

January 2018

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Seaways

The International Journal of The Nautical Institute

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Help or hindrance?

Mandatory shipboard equipment p06

Going green?

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When is a fix not a fix?

Importance of dead reckoning p21



Launch and recovery of boats from ships

The Institute's new publication p08



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Diary

What's on?

Navigation Assessor Course 15-16 January

NI Headquarters, 202 Lambeth Road,
London SE1 7LQ

Contact: Susie.stiles@nautinst.org.uk

Answers questions including:

- What defines an assessment?
- Improving safety and best practice
- How to conduct the assessment with a systematic approach
- Preparing and effective report

Discount available for Nautical Institute members

To take advantage of the discounts available for events listed in the Diary section, please log in to www.nautinst.org using your membership details and click on 'Event Discounts'

04 January

Autonomous ships

Ireland Branch

1900, Commissioners of Irish Lights, Harbour Road, Dun Laoghaire, Co. Dublin

Email: nautinst.ireland@gmail.com

10 January

London Boat Show

ExCel London, London E16 1XL

<https://londonboatshow.com/>
Whats-On

16 January

Seafaring – a lifetime occupation?

SouthWest England Branch

1900, Royal Plymouth Corinthian Yacht Club, Plymouth PL1 2NY

Email: robert.hone@plymouth.ac.uk

<http://glang.me.uk/nisw.html>

6 February 2018

Offshore Wind Journal Conference 2018

Novotel London West Hotel, London W6 8DR

<http://www.offshorewindjournalconference.com/index.htm>

10% discount for NI members

European DP Conference 2018

Novotel London West Hotel, London W6 8DR

<http://www.dynamicpositioningeuropa.com/index.htm>

10% discount for NI members

7-8 February 2018

Offshore Support Journal Conference 2018

Novotel London West Hotel, London W6 8DR

<http://www.osjconference.com/index.htm>

10% discount for NI members

13 February

Corporation of Trinity House

Southwest England Branch

1900, Royal Plymouth Corinthian Yacht Club, Plymouth PL1 2NY

Email: robert.hone@plymouth.ac.uk

<http://glang.me.uk/nisw.html>

19 February

AGM and 'Chartered Master Mariners'

NW England & N Wales Branch

1800, HMS Eaglet, East Brunswick Dock, Liverpool

For security purposes, please register in advance with

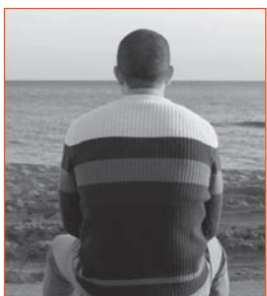
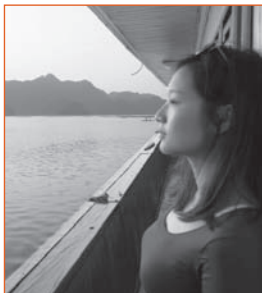
sec@ninw.org.uk

21-22 February

Arctic Shipping Summit

Montreal – venue TBC

<http://www.wplgroup.com/aci/event/arctic-shipping-summit/>



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Focus

Increasing engagement

“ I hope that during the course of the year you will have the opportunity to make the most of your membership of the world’s leading professional body for mariners. ”

To all of our readers, I wish you a very Happy New Year and very best wishes for 2018. For many, the New Year is an opportunity to think about the future and to plan for the year ahead, introducing new ideas and creating new opportunities.

Your Headquarters team in London is looking forward to the challenges of the year ahead and will be introducing new ideas for engagement with you, and the industry as a whole, as the year progresses. One example will be the launch of our next short programme for professional development. This will be the ‘Incident Investigation and Analysis Course’ which will help mariners understand the root cause of accidents and near-misses. The two-day programme will support the highly successful *Collecting Maritime Evidence* publication we launched last May and will be delivered with the support of our branches across the globe.

We will be continuing with the highly successful Navigation Assessors course, commencing in London on 15 & 16 January and progressing to other venues throughout the year. Our biggest demand in 2017 came from Hong Kong and Singapore as well as Dublin, demonstrating a truly international interest in the programme.

We will continue to grow our Ice Navigator Certification scheme using the extensive links of our President Captain Duke Snider. In fact next month I am pleased that this ‘Focus Piece’ will be delivered by the President while on a voyage to Polar Regions (he promised!!).

Membership and support

I hope that during the course of the year you will have the opportunity to make the most of your membership of the world’s leading professional body for mariners. With over 50 branches getting to a local meeting can help develop the networking

opportunities you have with peers. Your legal fees insurance remains in place as a benefit of membership. While we hope this will not be needed we are acutely aware that the criminalisation of seafarers agenda held by some authorities makes this an important contribution to your professional security.

Forthcoming events

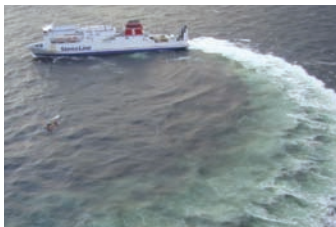
Malta will be an opportunity for a global meeting as we host the technical seminar and Annual General Meeting on 23 and 24 May. The event will attract leading specialists and experts on our key themes of superyacht operations; dealing with refugees and the impact of automation. We would be delighted to have your contribution, so please find time in your diary if you can.

2018 will be another year in which our leading publications will help guide our mariners to safer operations. A number of new and updated books will be launched including *Polar Ship Operations – A Practical Guide* and later this month *Launch and Recovery of Boats from Ships* by Dag Pike. This is a very important book that is especially relevant in an era that sees so many seafarers injured or killed looking after equipment designed to keep seafarers safer – as several of the articles in this month’s *Seaways* make clear. There will also be books focusing on watchkeeping and best practice.

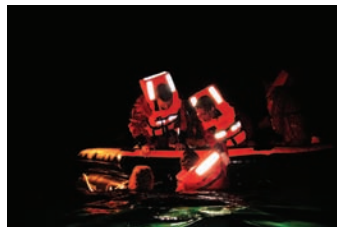
Please stay in touch with your local branch and with the NI in London through our *Seaways* correspondence pages and on-line. It is always great to hear from you. If you want to contact me directly, do not forget I can be reached on sec@nautinst.org

With very best regards

John 🌐



p5



p6



p10



p13

Captain's column

Lifeboats, liferafts and getting back on board

There has been considerable debate in *Seaways* on the design and operation of lifeboats and other lifesaving equipment.

Liferafts were introduced after I went to sea, and knowing how unwieldy and unmanoeuvrable a 90-man boat can be even in sheltered water, I initially thought my personal preference in an emergency would be for a liferaft. Until I actually had experience of one, that is.

We were heading across the Great Australian Bight in about force 4 to 5 with a moderate swell when the 3/O spotted a half-deflated liferaft about four points on the bow. We had had no warnings of anything that had gone wrong but obviously it had to be investigated.

A pilot ladder was rigged and the Old Man did a good job of putting the bottom of the ladder alongside the raft on the lee side. My original plan had been to wear a lifejacket, but I discarded that as potentially too unwieldy when trying to enter the collapsed canopy. Instead I had a safety harness. To spread my weight out I did a (sort of) swan dive from the ladder. I landed with my weight right across the raft, which was good; even better when I found the raft was empty.

A few seconds later I was airborne. The bosun's mate had seen fit to take a round turn

when I got on to the raft and when the ship rolled the other way, up I went. An event like this is good spectator sport and most of the crew were watching. 'Give him slack!' was the cry. The bosun's mate gave me heaps and I went plummeting down into a wet, clammy, rubbery embrace. When I got clear of that I forgot about trying to put a line through the collapsed arch. Instead, I made it fast to the lifeline round the raft and got back on board.

When the crew started to pull the raft aboard, the upper ring started tearing away from the lower ring. (The brand was recalled shortly afterwards.) I went back down the ladder, and this time I started by putting a round turn and two half hitches around the gap between the upper and lower rings.

At this point the liferaft had drifted so far away that in the bottom of the trough I could not see the ship. Enough is enough, and I shouted to the second officer to pull me back. The harness was in the middle of my back, and I got pulled backwards through the next swell, mostly underwater. When I got to the bottom of the ladder I was done for. I was in my late thirties and fit, but while I could use my hands and feet to guide me, I had to be pulled up the ladder. This gave me an idea of what real emergency situations could be like. The round turn and one half hitch held, and the crew

pulled a very bedraggled raft up on deck.

The scary part came when we found out the liferaft had been lost less than a day before. That made me re-evaluate my own priorities in the case of an abandon ship.

Design considerations

On ships where they can be fitted, I think freefall lifeboats are the way to go. However, I think we need to have a serious look at whether side-mounted lifeboats that are lowered to the water by davits should be enclosed or not. At first sight the idea of some protection from the elements seems laudable, but is it worth the down side? Consider:

- One of the major problems in anything but smooth water is unhooking the falls when the boat is in the water. Access to the hook and falls is much easier in an open boat;
- If there are survivors in the water it is much easier to get them into an open boat;
- It is much easier to organise for boats and rafts to be lashed and kept together from open boats;
- EPIRBs, satellite phones, transponders and satellite coverage mean rescue is much more likely to come quickly than in the past;
- Some cruise ships use lifeboats as tenders, but that should not detract from their primary function of being a lifeboat. 🌐



Ideal conditions for getting into a liferaft – doing so at sea is a very different matter

Going round in circles

The 'Lorén Turn'

International Maritime Rescue Foundation

One of the amendments to be made to the International Aeronautical and Maritime Search And Rescue (IAMSAR) Manual for its 2019 edition is the addition of information on the 'Lorén turn'.

Volume III of the manual already includes information on three 'standard recovery manoeuvres' – the Williamson turn, the single or Anderson turn, and the Scharnov turn. These manoeuvres are designed to assist a ship's crew to return to a man overboard. But, having reached the casualty, what happens then?

The FIRST Project (see www.first-rescue.org), conducted by the Swedish Sea Rescue Society with the active assistance of Stena Line and other partners, has done much good work on the difficult question of retrieving people from small craft, including survival craft, or from the water. It included live trials, in poor sea conditions, of a manoeuvre which involves a ship circling the casualty in order to break up wave trains.

This has the effect of temporarily calming the area of sea in which the retrieval is to take place. The pictures show the Stena Line ferry *Stena Jutlandica* carrying out the manoeuvre.

Ship simulations using different types of vessels have also been conducted at the Chalmers University of Technology, in Gothenburg, Sweden. These indicate the same effect.



Credit: IMRF

Adding the basics of the procedure to Volume III of IAMSAR will be of considerable aid to the Masters of 'ships of opportunity' asked to attempt rescues at sea, beyond the reach or in support of dedicated SAR units.

As the FIRST Project is headed by Captain Jörgen Lorén, Master of the *Stena Jutlandica* at the time of the trials shown, the manoeuvre was named for him in IAMSAR, and is known as the Lorén turn.

The benefits of the Lorén turn are that it facilitates launch and recovery of a rescue boat and rescue work by other craft.

Circling calms the sea by interfering with wave patterns: the more turbulence created by the ship the better. Additional ships circling to windward will calm the sea further.

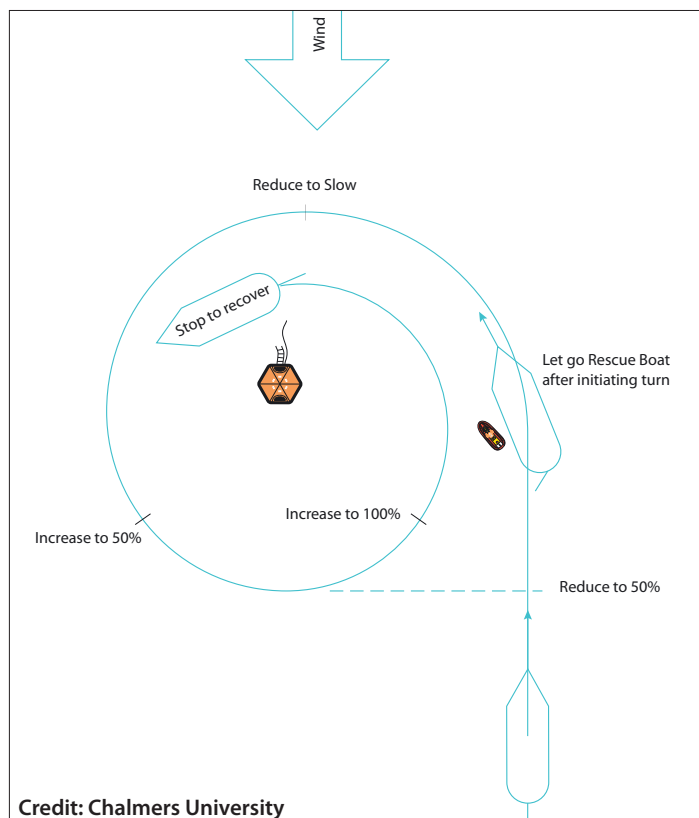
The Lorén turn procedure may be summarised as follows:

1. Head into the wind at full speed.
2. Begin the circle and reduce to slow when the wind is abeam.
3. When the wind crosses the stern to the opposite quarter, increase to half speed.
4. Continue circling as long as calmer water is needed.
5. Slow down, or stop, to launch and recover rescue boat on the leeward side, inside the circle.

It is important that Masters considering this manoeuvre, or the others already included in IAMSAR, know the handling characteristics of their own vessel. Opportunities should be taken to practise. 🌊



Credit: IMRF



Credit: Chalmers University

This article first appeared in *Lifeline*, the newsletter of the International Maritime Rescue Federation

Mandatory shipboard equipment: help or hindrance?

‘It really freaks me out!’: What seafarers think of mandatory shipboard equipment

Professor Helen Sampson

Seafarers International Research Centre, School of Social Sciences, Cardiff University

In 2012, the Seafarers International Research Centre began a four-year study of seafarers’ views of mandatory shipboard equipment. We were concerned to get a detailed view of the way in which mandatory equipment was seen by seafarers and in doing so, we spent a considerable amount of time at sea on nine different ships. While on board we interviewed 152 crew members and supplemented this information with another 211 shore-based interviews. This perspective was enriched with 2,500 interviewer-administered questionnaires completed by seafarers in ports around the world. When the results were published, in 2016, they gave some cause for some concern.

While some equipment was regarded by seafarers as well-designed and fit for purpose, essential lifesaving equipment was viewed less favourably. In many cases seafarers expressed fears about lifeboats and a marked reluctance to engage in the drills and maintenance that are necessarily associated with their safe operation. At the same time, many seafarers believed that the liferafts, survival suits and lifejackets carried by many ships were poorly designed and not fully fit for purpose.

Bridge and engine room equipment

The research considered a range of bridge, engine room, and emergency response equipment carried by vessels as a requirement of SOLAS and MARPOL regulations. The findings suggested that there was a high degree of support among seafarers for the carriage of some mandatory equipment, including electronic chart display and information systems (ECDIS) and oily water separators (OWS). These were seen as serving a useful function on board if/when they were well-designed and maintained.

Although seafarers generally supported the use of OWS, many of them suggested that poor design and maintenance could lead to misuse. Where OWS filters were not regularly replaced, for example, seafarers found themselves under pressure to discharge oily wastes illegally. One seafarer explained:

‘The pressure [to bypass the OWS] is from the company because they don’t want to spend money sending the bilge water ashore, so they are forcing you to [...] manage however you feel like because they never gave you the right thing. So [...] you can see, some people do these things.’

