter we are exploring its inner depths and revealing why it is often so successful.

SO WHAT IS THE PROCESS AND WHAT DOES IT ALLOW?

The process is private and confidential; parties who mediate do so of their own free will.

- The mediator initially engages with both parties together and allows them to summarise their case in front of each other, he/she then has private and confidential sessions with each party
- The mediator goes between each party in their separate rooms talking and listening to them and only passes on information to the other party when he/she has permission from the party providing the information.
- The mediator's role is to talk and listen not to be judgemental, he/she facilitates and probes when necessary to bring out facts and to understand the dispute.
- The mediator's role is to try to make each party see the other's case, their own case's strengths and weaknesses through talking with them.
- The mediation process provides thinking time without distractions providing an opportunity for each party to assess whether their case is as strong as they first thought and encourages them to think about the litigious risk, associated costs and their real desires.
- The confidentiality allows commercially sensitive information to be discussed without the other party, theoretically, using the volunteered information in any litigation process.
- If settlement occurs the parties produce the settlement agreement, not the mediator, and any legal settlement can be agreed even ones that a court cannot order such as discounts on future transactions.



WHY DOES MEDIATION USUALLY WORK?

It frequently works for many reasons, some of which are outlined below:

- It is a private and confidential process allowing parties to communicate without restraints.
- Generally parties tend to settle a dispute with the expectation of making some concession and the process allows this to happen in a short period of time.
- Parties can tell each other their case without going through lawyers.
- Parties can explore mutual concessions to reach settlement.
- Parties can VENT their feelings and views and sometimes venting is more important to people than money or winning; it is often about the principle of getting their point across.
- It is not a court of law so it does not have the rigid procedural rules for each party to comply with although the mediator must comply with the rules of mediation as they must not provide opinion or take sides.
- Mediator does not act as a judge or as an arbitrator they are an independent person to facilitate discussion and hopefully help parties to resolve their dispute resolution then a binding agreement is drawn up by the parties themselves and signed by the parties.
- At any time either party may choose to terminate the mediation process and continue with or start the litigation process.
- Hopefully at the very least the mediator will be able to assist the parties in narrowing the dispute to the key issues which can often have become blurred over time.

Sadly it is common for a conflict to have been going on for many months, or even years before mediation occurs, often badly affecting all parties involved in some way or another; time involved, stress and costs can be tremendous strains on individuals, partners and firms.

Attending mediation is a positive step to progressing to resolution under the skilful guidance of a mediator and perhaps, I like to think that occasionally results in personal and business relationships not being damaged and friendships kept.

“The role of a Mediator is to be an independent, unbiased third party who facilitates discussion between two or more parties at conflict with the aim of reaching a resolution”

If you would like more information on the mediation process or would like to speak with a mediator please contact us.