Forty-three per cent of engineers said they could understand why seafarers sometimes used ‘magic pipes’ to discharge oily waste illegally and 23% of engineers stated that they had been present on a vessel when a magic pipe was in use. Reassuringly, many seafarers suggested that these practices were dying out as a result of improved OWS design and tougher regulation and enforcement.

Mixed views were expressed about bridge watch alarm systems

(BWAS) and Global Maritime Distress and Safety System (GMDSS) equipment. Many seafarers considered both of these to have the potential to promote safety at sea. However, substantial numbers of seafarers felt that as a result of poor design the alarms could be irritating (too frequent and/or intrusive) and unnecessary.

Lifesaving equipment

Lifesaving equipment attracted the strongest criticism from serving seafarers. Many were fearful of using lifeboats in either drills or in real emergency situations. One seafarer related how he routinely evaded participation in lifeboat drills. He explained:

‘Now whenever I am asked to participate I talk to the bosun and tell him that I am not going to join the drill. It really freaks me out!’

Another described an incident:

‘There are two brothers. One chief mate and one AB [...] and there was a mistake and it [the lifeboat] first released on the forward and it fell in the water [...] Dead! [If] they ask me if I go to the lifeboat – No!’

Twenty-seven per cent of our questionnaire respondents stated that in a real emergency they believed that seafarers would be afraid of using their lifeboats. Such fears inevitably spilled over into training practices and 41% of respondents stated that they had sailed with captains who had not lowered their lifeboats because they were afraid of accidents. As one explained:



Even in ideal conditions, more than half of seafarers experience difficulty boarding liferafts



Conditions in freefall lifeboats are cramped and uncomfortable

‘To be frank, since you’ll not put my name, or the company name, I’m telling most of the Masters forge it [...] Masters they say that “As a Master, my responsibility is safety for the people. I don’t feel safe. I’m not doing it. If something happens blame will come on me.”’

While davit-launched lifeboats were a particular source of concern, many seafarers also objected to taking part in drills relating to freefall lifeboats. They found them cramped and uncomfortable and they were afraid of incurring neck and spinal injuries as a result of the impact experienced in the course of the launch.

It was not only lifeboats that were described as problematic, however. Many seafarers were also concerned about the use of liferafts in an emergency. Here, the problems were not related to any dangers posed by the liferafts themselves, but more prosaically were connected to the difficulties that seafarers experienced when trying to board them from the water. The majority of our questionnaire respondents (70%) had attempted to board a liferaft from the water (unaided) during sea-survival training in ideal swimming pool conditions. Of these, 52% had experienced difficulty. They were generally aware that in heavy, cold seas their chances of boarding would be further reduced. Overall, seafarers considered that liferafts were designed with inadequate boarding systems given their high sides. As one put it:

‘The ladder was too short so I couldn’t get the leverage to pull myself up.’ while another said:

‘I think liferafts should not be too high. [...] and there should be something more to grasp and help us heave ourselves into the liferaft.’

In this context we were not surprised to find that 27% of seafarers responding to our questionnaire thought that they would not be able to board a liferaft from the sea while wearing an immersion suit.

Seafarers were also generally critical of the design of many survival suits. They considered that immersion suits that did not incorporate proper five-fingered gloves inhibited liferaft access and the operation of lifesaving equipment such as flares. One explained:

‘When you have this immersion suit it’s very hard to move. You cannot move easily. Even you cannot climb maybe to the liferaft. [...] Better to have this five fingers. Yes, like a glove [...] because when we climb, when we handle something needs to have five fingers. Because it is more difficult to have only two fingers [...] Yes we have to change that system!’

These issues have also been highlighted by accident investigation reports such as that into the loss of the *Swanland* off the North Wales coast (MAIB, 2011).

Overall, our research demonstrates that seafarers are supportive of the carriage, and use, of most mandatory shipboard equipment. Nevertheless, there are several areas in which design could be improved. In particular, the research emphasises the very urgent need for the design of lifesaving equipment to be reviewed and for related regulatory standards to be revised. In relation to davit-launched lifeboats this process is already underway. However, our findings suggest that more broad-reaching changes to the design of liferafts, freefall lifeboats and survival suits are needed urgently.

This summary is inevitably unable to convey the full complexity of the project findings. To explore these in further detail please access the report via the following link: http://www.sirc.cf.ac.uk/SIRC_Free_Online_Reports.aspx

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Launch and recovery of boats from ships

The Nautical Institute's latest book aims to remove the fear factor through increased understanding

Stephen Spark

Editor, *The Nautical Institute*

For the shipowner they're an unproductive but necessary expense; for a passenger they are probably a reassuring sight; but for many mariners they can be a source of concern, even dread. Attitudes to lifeboats tend to be coloured by one's relationship to these lifesaving appliances (LSA).

Those responsible for specifying or designing maritime evacuation systems are unlikely ever to need to use one in an emergency. Happily, very few passengers will have to board a lifeboat or liferaft. And as seafaring has progressively become safer, ever fewer seafarers will have 'taken to the boats' in earnest.

This cumulative lack of experience and a succession of practice accidents have undermined crews' confidence in using the equipment. Reluctance to take part in practice launches has further served to erode safety. As the equipment is used less and less, the fear factor increasingly takes hold. There is a dark irony in the way that equipment intended to save life at sea is now felt by many mariners to put their lives at risk whenever they undertake a lifeboat drill.

Overcoming the fear factor

Gaining sufficient knowledge and confidence to overcome the fear factor is critical to improving the safety of lifeboat launches, maintains Dag Pike in a new book published this month by The Nautical Institute. *Launch and recovery of boats from ships* is, as Pike notes, a vast topic, and one that has not previously been dealt with in detail. As an author he certainly has the right experience, having experienced his first shipwreck at the age of 18. After serving as Captain of Trinity House lighthouse tenders, he went on to become an Inspector of Lifeboats with the UK's Royal National Lifeboat Institution and was responsible for some 50 lifeboat stations.

No matter how sophisticated or automated the system, launching a boat from another vessel in anything other than a dead calm sea requires considerable skill and seamanship. Recovering a boat and bringing it safely on board the mother ship in rough conditions is even more demanding – not least, Pike points out, because lifeboats (unlike daughter craft of workboats) are primarily designed for a one-way trip. Even when conducted by a highly skilled crew, launch and recovery can be quite hazardous. However, if these activities are being carried out by crew members who are inexperienced, apprehensive and lacking traditional seamanship skills, then the risks to personal safety can be much higher. Over-familiarity and complacency are equally dangerous.

Familiarisation

Understanding the boats and their launch systems is critical to building that confidence. On boarding a ship for the first time, Pike writes, 'the

new crew member may be tempted merely to glance at the lifeboats and their davits and assume that they meet regulatory requirements.' Instead, he writes,

'Crew members should be encouraged to increase their awareness of the lifeboats and to consider their capabilities and limitations. Just taking a close look at the lifeboat and its systems can help boost confidence. The new crew member should study how the ship's system operates and whether its components require maintenance. Which of the many types of davit are installed? How do the davits work when launching a boat? Where are the controls? How are the gripes released, and what happens when they are? Are skids in place that can take wear and tear if the lifeboat has to be launched when the ship has an adverse list? How do people board the lifeboat and are there tricing wires to bring it into the ship's side for boarding? When the lifeboat has to be launched is there scope for rigging a boat rope? What are the risks involved in getting away from the ship if the lifeboat is located towards the bow or the stern of the ship?'

These practical considerations are of vital importance not just for crew members, but also for LSA designers and manufacturers, naval architects and shipowners, Pike points out.

Choice of system is dictated by financial considerations, of course, but also by the design of the ship and its purpose. There is a strong commercial incentive to reduce to the minimum the amount of space taken up by boats and their launching systems, yet they need to be easily accessible for boarding in an emergency and for maintenance. Stowing boats low down results in a shorter drop to the water, reducing the likelihood of excessive swinging from the falls and perhaps also cutting the risk of injury to occupants, but it does raise the risk of damage from waves. Stowage high up ensures the boats are better protected but increases top weight. All these competing demands need to be balanced before a choice is made.

Launching systems

The book starts by considering the main types of boat launching system, with their characteristics, advantages and drawbacks, including some sidelights on alternatives that have been proposed or put into production at various times.

The apparent simplicity of the boat launch concept is misleading, Pike explains:

'Simple fixed-arm slewing davits are able to launch MOB boats, small rescue boats and liferafts. There are also increasingly complex single-point davits for the launch and recovery of rescue and work boats that regularly need to leave and return to the mother ship. Single-point davits seem to have the benefit of simplicity, but may actually make launch and recovery more complicated. Once free from its davit security the boat is able to swing from the end of the hoist wire in all directions in response to the movement of the mother ship. It can also rotate on the end of the wire, and it is this rotation that makes single-hoist launch and recovery so challenging.'

Increasingly elaborate means of restraining these swinging forces and overcoming the inbuilt difficulties of single-point systems have been developed, but each innovation has its own operational issues. Good seamanship skills, along with appropriate use of boat ropes and tricing lines, can overcome many of these challenges.

Lifeboat launch systems employing double-hoist davits are subject to stringent regulation, but, Pike observes, ‘...this takes away the incentive for shipowners to specify, and shipyards to fit, equipment of a higher standard [than IMO demands]’. It has had a further unwanted effect, he told *Seaways*: ‘Many modern LSA installations are designed to meet rule requirements rather than to provide a practical means of abandoning ship.’

Release systems

The problems with on-load release hooks have been well publicised, and *Launch and recovery of boats from ships* devotes a separate chapter to the thorny issue of connecting (and releasing) the boat to the hoist. It includes a look at some innovative solutions, but for the time being the onus is on crews gaining a thorough understanding of the equipment and its operation. Unfortunately, training programmes can only go a limited way to meeting this need, as it is impossible, for safety reasons, to replicate the challenges of a genuine emergency launch. Simulators may have a role to play in future, Pike suggests, but his preference would be to have a dedicated training ship that could both provide realistic lifeboat training and test out new LSA designs.

All parts of the launch system need to be maintained to the highest standards, paying particular attention to the risk areas. They include wire hoists, which can become corroded, particularly if left in position

too long; hook mechanisms, which can become disabled by grit; faulty cut-out switches; and fatigue cracking of davit fabrications.

Freefall lifeboat systems seem to be the answer to many of the concerns surrounding davit- and crane-based launch systems. The book summarises the advantages:

‘The freefall lifeboat is an effective way of abandoning a ship. In contrast to a davit launch, the fast launch from freefall gives the lifeboat the momentum to get away from the ship after hitting the water. For the shipowner the benefit is that only a single lifeboat is required rather than one mounted on each side of the ship, which reduces costs. By being stowed right aft, the freefall lifeboat does not normally need to occupy valuable deck space.’

Yet there are concerns, as Pike notes: ‘In the rush to abandon ship, I wonder how many crew in the lifeboat will be accurately seated and secured before launch. Also, there does not appear to be much experience of what happens when a freefall lifeboat launches into rough seas and big waves.’

Launching and recovering a boat can be hard enough, even during a carefully controlled practice in sheltered waters. But Pike raises a further question: ‘There remains the unexplored problem of how you recover occupants from a lifeboat/liferaft once they have abandoned ship. That can be a major challenge even for dedicated rescue craft, as I know from personal experience.’

More than a century after SOLAS, mandated ships’ evacuation systems remain ‘work in progress’. Much more needs to be done to improve the survival chances of crews and passengers evacuating maritime casualties. 🌊



BOOK OF THE MONTH:

Launch and Recovery of Boats from Ships

“Launching and recovering boats from ships can require considerable skill and seamanship. In this book we demonstrate good practice when carrying out these operations and explain the techniques and systems that can improve manoeuvres.”

*Dag Pike FRIN FIMarEST AFNI AFRMetS
Author and Navigator*



Order from: pubs.admin@nautinst.org by the end of January 2018

Cyprus Command Seminar



Harry Gale FNI
Technical Manager

The final Command Seminar of the 2017 series was held in Limassol under the auspices of the Cyprus Branch. The four sessions looked at:

- Facts and figures concerning navigation accidents;
- Human element;
- Technology;
- Challenges and opportunities.

As with the other seminars, the ongoing themes were fatigue, human element issues and mentoring.

In his keynote speech, NI President Capt Duke Snider FNI said that the human element remains one of the basic, yet often most misunderstood or forgotten, elements in an incident web. The technology of navigation seems to be constantly changing, so how do the limitations of human performance fit with this? Improved technology provides the modern navigator with a very precise depiction of where the vessel is, but are navigators mesmerised by the dot on the screen that seems to tell them they are on track? Navigational accidents still occur – too frequently, some would say – and all too often they are attributed to operator error or operator unfamiliarity.

A vital key to ship management and operation is the practical application of onboard training combined with positive mentoring, in both directions.

Accidents and their causes

According to figures from the American Club, collision and groundings represented 8% of total claims since 2012, said Joanna Koukouli. However, that equated to 50% of the total costs of the claims, some \$145 million. The human factor has been dominant in accidents, with some 85–90% attributed to human error. Lack of situational awareness, including over-reliance on electronic nav aids, coupled with poor bridge team management are primary causes. Joanna gave some solutions to reduce these errors, by mitigating the human factor and taking control of fatigue, then improving the training and competence of the seafarers.

Chris Adams FNI, Head of Loss Prevention at Steamship Mutual, described the impact, cause and control of navigation accidents. After illustrating these with case studies, Chris asked ‘How can we control the causes? How do owners and operators ensure that their vessels are being safely navigated whilst on passage?’ The usual answer is navigational audits, but investigations show that these mostly take place in port and are just tickbox audits. They are more effective at sea, preferably done by an independent assessor. He referred to The Nautical Institute publication on best practice and courses for assessors.

The discussions after this session centred on the causes of accidents. Too often bridge teams relax when a pilot is on board, when they

should be more vigilant. Raising the question of fatigue and safe manning, should P&I clubs give guidance to owners on manning levels? The answer was a firm no. This is not in their remit. It is flag states that decide the manning levels [editor’s note: see report on the Hong Kong seminar, p26 for further debate on these issues].

Cultural factors in manning

Building on the theme of the human element, the next session discussed cultural factors in the manning of the modern merchant fleet that affect navigation.

Capt Valentin Mavrinac AFNI from Columbia Shipmanagement likened these cultural factors to an iceberg, where the vast majority is out of sight. Core values gained from the culture we are brought up in vary significantly across cultures, and multicultural crews have different perceptions of the same situation. In some vessels the crew is made up of more than five nationalities, leading to considerable possibility for confusion. We need to address cross-cultural awareness and management. Valentin asked if incident investigations are looking deep enough into the causes of incidents. Did cultural factors play a role; if so, have they been investigated or addressed?

There is great potential for loss prevention through better education and training, Mavrinac said. Developing assessment and evaluation tools to quantify the level of cross-cultural competencies is a necessity.

In his presentation, Captain Michael Quain FNI gave examples of observations made during navigation assessments and how companies had responded to them. Observations were made on officer training, particularly in ECDIS operation and chart correcting; sloppy navigation practices, again in ECDIS operation, passage planning and position fixing; and commercial pressure on the Master. Quain said that navigation assessments should be used to predict human responses, and mentoring is a good practice in this regard. The more navigation practices are assessed, the more incidents can be prevented, and hundreds of near misses – which are never reported – can be avoided.

The audience discussion noted that more consideration should be given by those ashore to developing the soft skills of mariners, including assisting mariners in carrying out mentoring. It was agreed that, when auditing a vessel, all too often inspectors just record the result in a tickbox system and walk away, whereas a proper assessment will find both good and bad practices and these should be discussed with the Master and officers.

Technology and the human element

The first afternoon session looked at Technology and the Human Element. Zacharias Siokouros from Lloyd’s Register asked ‘How can future technology and infrastructure help reduce navigational accidents?’

Humans are very capable and adaptable and are very good at certain things, but there are limitations to their abilities, Siokouros said. People can adapt to the information they receive and to poor conditions and still achieve a good outcome. Seafarers can find a way to fix design faults, but it would be better if these were fixed

at design stage. Organisations adapt to cope with changing operational demands, but it is important to consider how these changes can affect seafarers. Even small changes that are justified and appear safe in themselves can have disastrous consequences. Seafarers are good at some things but bad at others, and get tired when they are stretched, becoming fatigued. Fatigue affects performance and attention narrows. The ability to retain and recollect information decreases. Complex tasks requiring flexible thinking and planning are sensitive to fatigue; judgement of own state of fatigue is impaired; and fatigued operators can cause accidents.

Zacharias concluded that we can see that the human element in shipping can have devastating effects on our business and on our seafarers. We need to take this into account, and design and operate our ships according to our human capabilities and limitations. We need to be proactive in our management to ensure we are not drifting out of the safety envelope; we need to provide seafarers with advice and support to maintain their health and wellbeing; and we can improve safety and reduce operational risk by enabling safe and reliable human behaviour.

The ship of the future

Alex van Knotsberg from Transas talked of the connected ship of the future, from the smart ship of today to drone ships (semi-automated, automated and eventually unmanned). Connected ships will be driven by commercial needs, but what is the risk assessment of connectivity and how will it comply with the same standards as today's ships' equipment and sensors? Providers, shipboard antennas, shipboard network equipment and connection hardware must all come together in connectivity.

Inevitably, cyber security is a major concern on the connected ship – and the onboard 'cyber missile' is the ubiquitous USB stick. There is a need for an industrywide call for awareness of the problem (see the NI publication *The Navigator* issue 12); the introduction of risk management technology (firewall, segmentation of onboard networks; this does not need to be expensive); and training (onshore industries and consumers are warned constantly about cyber security). A cyber security awareness course is a must on the connected ship. It should include training on malware awareness, phishing, passwords, understanding risks and acting accordingly.

Is shipboard technology a help or a hindrance to today's navigators? asked Cleanthis Orphanos from the Marine Accident and Incident Investigation Committee of Cyprus.

Each advance in navigation has brought with it a rash of accidents, from radar-assisted collisions to VHF-assisted, AIS-assisted and ECDIS-assisted accidents. So long as adequate training and suitable design and ergonomics are applied, technology can assist in navigation, reduce the risk of accidents, cut workload and improve efficiency in marine traffic.

Roughly a third of accidents are associated with navigation technology, and half of these indicate



“ Roughly a third of accidents are associated with navigation technology ”

inadequate equipment design. Errors made by navigators are invariably attributed to inadequate training and experience in using the technology and/or the procedures. Such deficiencies are taken to indicate incompetence. But is this entirely the fault of the operator, or does design play a part? Common faults in ship design include poor layout of workspaces and inadequate arrangement of controls and displays. Additionally, important alarms and displays may not be bright or loud enough to warn the navigator about significant changes. Finally, Cleanthis stressed that electronic technology should never be the sole method of collision avoidance.

The digital revolution will change the maritime industry completely and will affect the command of the ship, said Aleksander Legowski, MD of OL Shipping Group. Future generations will have more onboard training and mentoring will play a large part in this. New technologies will be used to support the Master's decision-making. Mentoring (being a natural process) and training (being task-specific) will be intensified in the digitalised maritime industry.

Challenges and opportunities

Opinions were expressed that the older generation fear technological change, remembering that seamanship is an art and science. However, it was also asked whether the new generation are ready to adapt to technological challenges and changes. There are still problems as the industry moves forward in adapting new technology, including more automation, and the industry needs to address these.

In addition to the discussion on technology, there was a lively debate on the role of women at sea. It was noted that only about 2% of seafarers are female.

Summing up, Capt Graham Cowling FNI said that the data on maritime accidents is a clear indication that the responsibilities of safe manning must be revisited worldwide. Training should be further evaluated to ensure it meets existing and future needs.

At present, the industry is not addressing the provision of soft skills. Navigation assessments are a positive way forward – provided they are properly carried out.

New technology allows intelligent systems to look more deeply into what the ship is doing, but this creates a cyber security risk. The response to this risk needs to be co-ordinated on board and onshore.

While the industry seems to be addressing challenges and opportunities, we still need to ensure the quality of people who work in it. It is important not to lose the knowhow gained by generations of seafarers. We must open more doors to encourage more women at sea and look to recruit young people with many choices. We no longer need brawn, we need brain power to deal with the new technology.

Closing the seminar, Duke Snider said that this was an incredible finish to 2017's Command Series. The Cyprus branch was to be congratulated on the speakers and the audience participation. The conclusions on global issues reflected those from the other seminars – and there is much work still to do. 🌐

Getting the AtoNs you want

Looking for feedback on aids to navigation, vessel traffic services and how you use them



David Patraiko FNI
Director of Projects, The Nautical Institute

Marine aids to navigation authorities around the world are responsible for providing navigation aids to mariners in all sectors – commercial, naval, fishing, leisure, etc. They are always interested in hearing from the mariners who use those services about how they are doing, and what could be improved.

The International Associations of Marine Aids to Navigation and Lighthouse (IALA) recognises that the maritime industry is going through a stage of rapid technological development and change, including developments in the design and operation of ships. The

increasing complexity and amount of information available to the navigator emphasises the need to take into account the possibility of information overload and confusion during the design of new aids to navigation. Among other things, IALA members face the challenge of providing appropriate aids to navigation to cater for high speed vessels, both those currently in operation and for new designs in the future.

Another potential change is that protection of the marine environment and increased security needs may lead to regional VTS systems being merged into a global network of systems.

When making these changes, it is vital to find out from seafarers themselves how they use existing systems, what changes they would like to see – and what they think of any proposed changes. The Nautical Institute has offered to ask our members and networks to help identify what works well and what can be improved. We invite *Seaways* readers to take a brief online survey to give us your feedback on buoys, lights, electronic navigation aids, vessel traffic services – or anything else that you might feel relevant for IALA members to hear. The survey should take no more than ten minutes to complete, and can be found at https://www.surveymonkey.co.uk/r/iala_aton

The survey explores your thoughts on the use of buoys, their placement, colour, and how easy it is to see them visually and by radar. We ask about:

- The use of lights, in particular sequenced or synchronised channel lights;
- Virtual (AIS based) Aids to navigation (VAtoN), their use, symbols and messages;
- VTS, the levels of service they provide, and how communication with them might be improved.

The questionnaire also explores future possibilities such as digital exchange of routes or other information.

A summary of these findings will be published in *Seaways* and presented to the next major IALA Conference, to be held in the Republic of Korea in May 2018. More information can be found at <http://www.iala-aism.org/product/iala-19th-conference/>



IALA is a non profit, international technical association. Established in 1957, it gathers together marine aids to navigation authorities, manufacturers, consultants, and, scientific and training institutes from all parts of the world and offers them the opportunity to exchange and compare their experiences and achievements. IALA encourages its members to work together in a common effort to harmonise aids to navigation worldwide and to ensure that the movements of vessels are safe, expeditious and cost effective while protecting the environment.

To learn more about IALA and its work, please visit <http://www.iala-aism.org/>

Shipping and global warming

Perception and reality



Julian Parker
OBE FNI

On my first trip to sea as a deck cadet in 1958, I remember being given a large shovel with instructions to clear over the side all the sweepings from the hatches that had accumulated during discharge of the cargo. Mostly this comprised old stained wooden pieces used to keep cargo from touching the steel plating, but there was also packaging spillage, some of it toxic and most of it unpleasant. This was small beer when compared with the discharges from tankers after tank cleaning and the spoils of bulk carrier residues after hatch cleaning. All of this was done at sea so as to be able to present clean ships ready for loading when tendering *notice of readiness*.

Changing attitudes

In those days it was common practice to use the sea as a convenient dump. When the IMO introduced the first marine pollution convention, MARPOL, in 1973, most mariners rather resented the perceived way marine administrations were trying to interfere with common practice. From an ecological perspective, there is no doubt that this convention – and indeed the UN convention prohibiting the dumping of atomic waste in 1994 – were badly needed. Captain Malcolm McKenzie captured the transition from resentment to responsibility when he wrote in *Seaways*: ‘The sea is our environment and we must protect it’.

We are now faced with a similar dilemma when it comes to atmospheric pollution. A statement of intent was made in Rio de Janeiro in 1992 that all governments must aim to limit global warming to no more than 2°C and introduce measures to contain temperature rises to 1.5 °C if possible. This became an urgent declaration at the Paris Environmental Accords in 2016. That means reducing CO₂ emissions to the level they were in pre-industrial times. Effectively, carbon emissions from the burning of fossil fuels need to be reduced from the current level by more than 60% globally before 2050. For shipping, almost totally dependent on oil as a fuel, the challenges implied by the Paris Environmental Accords are daunting.

Critics of climate change have argued that scientific evidence and projections have been selective and overstated for emotional impact. By contrast, *The Stern Review on the Economics of Climate Change*, released by the UK Government in 2006, concluded that ‘strong action taken early will far outweigh the costs of not acting’.

Ten years on, I sense that the scientific community responsible for monitoring climate change is becoming much more concerned about

deteriorating conditions, rather than relieved to find things are not so bad after all. There is no doubt that global warming is taking place. This is verified by worldwide ocean and atmospheric temperature monitoring amplified by sensitive satellite data. The exact causes may be subject to some debate, but regardless of the levels of natural or manmade greenhouse gas emissions, it is the levels emitted by humans that humans can change.

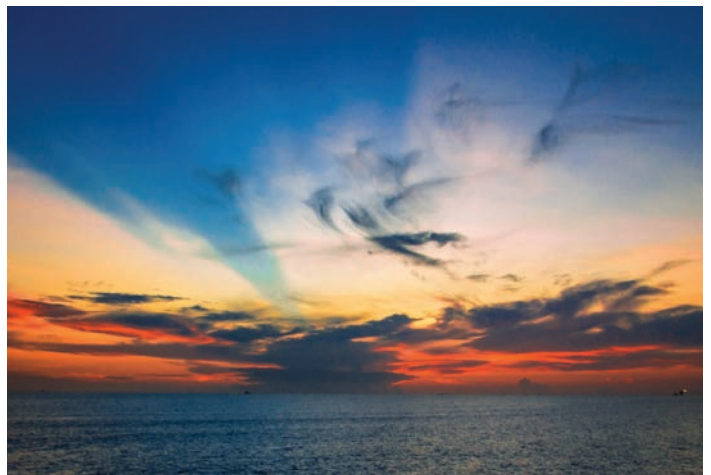
Shipping in Changing Climates Research

For the past four years I have taken an interest in the ‘Shipping in Changing Climates’ (SCC) research project funded by the UK Engineering and Physical Sciences Research Council and directed by Tristan Smith of University College London (UCL).

The project centred on five main themes:

- The impact of greenhouse gases emissions and the ways of reducing them in shipping;
- Technical options for gaining fuel efficiency in existing ships and options for innovation;
- Evaluation of different fuel applications;
- Ship transport modelling;
- Legal, commercial, administrative issues and economic assessments.

It became apparent early in the SCC project that if theories were to be tested, there would need to be a very reliable and convincing model of the economics and practice of international sea transport. A research team at University College London spent more than two years developing and testing GloTraM, a reliable tool for scenario planning. This has been a major achievement and will seriously reduce the time needed to evaluate any strategic proposal for schemes to reduce greenhouse gas emissions in future.



‘The sea is our environment and we must protect it’ (Credit: N Knejevic)

Another challenge was to find out just how much fossil fuel the shipping industry consumes. Statistics were available from the bunker supply industry, but how reliable was this information? To answer this question, researchers developed a dynamic real time model of ship movements using AIS positioning. They then used published data for speed and consumption from ship registers and broking organisations to trace individual ship movements and calculate their actual fuel consumption, which they then compared with bunker trading records. The results were within an acceptable range of deviation, creating a new type of analytical tool for calculating emission density.

Alternative fuels

Within the SCC project, Manchester University Tyndale Centre for Climate Change Research explored the possibilities for reducing CO₂ emissions in international aviation and shipping. Aviation is increasing the quantities of biofuel that it uses in an attempt to maintain and lower the impact of global warming in an industry that is still expanding. For shipping, the route to change is more tortuous because the flexibility of the current system, providing bunkers in so many different locations, is a key part of the transport efficiency equation.

Is it possible to use alternative fuels and if so what kind of transition would be necessary? The SCC project looked at the practical and economic consequences implicit in using different fuels in shipping with the main purpose of reducing greenhouse gas throughout the industry. The possibilities considered included:

- Nuclear fuel – which was dismissed on risk assessment grounds;
- Biofuels derived from vegetation;
- LNG – providing cleaner air in built-up areas, but a carbon fuel none the less;
- New technology fuels such as hydrogen – which require energy sources to produce the gas in the first place;
- Renewable sources – wind assistance.

The idea that wind farms can be used to generate hydrogen with spare capacity is changing expectations about the future provision of energy ashore. At sea, Viking Cruises is working on the introduction of the first fuel cell-powered passenger vessel, which will run on liquid hydrogen. The proposed design is 230 metres long and will carry 900 passengers and 500 crew.

Increasing efficiency

Strathclyde, Newcastle and UCL Energy and Marine Engineering Departments have been examining the possibilities for efficiency savings in the current world fleet as a means of controlling emissions. Unsurprisingly, in my view, they concluded that only modest gains in fuel efficiency were possible. After all, there are 70,000 ships and 10,000 companies working in an open competitive global market, all with the aim of producing the most cost-effective sea transport. It seems reasonable to expect that ships are already designed and operated to make the most efficient use of fuel.

Unfortunately, the impact of increasing efficiency is not always appreciated. The first generation container ships carried 2,000teu. The largest container ships today carry more than 20,000 containers. Their carrying capacity increases as the cube of their volume, whereas the drag caused by hull frictions affecting fuel consumption only increases as the square of the wetted surface area. Their wide hulls enable massive extra deck volume to be available for even more containers to be carried on deck. In effect they are delivering cargo with a 30–40% reduction in greenhouse gas emissions when compared with container ships of the previous generation.

During one of the SCC workshops I was buttonholed by a particularly assertive delegate who said the volume of emissions coming from mega container ships was absolutely disgusting – a not untypical comment from a particular point of view. When I argued that in fact they were some of the most eco-friendly vessels ever produced, this

person unfortunately just did not want to know.

Slow steaming offers immediate reductions in fuel consumption as resistance is a function of velocity squared. Superficially, this appears to be a very attractive proposition. The researchers pointed out that saving fuel costs by reduced steaming made eminently good sense in a declining freight market. However, in a climate of growing world trade, slow steaming means that more ships have to be employed to meet demand, and this therefore negates any savings.

Fuel saving innovations

Several innovations promise to produce further efficiency gains. The most promising so far has been the ‘magic carpet’ effect developed by Silverstream Technologies Air Lubrication Systems in which a layer of micro-bubbles is dispersed under the hull, thereby reducing drag. Trials on Stena Weco’s MT *Amalienborg* are providing fuel savings in the region of 4%, and it is believed they may reach as high as 10% when the system is fully operational.