Karen Brain

Managing Director –

solicitor non-practising

Matrix Insurance Services Ltd

Tel: 01892 724060

enquiries@matrix-ins.co.uk

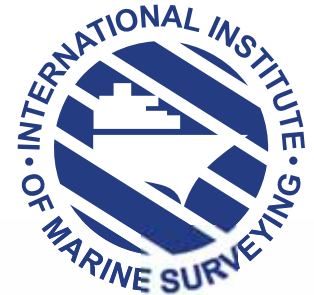
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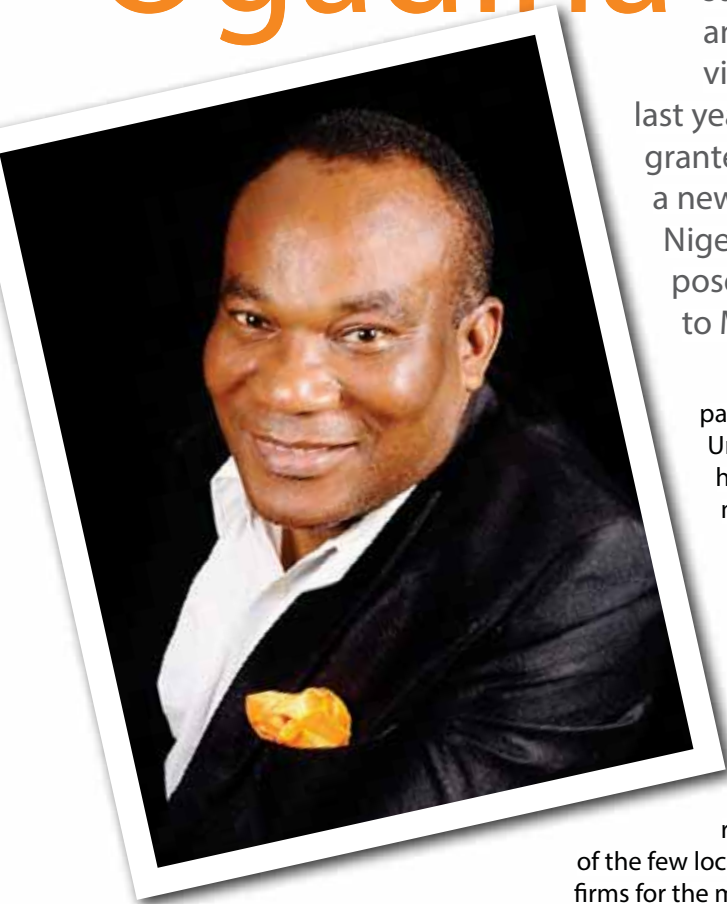
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A day in the life of Monday Ogadina



Monday Ogadina is an IIMS Regional Director, representing the area of West Africa, which is a busy area for surveyors. Following representation made by the growing number of member surveyors in Nigeria and after the CEO's visit to the country last year, the Board has granted the birth of a new branch, IIMS Nigeria. Mike Schwarz poses the questions to Monday.

parent body Commercial Union Insurance UK. It had a well-developed marine underwriting and marine claims department which were headed by a Marine Underwriter and an Adjuster of Marine Claims respectively. The marine claims department relied on the services of the few local marine surveying firms for the marine survey services.

Whilst under the employment I attended various courses on Marine Insurance, General Insurance, Marine Surveys and Adjustment, Cargo and Hull & Machinery Marine Claims and Underwriting. I read a lot of marine reports, survey reports, books and other journals especially from Lloyds publications, and picked up my initial interest in the marine surveying profession that way.

After spending about 7 years in the marine insurance industry, I resigned in March, 1993 to pursue my interest and passion in marine surveying. My focus was on marine claims, marine surveys, cargo inspection and loss recovery.

In 1996, I stated my own marine surveying firm as a services provider in the areas of marine survey, marine insurance, marine claims management and loss recovery. I established my own marine surveying and inspection firm Seaguard International Services as the principal partner and CEO.

In the year, 2001 I applied and joined the International Institute of Marine Surveying as a full member and have been a full member since then.

Q2. Which area of marine surveying do you specialise in?

My background in marine insurance predicated my areas of specialisation which are on Marine insurance, Claims, Cargo Superintendency, P&I Club Surveys - Cargo, Containers, Draft surveys, General Cargoes, Oil and Chemicals, Damaged Cargo Survey, Project Cargo Inspection and Surveys, Marine Loss and Claim Adjustment, Cargo Disposal and Loss Recovery, and other matters relating to marine insurance.

Q3. What does the establishing of an IIMS branch in Nigeria potentially mean for the profession in your country?

Undoubtedly, establishing an IIMS branch in Nigeria will create the needed boost for the marine surveying profession in the country. The potential for the growth and development of the marine surveying profession is very high due to the oil and gas based economy, and the fact that we have many young Nigerians who are showing great interest in the shipping industry. As the designated representative of the IIMS for the West African region, I have a lot of enquiries from Nigerians who want information on how they can become a marine surveyor.

In broad terms, the IIMS Branch in Nigeria will surely improve the growth and standard of the marine surveying profession in Nigeria. It will also promote positive engagement with the

Q1. I'd like to find out more about you as a person. How long have you been a marine surveyor and which route did you take into the business?