Stena Weco’s MT *Amalienborg*

Wind power has also been considered as a means of increasing efficiency. There was some caution about performance when confronted by adverse weather while trying to maintain schedules, and prototype studies showed that results should be evaluated across full voyage cycles. One such experiment is taking place on a 110,000dwt Maersk tanker, which will be fitted with Flettner rotors by the Norwegian company Norsepower. Sea trials will take place throughout 2019. It will be interesting to see the results in due course.

Another approach by Windship Technologies exploits the potential of computer-controlled aerofoils. Tests indicate substantial fuel savings can be achieved and the company is looking for development funds for prototype testing.

Practical outcomes?

The outcome of good research is to discover underlying principles, costs, benefits and relationships – in this case, of decarbonising shipping. It is not the function of researchers to implement policies but to present reliable information for those who do. In this sense, the ambitious SCC project has achieved its aim. In so doing, it has made an outstanding contribution to our understanding of the issues involved when seeking to introduce policies to reduce greenhouse gas (GHG) emissions in the international shipping sector.

The SCC project has accelerated global emissions reduction policy by at least five years because:

- (i) The broader issues are well documented and do not have to be contested in intergovernmental committees.

- (ii) There are now robust scenario models to test different strategies.
- (iii) There is more realistic awareness of new fuel efficiency measures and their impact on voyage costing.
- (iv) International trade associations are in a stronger position to promote greener commercial strategies.
- (v) Specific GHG abatement projects for selected predictable trades can be targeted for intergovernmental R&D funding.
- (vi) Realistic assessments can be made for the implementation of alternative fuels.
- (vii) The SCC project has developed a cadre of knowledgeable researchers who can contribute to educational programmes and consultancy.
- (viii) The SCC project has created an international network of academics and researchers engaged in this discipline who intend to share findings and meet regularly.

Who pays?

Which of the recommendations made by the SCC – if any – can be translated into shipping policy? The issue is rather different from that posed by ocean pollution, where the aim was to avoid disposing of waste products into the sea. Greenhouse gases are part of the driving force behind the world's economic performance. On the one hand, society demands cheap transport and useable energy; on the other hand, it wants a stable environment.

The shipping market is a complex self-adjusting system and it is all too easy to make assumptions about specific policy decisions like carbon trading or carbon taxes without considering the full consequences. Similarly, a restriction in one jurisdiction may simply move the problem elsewhere.

During my 15 years on the Board of Experts for the Green Award, an environmental shipping survey and rating organisation based in Rotterdam, much was achieved in reducing harmful emissions in port areas and minimising pollution at sea. However, efforts to reduce greenhouse gas emissions in a way that would not put unreasonable costs on accredited shipowners presented a particular difficulty. To have done so without a level playing field would have put some of the most environment-friendly ships and their operators out of business.

Shipping operates within the constraints of commercial legislation and the regulatory framework stemming from international conventions. In addition, international trading agreements such as UNCTAD and WTO (which prevent unfair discrimination against developing countries) also have to be considered when making regulatory changes within shipping. This makes the question of who should pay for the reduction of greenhouse gas emissions immensely complicated.



Economies of scale can reduce GHG emissions

The International Road Map approach

IMO's Marine Environmental Protection Committee (MEPC) agreed in its latest meeting to develop a road map for introducing measures to reduce GHG emissions. This will be formalised at its next meeting, in April 2018. The agenda will aim to provide 'global emissions scenarios, an agreed vision, levels of ambition, guiding principles, implementation measures, barriers to progress and cooperative arrangements, a strategy and review procedures'.

In the meantime, leading shipping industry associations have been playing their part through Capital LinkMaritime CSR to address the issues implicit in the road map, making progress on a list of possible CO₂ reduction measures that might be taken forward in the short, medium and long term. This is based on the understanding that zero emissions can only be achieved by supporting the development of alternative fuels and propulsion technologies while ensuring their availability.

Could a carbon levy work?

As mentioned above, our perception of environmental issues can range from resentful to responsible, strongly influenced by beliefs which are formed through experience and culture.

A study by The Frameworks Institute, for example, concluded that the ocean is considered to be so immense that it is immune from negative change. Any attempt to change matters is then accompanied by a sense of futility. By contrast, strident claims that the oceans are in crisis can trigger a sense of fatalism that nothing can be done to reverse existing damage or prevent future deterioration.

We should avoid sensationalism. Communications should emphasise that although the need for action is urgent, practical solutions are possible. They should focus on examples of success. Once the potential for action is recognised the power of belief can be a major motivating factor for demanding change.

The industry should also note that unless abatement measures are put in place that can be seen to be effective it is likely that public recognition will reach a tipping point driven by consumer choice over which politicians have no control, possibly misguided and unfocused causing more harm than good – something the shipping industry has seen in other incidents in the past.

Is there a precedent?

In his new book *Economics for the Common Good*, Nobel Prize winning economist Jean Tirole devotes a complete section to what he calls 'The Climate Challenge'. Tirole is unequivocal that future international negotiations ought to agree to establish a universal carbon price in accord with the Paris agreement levels, backed up by an independent monitoring structure. Levy payments collected nationally would then be distributed in the form of grants for research and development, transitional arrangements and support for developing countries to invest in green technologies permits. Rather like the World Bank stabilising financial systems, the green 'bank' would aim to facilitate carbon emission reduction and stabilise the atmosphere.

Pie in the sky or eminently sensible? Before making up your mind, consider the highly effective International Oil Pollution Compensation Funds. The levy money is held in independent funds that can be accessed by states, public companies and individuals if a marine pollution incident gives rise to exceptionally high claims for damages over and above insurable limits, to pay for lost revenue, displacement and clean-up measures.

The funds are managed by independent administrators who have transparent rules for assessing costs and paying compensation. Such an atmospheric environmental scheme would not be so different. It has been done before – and the maritime industry has already shown the way. 💡

Are you getting maximum value from your membership?

Martin Fothergill

Marketing and Communications Manager, The Nautical Institute

As a professional body, The Nautical Institute is only as strong as its members. It is only through your involvement and support that the Institute can act to drive up standards of safety and professionalism within the maritime industry.

But we don't take your membership for granted. We know we have to work hard to provide you with meaningful benefits – ones that will help you not just in your day to day activities but also as part of your wider career ambitions. Here are just some of the ways we seek to do this:

Tap into the collective knowledge of the NI membership

Login to the members' area at www.nautinst.org and click on the Presentations tab. You'll discover a wealth of audio/slide presentations on a wide variety of topics, from the challenges facing those working in the car carrier sector to the very specific demands of the cruise industry. It's a great way to keep up to date with current industry practice.

Also in the members' area are Technical Forums where you can 'ask the NI' for an answer to any maritime technical question. Simply post your question in the appropriate forum and we will find you a fellow member with expertise in that area who can give you an answer.

Network, network, network

With over 50 branches worldwide the Institute offers you the opportunity to make new friends, find new customers and touch base with potential employers. Many members tell us they have found employment through networking with their Institute colleagues. To find your nearest branch, visit www.nautinst.org and click on the Branch Locator link at the top of the home page. Details of each branch are also listed on the inside back cover of *Seaways* magazine.

Grow through Continuing Professional Development

The Institute's CPD Online programme provides you with a highly practical framework to help you record and manage your continuing professional development activities.

Click on the CPD tab in the members' area to find out more.

Access a wide range of other benefits

Belonging to the NI offers a host of other benefits. Thanks to its size, the Institute is often able to negotiate substantial discounts for members wishing to attend key industry conferences. Visit the Event Discounts tab in the members' area for further details. For those who find it difficult to attend events in person, the Institute offers a programme of webinars, with recent topics including cyber security and the adoption of S-Mode.

The Nautical Institute is well known for its range of specialist maritime books and guides. Members are automatically entitled to a 30% discount on all NI publications. The Institute also offers members a 10% discount on the IMO's best-selling titles. Browse through the Institute's online shop to view the full range of titles available.

And the benefits don't stop there. Legal fees insurance cover is in place to protect you from the ever-present threat of criminalisation; your monthly membership journal *Seaways* keeps you abreast of the latest industry thinking; significant discounts are available when you enrol on any of the Institute's study-schemes; plus your membership gives you a powerful collective voice at the IMO.

Thank you for choosing to make your professional contribution to the maritime industry from within The Nautical Institute. We hope this article will help you in making the very most of your Institute membership. 🌐



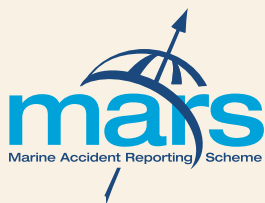
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Mariners' Alerting and Reporting Scheme

MARS Report No. 303 January 2018

MARS 201801

Slip on stairs – two month recovery

→ While at sea the crew were mustered for various emergency drills, including the shipboard oil pollution emergency plan (SOPEP), followed by an abandon ship drill and then a fire drill.

After the abandon ship drill, a crew member was proceeding to his fire muster station on the poop deck, with his lifejacket in his hand. He was using the external companionway ladder, as this was the shortest route. On his way down one flight of stairs, he slipped and fell along the stairs and to the deck below. The vessel was rolling slightly and pitching due to sea and swell and there was salt deposit and moisture on the steps and railing of the companion ladder.

He was given first aid on board the vessel and after several days sent ashore for more examinations. He was diagnosed with a contusion of the left shoulder and repatriated. The injury was expected to take about two months to heal completely.

Lessons learned

- Carrying a lifejacket in one hand while coming down the stairs means you probably cannot maintain a three-point contact with the companionway ladder.
- Outside stairs on vessels are often slippery because of dampness and salt deposits. Caution and deliberate attention to safe technique is required.
- While emergencies and drills can be stressful and by their nature require immediate action, this does not mean one should rush impetuously and forget best practices.

■ **Editor's note:** This relatively innocuous event happens more often than we care to admit. Most times the consequences are not serious, but in this case it cost the seaman two months recuperation. Why roll the dice when it comes to your safety on stairs? Use both hands and both railings.

MARS 201802

EGE fire

→ While at sea a crew member aboard a container vessel noticed sparks coming from the main engine funnel. The exhaust gas economiser (EGE) gas outlet high temperature alarm activated shortly afterwards. An EGE fire was declared and the main engine was stopped.

After an adequate cooling down period, crew opened the inspection door of the EGE and found extensive damage to the tubes, tube support and fins of the upper steam generator. Some of the tubes were cracked and deformed, and the fins were melted (see picture). Although temporary repairs were carried out to maintain operations, a large-scale permanent repair was scheduled for the next dry dock.

The company investigation suggests that inefficient soot blowing probably caused soot accumulation on the tubes, resulting in the soot fire. It appears that soot blowing was often carried out using air pressure but without increasing the engine load.



Fire damage to EGE

Lessons learned

- Regular soot blowing should be carried out on board vessels with EGEs.
- When carrying out soot blowing, best practice is to increase engine load.
- Monitor soot accumulation on tubes by opening the manholes at regular intervals. Additionally, review the operational data on a daily basis (EGE draught loss, outlet temperature, steam damp valve openings, available power, etc).

MARS 201803

Chain sling breaks, strikes stevedore

→ A vessel was at berth discharging a steel cargo and then loading containers. The containers were being lashed with chain slings. While one of the containers was being secured, a chain sling broke at its hook and hit the stevedore on the head; his helmet was cracked by the impact. The victim fell to the deck and was treated for his injuries. He received several stitches and 11 days of medical leave.

The chain was not very old, but on investigation it was found that no schedule of inspection or maintenance of the lashing equipment was available.



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Lessons learned

- Ships' crews need to adopt safety systems that allow inspection and documentation of tackle such as chain slings.
- It is good practice to visually examine a sling before using it.

MARS 201804

Touch bottom in uncertain waters

➔ A tanker was loading at a river location. The Master had requested confirmation of the maximum allowed sailing draught as well as the actual depths of the river, taking into account the peculiarities of the season (river flood) and a recent tropical storm that could affect water depth. The information received was that they could safely load up to a draught of 13.72 metres. Due to the cargo nomination they loaded to 13.55m before departure.

Once loading was completed, the vessel began the outbound passage under pilotage. After almost 10 hours underway the vessel temporarily touched bottom. The ship's speed was reduced to zero and then regained. Only after several extreme helm applications was the vessel kept in the channel.

It continued to anchorage for an underwater inspection and class attendance. The underwater survey showed that all four propeller blades had minor strike damage to their leading edges.

Several days after the incident, local authorities reduced the maximum allowed draught to 13.41m and limited traffic to one-way passage at the area of the incident.

The company investigation found, among other things, that:

- The touch bottom incident was quickly realised and the corrective actions were made immediately.
- The effectiveness of the bridge team was paramount. An inappropriate response to the incident could have led to grounding and/or severe damage to the propeller and the rudder.

Lessons learned

- Remain ever vigilant even under pilotage, as quick, decisive action may be necessary to avoid bad outcomes.
- In river areas affected by a variety of factors that can influence water levels in unpredictable ways, even local authorities can sometimes be outside the envelope of safety.

MARS 201805

Collision in plain sight

As edited from official TSB Canada report M13L0123

➔ A bulk carrier was down-bound in a river waterway. While the vessel was in a lock, there was a change of pilots. During the exchange, the disembarking pilot mentioned that it was difficult to communicate with the bridge crew because of their lack of proficiency in English.

After the arriving pilot had exchanged information with the Master, the vessel left the lock. The pilot requested the assistance of a police patrol boat from vessel traffic services (VTS) in order to clear any pleasure craft in the area below the lock exit, as many small boats were present for a fireworks show. As they progressed downriver, the Master left the bridge. The bridge team now consisted of the pilot, the officer of the watch (OOV) and the helmsman.

At about the same time, a port tug left its berth down-bound to assist another vessel. VTS granted authorisation for the tug and gave information on up-bound vessel traffic, but did not mention the down-bound bulk carrier exiting the lock.

As visibility was good, the tug Master navigated visually and did not turn on the radar. The ECS was not used either. The bulk carrier, now making way at a speed near 12 knots, was upstream and behind the tug

at a distance of approximately 0.9nm. The tug was visible to the pilot.

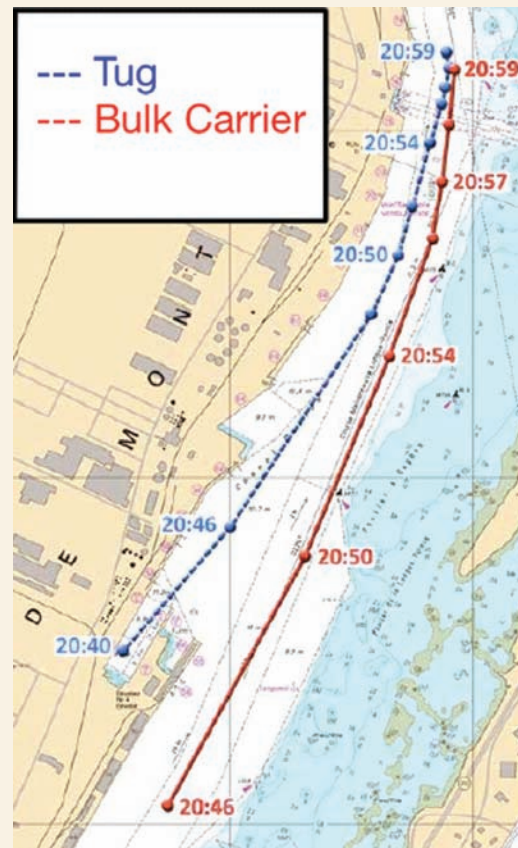
On the bulk carrier the pilot asked the OOV to turn on the forward deck lights to make the vessel more visible to the pleasure craft and to have someone posted forward on the forecastle deck to stand by at the anchors. The OOV appeared not to understand; at any rate the requests were not acted on. The pilot asked for the Master to come to the bridge. When the Master arrived, the pilot again requested that the forward deck lights be turned on. The Master turned on the lights.

The pilot, now on the port side of the bridge, observed three pleasure craft ahead of the bulk carrier moving towards the vessel. Two of them altered course to starboard in order to meet port to port. The third altered its course to port; in doing so, it disappeared from sight behind the bulk carrier's cranes. The pilot went to the starboard side of the bridge in an attempt to see the third pleasure craft but then lost sight of the tug. Not being able to see the pleasure craft, the pilot altered to port.

When the pleasure craft became visible on the starboard side, the pilot ordered starboard 20° and then hard to starboard. Once the swing of the vessel was stopped, the pilot ordered that the vessel be kept steady at 357°. By this time the tug was less than 100m away on the port side, and the pilot was on the starboard side of the bridge – still without a view of the tug. As the pilot walked back to the port side of the bridge, there was a screeching sound. The pilot now saw the tug on the port bow moving away from the bulk carrier. The Master on the tug had, at the last minute, become aware of the bulk carrier behind him and had engaged both engines in order to move away from the approaching vessel.

Following the collision, the tug's engineer checked for water ingress. The pilot on the bulk carrier and the Master on the tug spoke over VHF radio and confirmed that they had collided and VTS was informed.

The damage sustained by the tug was sufficient to merit a dry dock and it was out of service for almost seven weeks. The bulk carrier was not damaged, but traces of black rubber from the tug's fenders were apparent on the hull.



Some of the findings of the official report were:

- The pilot on the bulk carrier was not monitoring the tug at the time of the collision. The bridge crew was not assisting the pilot by maintaining a lookout or using navigational equipment to advise the pilot of relevant traffic.
- The language barrier between the bridge crew and pilot contributed to communication difficulties and led to ineffective BRM at a critical time during the voyage.
- The VTS officer's high mental workload at a critical time probably caused him to omit the down-bound bulk carrier when reporting traffic to the tug.
- The Master on the tug was unaware of the bulk carrier for a variety of reasons:
 - VTS had not reported the down-bound vessel.
 - The Master was not using all available navigational equipment such as radar.
 - No effective lookout had been posted.

Lessons learned

- It bears repeating that all navigational aids should be used not only to help position a vessel but also to give the bridge team the most complete situational awareness possible.
- If there are communication issues within the bridge team that is the time to redouble one's vigilance.
- Vessel bridge crew and the pilot are a team and need to work together for a safer voyage.

MARS 201806

No one saw anyone

As edited from official ATSB report 311-MO-2014-006

➔ A container vessel was under pilotage in coastal waters in darkness at about 17 knots. Besides the pilot, the bridge team included an OOW, a junior officer and a helmsman. The vessel was being conned by the pilot in a buoyed channel while the junior officer was plotting positions and the OOW was observing the radar. Visibility was good.

Meanwhile, a 13.4m steel sailing yacht was transiting the area under power, making about 4.5 knots. With a crew of two, the yacht was not

using a radar nor AIS receiver so lookout possibilities were restricted to visual means. The route of the yacht cut across the buoyed shipping channel and the crew did not see the oncoming container ship. Only at the last minute did the yacht helmsman see the vessel. He quickly put the rudder over to port and the engine throttle to full in an attempt to get clear of the ship. The yacht remained alongside the container vessel for about 30 seconds, bumping and scraping against its hull, until clear of the stern.

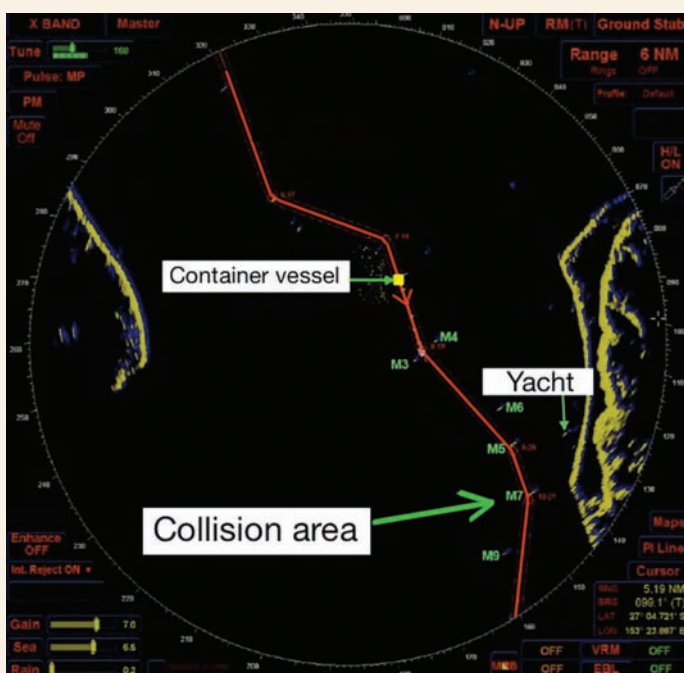
On board the container vessel no one had observed the yacht, either visually or by other means, and the crew were unaware of the collision. Yet, the investigation showed that the steel yacht appeared on the container vessel's radar at least 20 minutes before the collision, as shown below.

Although the steel yacht was showing on the radar and was visible to the eye, the official investigation identified many factors why the yacht was not observed by the bridge team, including;

- No dedicated visual lookout was posted;
- Background shore lights made it difficult to distinguish the yacht;
- The bright lights of a nearby dredger caused distraction;
- Relatively low visual and radar detection range of the yacht;
- Yacht's radar echo was not identified and actively monitored;
- Bridge team workload (four course changes in 22 minutes before collision and watch change);
- Bridge team members focused on individual tasks during that period of high workload;
- Inattentive lookout for small craft, although these could reasonably be expected in this area.

Lessons learned

- Small craft are notoriously difficult to detect on radar, but if constant and diligent attention is applied these vessels can usually be detected at the 2–3nm range.
- While some small craft are fitted with AIS transceivers, not all have them, nor are they required to do so.



Radar image 20 minutes before collision

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➔ David Patraiko FNI rounds up the latest news, releases and events affecting the maritime professional throughout the world

EMSA Annual Report

➔ The European Maritime Safety Agency (EMSA) has released its 2017 report on marine casualties.

During 2016 there were 106 reported fatalities, 957 persons injured, 26 ships lost and 123 investigations launched. Encouragingly, the number of ships lost has reduced by 50% since 2014, and 2016 showed a significant decrease in fatalities, which were at the lowest level since 2012. The number of cargo ships involved in marine casualties and incidents has decreased to 1400.

Since 2014, the number of reported accidents seems to have stabilised at around 3200 occurrences per year – 2016

followed this pattern, with an overall total of 3145 marine casualties and incidents.

While the number of very serious and serious marine casualties and incidents remained at levels similar to previous years, there was a limited but continuing increase in the less serious accidents reported. Some under-reporting of marine casualties and incidents appears still to exist, although there has been continuous improvement since the implementation of the relevant EU legislation in 2011. Estimates indicate that under-reporting relates mostly to the less serious casualties and incidents.

Over the period 2011-2016,

half of the casualties were of a navigational nature, such as contacts, grounding/stranding or collision. Amongst occupational accidents, 40% were attributed to slipping, stumbling and falling. Human erroneous action represented 60% of accidental events and 71% of accidental events were linked to shipboard operations as a contributing factor. Of all casualties, 42% took place in port areas.

Despite a decrease in the number of fishing vessels lost in 2016, a significant increase of fatalities and injuries was noted.

The full report can be found at <http://www.emsa.europa.eu>

TMSA3

➔ The UK P&I Club has highlighted the implications of the updated Oil Companies International Marine Forum (OCIMF) regulation for the tanker sector:

'OCIMF published the third edition of its Tanker Management and Self-Assessment guide (TMSA3) in April 2017 and as of 1 January 2018, this will replace the TMSA2 and tanker owners will be required to follow the new self-assessment procedure.

'TMSA3 introduces some minor and major changes. Elements 6, 6A and 10 have all had revisions, with element 10 now incorporating the OCIMF Energy Efficiency and Fuel Management paper that had previously been a supplement to TMSA2. Additionally TMSA3 also has 19 more KPIs than TMSA2, showing the focus on continuous improvement.

'The most significant change is the incorporation of an entirely

new element – Maritime Security (element 13). The purpose of this addition is "to establish and maintain policies and procedures in order to respond to and mitigate identified security threats covering all company activities including cyber security." To comply, tanker owners should put detailed security plans in place that cover cyber security risks, all shored-based activities, vessels and personnel.'

UK Code of Practice for autonomous vessel design

➔ A UK Industry Code of Practice has been prepared by the UK Maritime Autonomous Systems Working Group and has been published by Maritime UK through the Society of Maritime Industries. It has been reviewed by the UK Maritime and Coastguard Agency (MCA) (see *Seaways*, November 2015 for discussion of the

development of this code from the MCA). This Industry Code of Practice seeks to provide practical guidance for the design, construction and safe operation of autonomous and semi-autonomous vessels while a more detailed regulatory framework is developed. This Code will be updated when guidance from the IMO Regulatory Scoping

Exercise is published, and as the MCA develops policies to meet the needs of forthcoming technological, commercial and regulatory developments.

Copies of the Code can be downloaded at <http://www.ukmarinealliance.co.uk/content/masrwg-code-practice>

Environmental sustainability

➔ Addressing government trade negotiators in the OECD Working Party on Shipbuilding, at a workshop on 'green growth' in Paris in November, the International Chamber of Shipping (ICS) asserted that the shipping industry could only be environmentally sustainable if it is economically sustainable too.

'The perennial challenge facing

shipowners is over capacity, aided and abetted by government subsidies and support measures that encourage shipyards to produce ships that are surplus to requirements' said ICS Director of Policy, Simon Bennett. 'If governments are serious about helping the shipping industry deliver on the United Nations Sustainable Development Goals,

the OECD needs to reboot efforts to have a global agreement on the elimination of market distorting measures from shipbuilding.

ICS also set out the progress that is being made to further improve the shipping industry's environmental performance.

With regard to successfully implementing the UN IMO Ballast Water Management Convention,

IMO Technology Network

➔ A global network of centres of excellence in marine technology was officially launched on Monday (4 December) at the headquarters of the International Maritime Organization (IMO).

The network of MTCCS – in Africa, Asia, the Caribbean, Latin America and the Pacific are expected to provide leadership in promoting ship energy-efficiency technologies and operations and the reduction of harmful emissions from ships. Through collaboration and outreach activities at regional level, the MTCCs will help countries develop national maritime energy-efficiency policies and measures, promote the uptake of low-carbon technologies and operations in maritime transport and establish voluntary data-collection and reporting systems.

'The project brings together two of the most important themes that IMO and its member states are pursuing as we move into a new era. These are developing new and innovative technology and building the necessary capacity, the latter especially directed to the developing world, to be in a position to take up that technology and then use it to its best advantage,' said IMO Secretary-General Kitack Lim.

Getting a fix on reality

A fix is not a fix without an associated DR/EP position

Captain Paul Whyte

MBE AFNI

Electronic navigation, particularly with the advent of the Electronic Chart Display and Information System (ECDIS), has added more layers to the safe conduct of navigation. In order to deliver the promised enhanced safety of navigation, the Officer of the Watch (OOV) can be forgiven for abandoning many of the traditional chart work skills while adapting to the electronic chart. However, despite the move to electronic navigation, most of the traditional skills of yesterday remain just as valid today.

It is impractical to make constant reference to the 'traditional' paper chart and simply trust in historical position fixing to give an accurate position. Dead reckoning (DR) ahead, at intervals not less than twice the distance to danger, should be the primary tool for keeping the vessel safe from grounding. Additionally, monitoring visual bearings (on those vessels fitted with a centreline pelorus) or radar parallel indexes, will provide 'real-time' precise track control. However, in the absence of any visual bearings or radar parallel indexes, the charted fix and an up-to-date DR position will provide 'near-real-time' track control to keep the vessel safe from grounding.

Where not to be

It is fascinating that in the modern era, we know with absolute precision where a vessel grounded, courtesy of Global Navigation Satellite Systems. This means that, in the event of a grounding, the error was not so much failing to know where the vessel was, but failing to know where the vessel should not have been.

The task of navigation remains a vital component of situational awareness, which means *'being able to identify, process and comprehend what is happening around you, where you are and where you are going'*. In effect, you either have situational awareness or you do not. It is not something lost if you never had it in the first place!

Safe water and the no go line

In reality, the planned track is simply a 'datum' within the boundaries of the safe water limits defined by the 'No-Go' line that allows the navigator to keep the ship safe from grounding. This is like driving a vehicle along the road, where the kerb marks the 'No-Go' line and the driver maintains a safe distance and uses the white centre line or lane markers as reference points to maintain a safe position. (See Figure 1).

Looking ahead

Another similarity with the road vehicle is the method used to drive smoothly, by looking ahead and scanning all round to predict where to place the vehicle on the road. The driver does not rely on looking down through the floor-pan (the shipboard equivalent would be real-time position monitoring by visual bearing or parallel index) or simply using the rear-view mirror (calculating based on historical position

fixing) to determine where the vehicle is heading, as this would result in erratic driving and be catastrophic. The driver looks ahead and uses constant feedback to determine where to point the vehicle. (See Figure 2.)

Modern electronic navigation systems provide this function by giving a continuous vector of a pre-determined length/time based on GNSS positioning. Additionally, ECDIS can provide a vessel-shaped predictor for monitoring the rate of turn when altering course. So to continue the analogy:

- Fixing is akin to looking through the rear view mirror;
- Parallel indexing is akin to looking downwards; and
- Fixing *and* dead reckoning ahead is akin to looking through the windscreen.

It is pretty obvious which method offers the best solution. So the navigator must always recognise that a fix is just historical information astern of the vessel in the wake. [See Figure 3.]

In Figure 4, we use the historical position to generate 'near real-time' positioning by constructing ahead a Dead Reckoning (DR) or Estimated Position (EP) (corrected for tide/current/wind) from every new fix for at least two fixing intervals, with the interval never less than twice the distance to the nearest danger.

The DR/EP position is then used to provide accurate track control, anticipate any hazards and give early warning of any alterations of course. Past maritime casualties remind us that many groundings were the result of poor chart work by 'fixing the fix' without any precise knowledge of the predicted position due to the lack of an accurate DR or EP.

It follows that proficient track control using the traditional paper chart means that *'a fix is not a fix without an associated DR/EP position'* to keep the vessel safe from grounding. This is a key part of the information needed to maintain situational awareness. 💰

Captain Paul Whyte MBE AFNI is a Master Mariner and consultant at London Offshore Consultants. He has provided expert witness evidence in Court and prepared expert reports for collisions, allisions and groundings, and many other navigation related disputes.