My Name is Ogic Monday Chidi Ogadina. I graduated from Delta State University, Abaraka, Delta State. I am married to a beautiful wife and blessed with four wonderful children.

My history, or journey into the marine surveying profession started with my employment by Unic Insurance Plc, and my posting to the marine claims department of the insurance company in 1987. Unic Insurance plc was setup by its

government agencies in the area of developmental issues such as safety, compliance, standards, and will improve student enrolment for those who want to become marine surveyor. It will also lead to better coordination of Nigerian members. Also, it will create more awareness to Nigerians and West Africans of the positive contributions of IIMS and marine surveying as a whole.

Q4. What are the key challenges facing the marine surveying profession in Nigeria?

The marine surveying profession is generally not a popular profession in the country due to lack of general awareness. Therefore, it is natural that there would be mountains of challenges. The major challenges confronting the profession are the lack of recognition and support from the government to compliment the efforts of the professionals and educational institutions for the young professionals, and awareness from the maritime stake holders. We are also facing the problems of poor remuneration, and patronage from government and maritime stake holders.

Q5. Where do you see the main challenges and security issues of surveying in a bustling city such as Lagos?

The city of Lagos is the commercial capital of Nigeria. We have two major ports located in Lagos, and probably the busiest ports in the West African region. Just like other major cities in the world, the major challenges confronting marine surveyors are the congested traffic systems in and out of the port terminals, poor security systems and infrastructure to support efficient port operations. However, despite these challenges Lagos life is fun and the city is a dream location for any passionate marine surveyor. But safety first always.

Q6. Monday, 2015 turned out to be a progressive year for marine surveying in Nigeria with the plan to launch a branch and my visit to

give the lecture. What effect has this activity had so far?

First, the marine surveyors in Nigeria were really grateful for the visit of the IIMS CEO. The visit of the CEO and the good news of an IIMS Nigeria branch were the important 2015 land marks for us in Nigeria. The keynote lecture and advice were informative and gave a strong message of hope for the marine surveying profession in Nigeria. The visit created a very good interactive platform and relationship for the Nigerian members, the non members, members of the press and the inquisitive young students who are interested in marine surveying as a profession.

After the visit, enquiries from the public and prospective members has been on the increase. The Nigerian Branch will act as the catalyst for the marine surveyors in the West African region, if not further afield.

Q7. How strong is the opportunity to educate and develop the marine surveying profession in Nigeria and West Africa as a whole?

With the economy base of Nigeria and West African being oil and gas, import dependent and developing countries, maritime activities are growing at a rapid rate with great potential.

The Nigerian economy is based on oil and gas and it is imperative that the marine surveying profession will always have a complementary role to play in the development and future of the economy. The marine surveying profession will also grow to support the shipping industry which is developing at the moment.

Q8. What advice would you give to young African marine surveyors who are learning their craft?

Marine surveying is an interesting profession. For the young marine surveyors, my advice to

them is to seek knowledge through the right education, maintain high levels of integrity, shun corruption, have an open mind with a closed mouth. Make sure you join the local surveying body for pressure group support and the international surveying organization such as the International Institute of Marine Surveying, London for training, standards and recognition.

Q9. How do you spend your spare time when you are not working and relaxing?

When I am not working, I spend my quality time with my family, watching premier league games, and documentaries on the TV. Once a week I get involved in the charity works and community service for humanity.

Q10. If you have one regret in your life, what would it be?

I don't have any personal regrets, except that marine surveying in Nigeria started very late due to a lack of awareness. My experience so far has been wonderful, and to follow the profession was one of my best decisions I have made in my life.

Q11. As IIMS is celebrating its 25th anniversary this year, what message do you have for other fellow surveyors around the world?

Congratulation to all IIMS members and well done to the CEO and the administrative staffs for their work. As we celebrate the attainment of the 25th year anniversary, we must all keep the ship sailing and the flag flying.