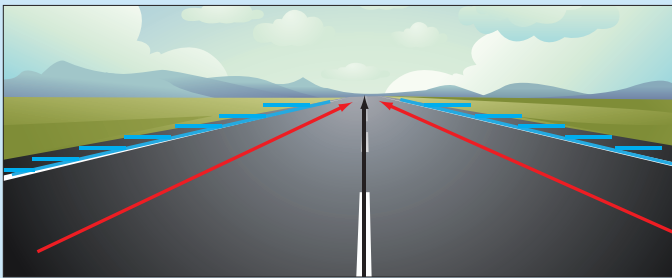


Figure 1 - Track datum and safe water – on the road!

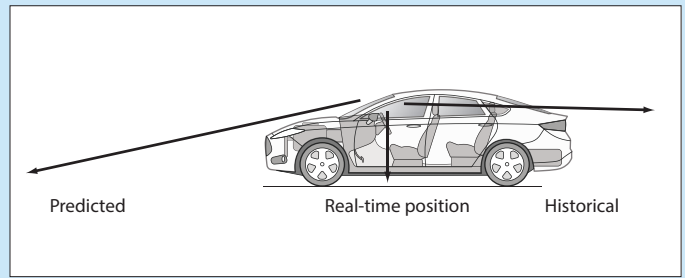


Figure 2 - Real-time navigation

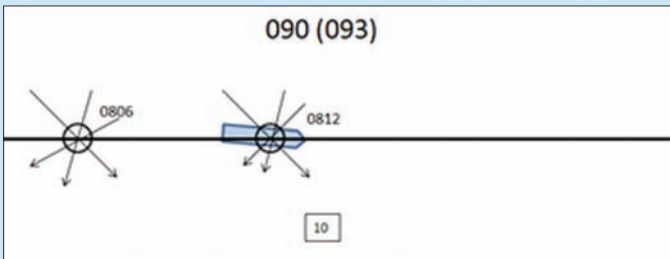


Figure 3 – Historical position fixing

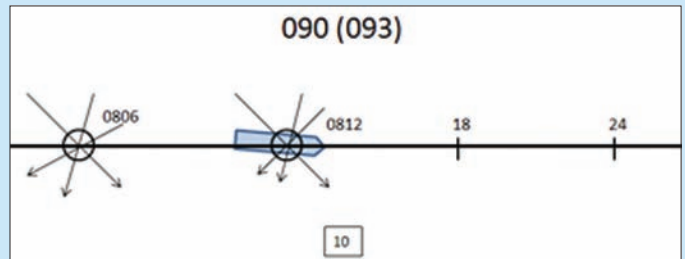


Figure 4 - 'Near real time' DR predicted position

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Is the maritime industry falling behind the times in addressing occupational health?

Chris Chafer
AMNI

Seafarers are affected significantly more by mental health issues than most shoreside workers, and at increasing rates. Shockingly, the frequency of suicide within the seafaring profession has tripled since 2014, according to figures from the UK P&I Club. Despite this, the infrastructure supporting mental health in the maritime sector is flawed and is lacking any significant standardisation. With growth in both awareness and understanding of addressing mental health within the workplace, the maritime sector should take note of successful models being implemented in numerous other industries.

Regulatory position

The International Labour Organisation (ILO) states that the mental wellbeing of an individual affects not only themselves, but also those around them, and poor mental wellbeing can impose a heavy burden on the social environment. Stress, anxiety, depression and post-traumatic stress disorder (PTSD) have all been categorised as mental illnesses that can be associated with the shipboard environment, and competent authorities should provide effective measures to identify and reduce workplace stressors.

The importance of this support is, at least nominally, recognised in legislation. The Maritime Labour Convention addresses mental health, and *Regulation 4.3 Health and Safety Protection and Accident Prevention* (HSPAP) states that vessels must provide occupational health protection for their crew, in conjunction with national guidelines set by the flag state. Further, HSPAP requires that vessels work towards standards recommended by International Labour Organisation Guideline B4.3, detailing that a ship should provide 'effective implementation of health programmes' and 'in-board programmes for continuous improvement of health protection'. The MLC recognises the importance of good mental hygiene.

Implementation of these recommendations is, however, dependent on the flag state, and the standard of support on vessels varies widely. Although international organisations produce guidelines and other publications, they are not mandatory, meaning there is no obligation to provide a high standard of occupational health support.

Extent of the problem

While mental health issues within the shipboard environment are typically minor, the frequency with which these minor issues occur and the insufficient levels of support available can ultimately result in the manifestation of serious mental health issues. Cadets are among those worse affected, accounting for 40% of crew suicides in 2015. These statistics suggest that crew do not have sufficient access to mental health support and, importantly, that those new to the environment appear to be more vulnerable. Alternatively, either the programmes available are ineffective, or accessing these services is perceived as a taboo. All of these factors can result in the unnecessary development of serious mental illness in a high-pressure work environment, with serious consequences.

Competent authorities should provide effective measures to identify and reduce workplace stressors. However, even where this support is available, mental health issues carry with them a stigma that typically restricts discussion of these matters. There is a perception that discussion of mental health issues is detrimental and may result in the sufferer losing their job. This precedent is coming under increasing scrutiny, with a number of attempts to dispel it.

Tackling the issues

The discussion of mental wellbeing is now recognised as crucial to a successful working environment, and as beneficial for the employer as well as the employee. A healthy work and social environment on board ship will not only help maintain the wellbeing of seafarers but also increase productivity during working hours. It is therefore in the best interests of both the seafarer and the employer to provide optimal support to promote mental wellbeing, minimising lost work hours and potentially reducing mental health issues such as stress.

Support networks are expanding, with more organisations providing support, encouragement and recommendations for providing more effective occupational health support. It is apparent from the growing number of organisations promoting mental health awareness that the need for more stringent legislation and standardisation across the industry is becoming critical.

Can recruitment play a role?

Much of the increase in seafarer mental health issues can be contributed to factors within the work and social environment. Reduction in manning levels and increasing workload have significantly increased the pressure of the working environment.

The better availability of internet on board has led to reduced social interaction among crew members. It has also affected rest periods, with personnel spending their free time awake and online, rather than resting. Understanding how individuals are likely to react when working within this environment is an important factor in ensuring mental wellbeing on board.

Personality has been recognised as a key factor in predicting behaviour, affecting both the working and the social environment. This can be challenging in the shipboard environment, where work and social environments are in close proximity, if not identical. Currently, recruitment in shipping focuses on academic qualifications. In other industries, the use of personality assessments has been successfully implemented and used to identify suitable candidates for employment. The inclusion of personality assessment will provide greater insight to the traits individuals display and will provide an insight to individuals who are at greater risk.

There is clearly a benefit to both a company and its employees in taking suitability for the role into more detailed consideration. Human error is less likely to occur if the company employs individuals who respond better to working within high-stress environments. Financially, poor recruitment has been shown to cost the employer approximately 1.5 times the salary of an unsuitable employee.

Prevention is better than cure

There is overwhelming evidence to suggest that the improved management of occupational health within the shipboard environment provides benefits for both company and employee. The gains in terms

of personal wellbeing for employees and economic advantages for companies are substantial.

At present, the maritime industry is not a global leader in mental health, and the infrastructures in place in other industries are considerably better developed. Despite it being in the best interests of companies to address the issue, if industry standards are to be improved this will have to be enforced through the introduction of more stringent legislation to ensure that the maritime sector falls in line with modern expectations.

It is generally accepted that most mental illness within the seafaring working environment occurs as a result of multiple minor issues that build up until they become too great for an individual to manage. Individually, any of these typically minor issues could be addressed quite easily. Being aware of minor issues and effectively addressing them will contribute to better management of wellbeing on an individual level, and effective care of the close-knit social and working environment.

Resolution will be achieved through a change in culture, through understanding and by putting appropriate support systems in place. The aim is to ensure, first that those working within high-stress environments can manage stress, and second that the systems in place to support them are effective. The first logical step would be to better understand the personnel involved, aiding insight into the wellbeing of individuals and identifying trends across the industry to allow a more proactive and pre-emptive approach. 🌐



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SAFE MANNING ABOARD SHIPS

➔ The Hong Kong Nautical Institute's Safe Manning seminar was a fascinating event, with the speakers casting light on a whole range of issues. The whole question of what we mean by safe manning might seem to be simple and obvious, but is complicated by all manner of different factors. The speakers gave some very vivid examples of how very important safe manning is for the operation of any ship.

Risk assessment and the safe manning certificate

If you talk to those responsible for issuing authorisations for safe manning certificates – the maritime administrations – the criteria under which they grant these certificates seems to be both reasonable and obvious. They will have rules and procedures for assessing the number of crew which will be able to operate that ship safely. It will be done, attendees were told, on the basis of risk assessment methodology, taking into account all the tasks and duties the crew must carry out, both in normal and emergency situations.

As with any risk assessment, there will be a desired outcome, in this case the safe operation of the ship and the protection of the marine environment. It will anticipate changes in circumstances, like changes of trade and take into account specific factors such as the frequency of port calls, the length of the voyage and its nature, ship design and layout, propulsion and equipment, cargo, maintenance policies, training requirements on board ship or coping with various emergencies.

But while all this seems plain and full of common sense, there will be other issues, open to interpretation, that arise over the assessment of what constitutes a safe number of crew members. The responsible authority will take this decision professionally, employing staff who can identify potential problems and are flexible enough to understand when manning proposals are less conventional and demand alternative solutions. Because of their experience, these responsible officers of the administration will hopefully be alert to operators 'trying it on' and will know the questions to ask about how peak demands are to be handled, the procedures for the rest regulations or how the plan will cope when people are ill.

They will hopefully not be influenced by operators suggesting that the other administration down the road will allow them to operate with fewer people and will have the will to turn down applications they believe are without merit. I would also suggest that those operating respectable registers probably would

rather not have the sort of people who are looking for cut-price manning deals and ultra minimum crews, and the speakers at the conference gave some confirmation of this.

But we also heard that the human element is a recurring theme in accident causation, particularly on ships where manpower is deliberately tight. This is arguably caused by the fact that if a couple of hands makes the difference between profit and loss on a voyage, fatigue or other preoccupations will be discovered as an important causal factor.

Fatigue

A pilot in my local port told me of a ship they were expecting one night and which turned up on schedule, but which appeared to be steaming full speed for the breakwater with nobody answering the VHF.

The pilot boat went alongside and although there was no ladder, the pilot managed to leap aboard and rush up to the bridge to find the Master alone, fast asleep in the pilot chair and completely oblivious to what was going on in the world. Another port where the pilot boat goes out to ships at anchor with an enormous hammer, to bang on the hull and let them know they are there, because there will be nobody awake. You can talk until the cows come home about declining standards, but it would be a brave person who would deny that tired people and not enough of them are contributors to these accidents.

As we heard from Kuba Szymanski FNI, the work done by Project Horizon and other fatigue studies has been very worthwhile, and a number of different ideas about the management of fatigue have emerged. You might suggest that if there were sufficient people on board in the first place, there wouldn't be issues of fatigue causing concern. And of course you would be right. But then I recall talking with one of the biggest Dutch short sea and middle water operators who said 'If we did things like stopping the Master watch keeping or paid for an extra mate, we simply wouldn't be able to compete with the lorries and more road haulage would be the only result'. Thus, all the time we come back to the grim lack of reward for sea transport and its competition which reflects so much thinking in this area.

Our debate on whether the manning of ships should be the responsibility of the IMO was very interesting – resulting in the audience being split almost exactly down the middle. As chairman, I should be scrupulously neutral, but I wonder whether IMO would be even capable of taking over such a role, if we were to demand



Lively debate after hours



Conference chairman Michael Grey (Centre)



Speaker David Patraiko FNI (r)



Speaker Capt Varun Rowat (l)



Conference speakers

that manning levels were to be decided on a ship by ship basis. Sure, there are some dodgy flags out there that will give you any number you might need, in order to get your business. But maybe it is for the port state control, or the more respectable registers, to illuminate the dirty work of the poor performers. And shouldn't the gradual surveillance of the IMO's Flag State Implementation teams weed out these doubtful flags over time?

Over the course of a brilliant meeting, here are some of the specific points that resonated with me. I am sure other attendees will have their own lists of highlights, and many great ideas to take away:

1. The people, person or agency who determine safe manning levels should understand the practical realities of what goes on aboard the ship. What are their qualifications? This is more than a clerky, or administrative role;
2. Aboard ship we cannot have sufficient highly skilled and adaptive people;
3. There is a need to manage numbers constructively, bearing in mind the realities of work and its demands upon the individual;
4. When we consider accidents that can be tracked back to inadequate numbers or skills, we are harshly reminded of issues of reputation and the pressures of competition;
5. The effects of responsibility and stress are clearly not properly understood;
6. We have been reminded of the importance of delegation as a factor in the role of leadership;
7. The over-arching need to support the Master has been re-emphasised;
8. Some people, notably the Master, are 'multi-tasking' to a ridiculous degree;
9. The huge pressures when a ship reaches port need to be more widely recognised; ('Ports are the killers', as one Master put it);
10. There is a need to gather and broadcast best manning practice (perhaps an important role for the NI).

Presentations from the conference are available to view on the Hong Kong SAR Branch website www.nautinsthk.com;

Michael Grey FNI

SAFETY CULTURE FORUM

→ The UK Chamber of Shipping recently hosted a Safety Culture Forum onboard Saga Cruises' vessel *Saga Pearl II*, on a repositioning voyage from Greenock to Southampton.

This event brought together participants from the UK maritime industry to collaborate and discuss how best to establish a culture of safe operation.

Before sailing from Greenock, a lifeboat muster was conducted in accordance with SOLAS.

On sailing, the first session included presentations from maritime, rail and air experts on their approach to safety.

Hallmarks of a safety culture

Steve Clinch, Chief Inspector at MAIB explained that everything to do with shipping has to have an element of safety culture. Fostering a good safety culture reduces risk and saves money through fewer accidents, better maintenance and a more motivated workforce with better retention and less turnover. When safety culture is at its most effective, staff have a proactive attitude to ensure nobody gets hurt at work.

Steve identified four main hallmarks of an effective safety culture:

- Commitment to safety from senior management;
- Realistic procedures and shared ownership among the workforce;
- Continuous organisational learning;
- Shared concern for safety across the organisation.

He said that commitment from senior management is perhaps the most critical part of ensuring that an organisation's safety culture works well.

Owners and managers are often blind to, or choose to ignore, inherent problems with their corporate safety culture, while saying that they operate a robust safety policy on their ships. The result is that accidents continue to happen.

Steve concluded by saying 'You need to create an environment where your staff are not afraid to say 'I've made a mistake', and challenged the attendees 'What will you do to develop/improve and/or maintain a strong safety culture within your fleet? How will you measure success?'

The rail perspective

John Abbott, Rail Safety & Standards Board (RSSB), then put the rail perspective of a safety culture.

He said that it is remarkable that the UK rail network is the safest it has ever been in its history, while also being at its busiest, with the last fatal rail incident in the UK in 2007.

Several deadly train crashes culminating in the 1999 Ladbroke Grove disaster forced the rail companies to take action to collaborate on

safety, and the rail industry implemented a rigorous open-access incident reporting regime.

Rail safety management now revolves around five principles:

- Quantifying risk;
- Using management systems (like ALARP) to control and monitor risk;
- Collaborating on the collection and collation of open data;
- Developing common standards for interfaces;
- Recognition of each company's duty to cooperate.

All UK rail companies now cooperate with each other to maintain and improve safety and share data on incidents and near-misses. This data is freely accessible to other companies and is used as the focus of safety management.

Having access to this data allows rail companies to spot trends and recurrent incidents, which can then be targeted with specific campaigns, safety measures and by developing common standards. Data has also allowed rail companies to identify incident trends that might not be immediately obvious, which has helped keep the rail workforce safer. Rail companies, in short, have come together through their transparent incident reporting scheme, which has improved safety significantly, even in ways that were unanticipated.

View from the air

David Balston from the UK Chamber of Shipping introduced the air safety culture case.

A Mandatory Occurrence Reporting (MOR) Scheme was developed in 1976 which identified a reportable occurrence as 'Any incident which endangers or which, if not corrected, would endanger an aircraft, its occupants or any other person.' One of the objectives is to ensure that knowledge of these occurrences is disseminated so that other persons and organisations may learn from them.

However, the European Commission conducted a review of occurrence reporting across Europe in 2011. They concluded that there was inconsistent implementation across the EU and was focussed on reporting, not analysis or follow-up. National databases contained only initial reports with very few updates. Following this, EC Regulation 376/2014 on the *Reporting, Analysis and Follow Up of Occurrences in Civil Aviation* became applicable from Nov 2015. This mandated that each organisation established in a Member State shall establish a reporting system to facilitate the collection of details of occurrences, and detailed the persons who should report the occurrences.

Member States and European Aviation Safety Agency (EASA) now have to analyse reported occurrences to identify hazards and monitor the preventative/corrective actions taken.

Management need to accept that staff will make errors, recognise that their best people can make the worst mistakes, and encourage and support their staff to report hazards / near misses.

The Civil Aviation Authority (CAA) actively promotes good reporting culture but recording alone is not enough. Data must be shared which allows lessons to be learned – the real value of the MOR scheme.

Data collection

The second day of the workshop consisted of four sessions cycling through four work themes: data collection/benchmarking; safety leadership; operational safety and crew safety in terms of facilitating interventions.

Discussions revolved around making sense of data, how to identify trends and what would make a good data measuring tool for a database. There should be a common standard for layout, it should be simple to use and be able to be analysed for trends. There are some challenges here, and the group were asked to identify these using example databases.

Leadership

A series of videos of leadership techniques were shown and the group discussed the leadership qualities shown in each. Excellence in safety leadership gives positive reinforcement as a core component of a strong safety culture, lets people hear what you really value and shows that behaviour that gets rewarded gets repeated.

Good leadership is leading by example, no matter how busy you are and recognises that near-miss reporting encourages safe behaviour. Leaders should challenge unsafe practices, intervene when they see unsafe behaviour, focus on facts not fault, and hold safety conversations asking the team about their concerns, opinions and improvement ideas.

Operational safety

Again, the group was shown a series of incidents, accidents and near misses. We were asked to consider the potential barriers that could have failed and categorise these into the following groups: process / procedural barriers, engineering barriers, human barriers, and managerial barriers. The group were then asked to discuss the barriers that would prevent this type of incident from happening; what could cause these barriers to fail; and what could be done to make them more effective. In this regard you must understand your barriers, ensure the strength of the barriers is reviewed and maintained, and understand why we behave and act as we do .

Interventions

An intervention is an action taken to prevent an injury or incident from occurring. The group were shown examples of good and bad practices in making an intervention. Interventions are important to prevent an injury or incident from occurring; stopping an 'at-risk' situation; create a 'culture of caring'; change the nature of the safety programme; engage

employees in the solution; and provide opportunities to praise.

Interventions set the tone of safety on board ship. They transform the safety programme; give an opportunity to praise a good procedure; and identify training requirements.

Management safety

Making a stronger safety culture within an organisation requires action to be taken in many areas. Seahealth Denmark has produced eight Safety Links, each of which consists of specific tools that represent one component of a good safety culture. These tools are specifically designed to help support and build up good, safe behaviour. They can be accessed at <http://www.seahealth.dk/en/page/tool-8-safety-links>.

This event was a hugely informative look at how attendees create a safety culture in their own organisation and how they encourage staff to take a proactive and thoughtful approach to working safely. The findings over the four sessions of the workshops will be collated to develop a series of UK Chamber of Shipping documents highlighting best practice and used to identify future work streams.

This is a very ambitious programme by the UK Chamber of Shipping to get a global maritime safety culture in place, but we have to start somewhere.

Harry Gale FNI



Harry Gale and Susie Stiles from NI HQ on board the Saga Pearl



A round-up of news and events from NI branches across the world.
Send your updates to hg@nautinst.org

SOLENT BRANCH

Handling large vessels without tugs

→ Captain Chris Wells AFNI, Master of the *Queen Mary 2*, spoke to an audience of over 70 NI members and guests from the Royal Institute of Navigation (RIN) on the challenges associated with handling large cruise vessels in confined waters without tug assistance. The meeting was held at the Fisher Hall on Whale Island, courtesy of Commander Michael Dreelan Commanding Officer, *HMS Excellent*.

Captain Wells opened by outlining his career before joining Cunard, which was spent mainly with Shell on tankers. After joining Cunard, he worked his way through the ranks, and is now Master on the 345m-long *Queen Mary 2*.

Captain Wells spent a little time comparing the manoeuvring characteristics of the *Queen Elizabeth 2*, which has twin screws close together and a single rudder with two low-powered bow thrusters, and the *Queen Mary 2*, with triple 'pods' and three powerful bow thrusters.

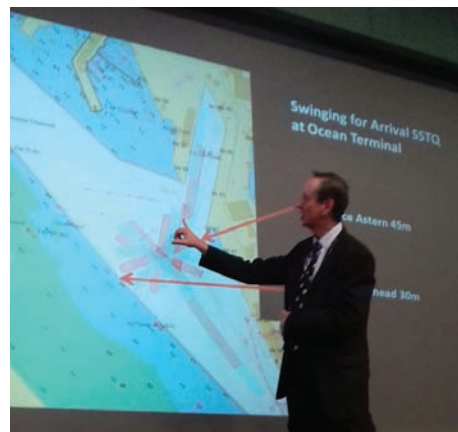
He went on to look at the manoeuvring issues to be addressed when navigating into and berthing alongside in Southampton, New York, Hamburg and St Nazaire. Captain Wells produced a series of diagrams that showed the limits of turning circles, then added the wind and tidal parameters needing consideration



Capt Wells (l) is presented with a token of thanks during manoeuvring. He stressed that a proper degree of pre-planning with the bridge team was essential, especially given the visibility ranges from different conning positions.

Capt Wells discussed the relationship between the bridge team and the pilots, and the different regulations and customs that apply in different ports. This often makes for challenging situations.

A short video was shown covering the St Nazaire visit – a special one-off call celebrating 100 years since US troops landed in 1916. This



Capt Wells explains the manoeuvres

demonstrated the wholly professional manner in which the *Queen Mary 2* was handled under the Master's command.

The talk was highly illuminating and at times breathtaking, giving a clear and interesting explanation on handling the *Queen Mary 2* in tight situations. Captain Wells gained the respect and admiration of the audience.

Captain C R Kelso FNI gave the vote of thanks. Capt Wells was presented with a token of appreciation kindly supplied by the RIN.

John Noble FNI

WESTERN AUSTRALIA BRANCH

World Maritime Day

→ World Maritime Day 2017 was another great celebration in Fremantle, with almost 1,000 spectators turning up to watch and take part in the various activities – a great opportunity to promote maritime careers and The Nautical Institute. A colourful spectacle and huge array of marine-themed activities was organised inside B Shed and areas just outside. The family fun day catered for wide-ranging interests, offering action and displays throughout Victoria Quay's west end and on the water.

The crowds started pouring in to Victoria Quay even before the start time of 10am. The Nautical Institute stall was ready to welcome them, having been set up by Branch Secretary Capt Zubin Bhada AFNI and his daughter Freya Bhada. The stall was well set up with props collected by Branch members and a box load of pamphlets supplied by NIHQ. As we did last year, we organised a simple competition to generate some interaction with visitors, which led to some 60 people stopping by our stall to answer two simple questions related to the submarine

fleet in Western Australia.

Marine students from the local technical college and a few master mariners stopped by the stall and gave their feedback on their experience with The Nautical Institute. Our volunteers explained the benefits of membership to each person and gave them a

membership form. We would like to thank our Branch members and the volunteers who supported us in looking after the stall during the day – Tim Gourlay, Freya Bhada, Rahul Sagar (new member to be) and Zubin Bhada.

Captain Rob Hildebrand AFNI



Dr Tim Gourlay MNI (centre) and Capt Zubin Bhada AFNI (l) congratulate competition winner Jason Pepperell, Portfolio Manager (Maritime) at the South Metropol TAFE at Fremantle

LONDON BRANCH

Windfarm vessels – operational challenges

→ The December technical meeting of the London Branch continued the theme of the challenges of operating different types of vessel. In this session we looked at windfarm vessels.

More than 60 people turned up on board HQS *Wellington* to listen to a panel chaired by John Lloyd FNI, CEO of The Nautical Institute. The panel comprised Mike Vanstone, Head of Marine Operations at Vattenfall; Ian Baylis, MD of Seacat Services; Hugo Cook, a serving Master with Seacat Services; and Mike Frampton, Renewables Director at LOC.

Mike Vanstone set the scene, describing the evolution of crew transfer vessels (CTVs) from monohull to catamaran; the latter are faster and more stable. Windfarms have moved farther offshore, but faster craft enable quicker transfer of technicians to the workplace. The transfer to the field should take no longer than 1½ hours, as this is maximum time for comfort for the technicians before they start a six-to eight-hour work day on a wind turbine.

Today, the average speed of vessels is 28–30kt, although the new generation of air-cushioned catamarans now entering service is capable of up to 50kt. Seasickness can be a problem so vessels are designed to be as stable and comfortable as possible. Seating must be shockproof and cushioned and the vessels should have communication facilities so technicians can continue working during the journey.

Ian Baylis explained that Seacat Services operates a fleet of 14 CTVs, from 21 to 27 metres in length, with 'step-to-work' capabilities. The catamaran pushes on to the turbine using motion-compensating fenders and the technicians can then step on to the turbine ladder. The vessels can carry up to 12 passengers (technicians) in addition to the crew. Implementation of the new HS-OSC Code means that CTVs will be able to carry more technicians, because they will be defined as industrial personnel.

Windfarm operations are driven by commercial considerations, so availability to the client is the priority. The windfarm industry is still young, so it takes personnel from other parts of the maritime industry. Availability to enable the turbines to keep producing energy is the *raison d'être* and to achieve this, good boats, very high standards and well-trained crews are essential.

Hugo Cook gave the view from the bridge. Working on a CTV is a really hands-on position. Usually there is a crew of three – Master, mate and deckhand. It is very important to have good communications with the technical support back at base to resolve any issues when

out at the windfarm. There is no overnight accommodation on board and crews are rotated on a shift pattern. As the industry moves farther offshore, accommodation is increasingly being provided in floatels, which offer more comfortable surroundings for technicians.

Mike Frampton spoke about issues of access to windfarms and carrying out warranty surveys in both the construction and operational and maintenance phases. During the construction phase, access is preferably by fixed gangway. The industry has moved away from conventional boat landings, in which landings were limited by sea/tide direction and wave heights, and now uses vertical ladders and CTVs. The ladders have 'bumpers' against which the CTV rests, and are designed to take transfer force from the CTV – up to 80% of power. Technicians can step across on to the ladder. The vessel captain has to keep an eye on the weather during the time the technician is on the turbine. It is easier to climb up than down, and the step back from the ladder down to the CTV may be difficult if the weather deteriorates. Also, crew transfer back on to the vessel must be completed before dark.

Walk to work systems are becoming more popular for getting on and off the vessel, and Mike showed an example of the Ampelmann motion-compensated gangway system, although this is more often seen on an OSV. Farther offshore, the longer passage time and reduced time available for work mean that use of a CTV is less efficient.

Following the presentations, discussion and questions were open to the floor. These mostly focused on safety issues. The industry as a whole has an excellent safety record. There are approximately 465 CTVs in the system, carrying out a total of 50,000 transfer operations with no accidents or significant injuries. Crew transfer vessels conduct safety drills as per SOLAS and carry out emergency evacuation drills with RNLI lifeboats and helicopters. CTVs carry Jason's cradle, SB rescue slings and a crane for rescuing people from the sea.

Technicians have to comply with safety requirements for vessels and for turbines. The industry needs to balance these requirements against the technicians being so overloaded with equipment that it is difficult to get on and off the CTV and up and down the ladders. This is an inherently risky task. Technicians must be pragmatic and make risk assessments for climbing vertically up 70–80 metres.

It is unlikely that CTVs will become autonomous in the near future, as there need to be eyes and experience at the 'sharp end'. Once again, time ran out on the discussion.

Captain Harry Gale FNI



Mike Vanstone



Hugo Cook



Ian Baylis



Mike Frampton

SOUTH WEST ENGLAND

Mayflower Autonomous Ship project

→ Paddy Dowsett, Programme Manager for the Mayflower Autonomous Ship project and Business Development Manager of MSubs (underwater vehicles and equipment), hosted our Branch meeting at MSubs Headquarters. He gave an informal talk about the development of the Mayflower Autonomous Ship (MAS), followed by a visit to the factory.

In 2014, Plymouth City Council decided to build a modern *Mayflower* to mark the 400th centenary of the sailing of the original *Mayflower* from Plymouth docks. The resulting company, Mayflower Autonomous Ship (MAS), consists of three interested parties, MSubs, ProMare (a charitable research foundation) and Plymouth University. They aim to build an autonomous vessel powered by renewable energy and capable of conducting scientific research with the endurance and reliability to operate remotely in all corners of the globe. By the time it participates in the *Mayflower* 400 Commemorations in 2020 the vessel will have undergone an extensive sea trial period.

MSubs is providing the managerial expertise to keep the project on track. The original idea had been to build a one-off Shuttleworth 32 metre trimaran as the platform. However, concerns about the overall costs and the risk of capsize led to a rethink. It was agreed that the mission could be achieved by purchasing an existing single-hull vessel and adapting it, and an order will be placed in early 2018 for a single-hull Oyster 70.

A 7m Hunter Sonata, called *Christopher Jones* after the Master of the original *Mayflower*, will be used to trial technology intended for the *Mayflower* project. She will begin sea trials in May 2018. Sea trials of the Mayflower Autonomous Ship will begin a year later. It is planned that the ship will be ready to start her autonomous voyage in September 2020 to commemorate *Mayflower's* original voyage.

There have been three key challenges: technological, regulatory and financial. Paddy said that unless new disruptive technology is developed, the prime autonomous ship

technologies are already present. Regulatory issues are a concern but are 'being sorted' and solutions are available. The greatest challenge is raising funds for an untested concept.

From research to commercial possibilities

Members discussed whether the development of autonomous cargo-carrying ships was a realistic proposition. It was argued that a ship is just part of the supply chain, so if other parts of the supply chain can be fully automated, why not the ship?

Lloyd's Register has established seven levels of autonomy, defined as A0 to A6. A ship defined as A0 has 'no autonomous functions – all actions and decision-making being performed manually', while at level A6 the ship is 'fully autonomous, having unsupervised operation where decisions are entirely made and actioned by the system during the mission'. It was suggested that the use of autonomous ships could be safer than the use of manned ships, given that human error leads to 80% of all accidents. It was recognised that more complex technology will initially be expensive but the cost will be offset by the lack of need for crew accommodation and hotel services!

Automated Ships Ltd is presently developing the design, construction and operation of the first full-sized, commercial, unmanned ship for offshore operations. Already named *Hrönn*, the ship will be built in Norway in co-operation with Kongsberg Maritime AS and Automated Ships Ltd. *Hrönn* is a light-duty, offshore utility ship servicing the offshore energy, hydrographic and scientific and offshore fish-farming industries.

The update was valuable, and doubtless autonomous ships will appear. However, this writer remains a little of a sceptic of the process, recognising the power and unpredictability of the seas and the fragility of electronic systems. But perhaps that's simply a sign of old age.

The Marine Accident Investigation Branch

→ Members of the South West of England Branch were invited to join Plymouth University students at a presentation given by the Marine Accident Investigation Branch (MAIB). The presentation was made by MAIB inspectors Captain Jae Jones AFNI and Adrian Lambert, a marine engineer.

An interactive presentation on the role and functions of the MAIB was followed by comments on recent investigations, including a collision between the pure car carrier (PCC) *City of Rotterdam* and the ro-ro freight ferry *Primula Seaways* on the River Humber in 2015 and the grounding of the ultra large container ship (ULCC) *CMA CGM Vasco de Gama* in the Thorn Channel, Southampton, in 2016.

Among the many issues considered by the investigation into the grounding of the *CMA CGM Vasco de Gama* were master/pilot information exchange, bridge resource management including bridge team/pilot integration, passage planning, the use of ECDIS during pilotage and matters associated with the use of portable pilotage units (PPUs).

The reports on both investigations are available on the MAIB website and are well worth reading.

Paul G Wright MNM FNI



The initial Shuttleworth 32 metre design (l), and the current hull design (r)

BELGIUM BRANCH

MARS debate 16/11/17 – fire drills

→ The Belgium Branch and the students' association of the Antwerp Maritime Academy continued their successful MARS debates on 16 November. The debate was held in the customary location of the *Kerkschip St Jozef*, a converted concrete bunker tanker built by the Germans during WWII and now permanently moored in the Antwerp docks.

Before kicking off the actual presentation and debate, our NIBB chairman, Walter Vervloesem FNI, gave an introduction to the objectives of The Nautical Institute and the benefits of membership for the new students.

We were delighted to have Peter Van Cauwenberghe, Centre Manager, and Roel Proesmans, Senior Instructor from Falck Safety Services Belgium, provide the audience of some 75 students with a very useful presentation on the legal and practical aspects of fire prevention and firefighting, as well as information on how to organise a realistic fire drill on board.

Peter started by giving a snapshot of the core activities of Falck Safety Services Belgium. Falck is a Danish company with worldwide presence that specialises in safety services, emergency services and healthcare. It is a global maritime training provider in safety aspects, focusing on scenario-based training. It also performs fire and other safety drill assessments on board. The Falck Emergency Response Team assists salvage companies worldwide and has recently assisted with several major casualties, including a fire on board the Spanish ferry *Sorrento*, off the Balears, in April 2015.

Fire drills in practice

Unfortunately, on many vessels fire drills are basic and generic, offering little practical benefit in terms of preparing the crew for real emergencies. Drills should be realistic and useful, preparing crew for dealing with real fires where they will all need to participate and work as a team. This is of key importance to any vessel, but in particular for ro-ro and container ship, which suffer the highest number of fire outbreaks.

Fire drills first and foremost need to be carried out safely. It is therefore vital that all crew members are made familiar with relevant equipment and procedures to prepare them properly for real emergencies and avoid panic. The crew should be familiarised with the use of all firefighting equipment/systems on board, which generally include:

- Fire hoses and monitors;
- Fire suits;
- Self-contained breathing apparatus;
- Portable extinguishers and fixed firefighting installations;
- Escape routes from any location on board;

- Assembly points;
- Fire dampers;
- First aid equipment.

All crew members should be well aware of the fire squad they will be participating in and the tasks they are expected to execute. It is very helpful for all crew members to be provided with action and task cards when they sign on, so that everyone knows the function they have been assigned to in the context of various emergencies right from the outset.

SOLAS

Peter continued by highlighting the main requirements of SOLAS in terms of onboard training and fire drills. Although most attendees were already well aware of these, this nevertheless served as a good refresher:

- Each crew member must participate in at least one fire drill every month;
- All the ship's firefighting appliances shall be covered every two months;
- On passenger vessels, fire drills must take place weekly but do not need to involve the whole crew as long as each crew member participates in at least one drill every month;
- If more than 25% of the crew has been replaced, drills should take place within 24 hours after leaving port.

Fire drill specifications

Fire drills should be based on the company's safety management system under ISM. They should be conducted with minimum impact on the crew's rest periods and should be run based on different realistic scenarios/types of fire and in different locations/conditions (deck, engine room, galley, cabins, cargo holds, etc). If, because of watch arrangements and minimum crew levels, not all crew members can participate in drills, the timing should be varied so that all crew members participate in at least one drill every month.

Q&A time

The floor was then open to questions from the audience.

One question was whether or not ships should conduct unannounced and/or night-time drills. Even though certain Masters have done this and some may still do so today, Roel was not in favour. Instead, he suggested organising drills where certain parts of the ship are kept completely dark in order to simulate a black-out, for example in the engine room involving evacuation of possibly injured seamen. In such situations it is obviously vital to be familiar with escape routes and ways to reach the assembly points.

He asked the audience whether those students who already participated in fire drills

on board had learnt anything useful from those. The reaction was not very positive. Most of them did not find the drills they attended particularly useful. Some of the students had received training on fighting small fires and all of them felt confident they would be able to handle them, although they admitted things would get more complicated if several people were injured at the same time.

We learned that, depending on the extent of the fire, extinguishing operations should start within seven minutes in order to avoid the fire getting out of control without external assistance. Response should be put in action immediately after the fire alarm has been activated.

The most common mistake made during firefighting operations is yelling into the walkie-talkies (often due to excitement and stress). Doing this means that people on the other side cannot understand what the operator is saying. Proper training can help people learn to speak normally and calmly when being involved in real firefighting.

Should fire suits be kept stored in their boxes in the safety station or rather be hung ready for use? Opinions appeared to be divided on the subject, with the difficulty of transporting fire suits when they are no longer in the box being a key question. Every minute counts.

Roel recommended that crew members make comments or suggestions to the Master or chief officer on board about the way fire drills are conducted. If necessary – and if possible – try to implement some variation in the scenarios, making them more realistic and useful.

W Justers AFNI and W Vervloesem FNI



Letters

JOIN THE CONVERSATION

Send your views and opinions to us at editor@nautinst.org, write to us at **202 Lambeth Road, London SE1 7LQ, UK** or become part of our online community:



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Is it time for Safety of Life in Port?

→ Captain Hemant Gupta, AFNI, has made a case for introducing a 'Safety of Life in Port' convention (*Seaways* November 2017). His ideas deserve the attention of IMO and flag states sooner rather than later. The Oil Companies International Marine Forum (OCIMF) has shown leadership in developing very good standards for marine oil terminals as well as for oil tankers. The OCIMF publication *Marine Terminal Management and Self-Assessment* (MTMSA) is an excellent model for this development. While this publication is for oil terminals, it can be tweaked for all ports and marine terminals. It has a four-stage maturity model.

The ISM Code has undeniably improved the awareness and safety performance of shipboard personnel. A similar action, with a

safety management system (SMS) in ports, terminals and shore service providers acting as a vehicle for safety risk management will go a long way in delivering safer marine operations in ports.

The aviation industry provides us with an example. Aviation service providers and airports are required to have a safety management system. There are strong parallels to the maritime industry. Ports can move forward by adopting a system approach to safety. A port SMS consisting of safety policy, safety risk management, safety assurance and safety promotion will go a long way in preventing both small incidents and catastrophic accidents in the port marine environment.

Captain Ravindra P. Varma MNI
California, USA

PPE

→ As a recently retired surveyor, I found Nippin Anand's article 'The PPE Paradox' (*Seaways*, December 2017) most interesting. Many of the sites I visited used 'health & safety' as an excuse or reason for preventing normal activity. One factory that I visited in Northern Ireland insisted that all personnel, including office staff, wear hi-vis vests at all times. As I was there for a number of days, I queried the worth of this and whether, in fact, it negated its purpose with everyone being the same. Although the person I mentioned it to agreed with me, I was told it was 'company policy'.

In a similar vein, at a UK dockside to carry out a vessel

survey, I was advised by their safety representative that I could not enter the site without watching a 20 minute induction video and then wearing the appropriate PPE – hi-vis, safety boots, hard hat, life jacket et al, which of course I carried in the course of my work. I was then escorted to the dockside by the same guy – who was wearing jeans and T-shirt, no hi-vis, no hard hat. Unbelievable. And he wasn't even concerned when I questioned his attire.

Steve Barnet MNI
Stirling, UK

City of Rotterdam court case

→ As a subscriber to the UK MAIB email alerts, I noted the lessons learnt in the investigation of the collision between *City of Rotterdam* and *Primula Seaways* in December 2015 (report No.3/2017.) In particular, I noted the issues in respect of the relative motion illusion caused by the *City of Rotterdam's* bridge design and equipment layout. I also noted that this appeared to be yet another of the endless number of cases of over-reliance on the pilot – in spite of the fact that the issue of bridge team management dates back to my early days at sea and I am now 55 years old.

In November 2017, it was reported that *City of Rotterdam's* Master and the pilot on board at the time of the collision had been each given four months suspended prison after pleading guilty to charges of conduct endangering a ship.

This comes 15 years after the arrest of the Master of the *Prestige*, which attracted considerable

international attention. It is odd that the case now at hand prompted relatively little attention in terms of shock, disbelief or general comments of criticism from the maritime community for yet another case of Master (and pilot) criminalisation.

I am not in a position to give an informed opinion as to whether the actions of the Master and pilot fully deserve the charges, but it would appear that the Court appraised the case to be serious enough to warrant a sentence towards the higher end of those permitted. My own assessment would be that as neither personal injury nor damage to the environment or the community arose as a result of the collision, the case ought to be restricted to a dispute between underwriters and a screening of professional conduct via the respective companies' disciplinary procedures.

Cases of acts or omissions in the discharge of professional duties should be heard by specialised

tribunals – if they are to be allowed as offences at all – unless there is evidence that they are deliberate or have been committed under the influence of drink or drugs.

I cannot avoid raising a strong objection to the fact that a MAIB report was brought to the attention of the Court by the prosecution. [*Editor's clarification: while the MAIB report was referred to in court, it was not referred to in detail, and the prosecution's case was independent of that report.*]

It is my strong belief that investigations and reports by safety related accident investigation branches such as the MAIB should be fully protected from exposure in court proceedings. Indeed, the UK 'Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 state:

Objective of a safety investigation
5. (1) *The sole objective of a safety investigation into an accident under these Regulations shall be the prevention of future accidents*

through the ascertainment of its causes and circumstances.

(2) *It shall not be the purpose of such an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame.*

As an immediate resource, safety investigation reports should not be published until any court proceedings are over. This would mean waiting for any lessons to be learnt, but on the other hand would preserve the independence and thoroughness of the investigators. It would ensure full co-operation on the part of those investigated as well as witnesses in their broadest sense.

The above does not prejudice the fact that police or other enforcing agencies may conduct the investigations that courts need in order to hear cases.

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The Nautical Institute LinkedIn forum



JOIN THE CONVERSATION

The Nautical Institute has a lively discussion group on LinkedIn
<http://www.linkedin.com/groups/Nautical-Institute-1107227>

THIS MONTH, WE ASK IS THERE AN ISSUE WITH VANISHING TRUST AT SEA?

In the November edition of *Seaways*, Professor Helen Sampson of the Seafarers International research Centre at Cardiff University presented the results of research which pointed to a breakdown of trust between seafarers and shore officials, including those in their own company

headquarters.

The report made some 20 recommendations relating to the future improvement of ship-shore relations across the maritime industry.

THE INSTITUTE'S LINKEDIN COMMUNITY RESPONDED:

→ Although this is not a 'sea only' problem, there is no doubt that the nature of our work creates extra challenges, including the need to deal with several cultures, languages and countries, the distance between managers and seafarers and details such as time differences and the lack of physical presence in the office. As a result, our opinion gets soon forgotten.

I guess that the best company to work for would be one where the sea going personnel and managers do not refer to each other as 'us and them'. A lot can be said about a company from the way that the management treats its employees.

I am not sure that a Code of Conduct will solve anything, because the companies that will follow it will probably be the ones that do not need it in the first place, and the ones that need it will always find a way to continue the bullying, in more creative ways.

→ One could also ask whether there is: 'Vanishing trust ashore?' As a charterer's representative I used to spend thousands of hours on hundreds of ships and was always surprised to learn how little ship's staff knew about the commercial operation of their vessel. Few captains had any idea about the freight or demurrage rate of the voyage. Many showed no interest either. Almost without exception there was no copy of the charter party and voyage instructions on board. Perhaps there is a role for the NI to put some more emphasis on the commercial aspects of shipping. It will no doubt lead to higher standards in the profession and better wages.

→ What makes seafarers think they are any different from workers in other professions or occupations? Graft, mistrust, envy, jealousy, departmental differences - these human characteristics exist in all walks and levels of life and I suspect always will.

→ The ship/shore divide is widening with the burgeoning regulations our industry has been dealing with over the past decade with no sign of any reprieve in the near future. A 'no blame' culture could be part of the solution but an holistic approach is needed to reduce this gulf.

→ There are considerable stresses and pressures for both teams, at sea and ashore, where finite resources provide for little time to allow a better understanding of the responsibilities, duties and demands placed on the other side. This is how the 'Them & Us' mentality is nurtured.

→ We are all trying to be as efficient as possible, so much so that lessons of the past are being forgotten and we have lost the 'grace' of time in day to day activities.

This can only be rectified with either additional team members, or better and more effective systems of communication and data processing. Primarily, this should reduce the current duplication of information, data, processing and reporting to a single point of entry and action for all, both at sea and ashore.

→ This problem is as old as shipping. However, modern management systems and communication mean information should be freely available for shore as well as ship's staff. There are companies with extensive and integrated management information systems which appear to be functioning well and improving ship-shore information exchanges.

→ On the question of mistrust between ship/shore, how can any seafarer develop trust in any institution when no one knows if he is going to be working with the same company in the next contract or not?

→ It's so sad that shore based staff do not understand working conditions or culture on board a vessel. And when port state control demands '\$450 in cash 'Or we'll find something and come back again,' I am not surprised by the attitude of ships' staff. As a supercargo it takes me hours to get the message across that I'm on their side, and there to help not be critical.

→ Trade is the backbone of any economy, and making it more efficient by eliminating mistrust between ship and shore is crucial. I only suggest two things which aim to make the difference. First, create a common policy by every owner in maritime industry, 'strict ban on facilitation gifts'. In respect to shore/sea staff

working relationship, it is important to ensure compliance with sea staff rest hours as per ILO and more concern toward fatigue management at sea before meeting the extra needs of shore personnel. Safety at sea shall be at high priority, and proper rest is important for elimination of human error, which is still the major factor in accidents, incidents or mistakes.

→ The ban on bribes is strictly enforced by some of the oil companies. I know of one company that does not carry cigarettes or other bonded stores on their vessels. They suffer for this in certain ports, but they manage to survive. If it was possible to create a common policy for the shipping industry, that would be the way to go. However it would be like herding cats - and if someone thinks a case of cigarettes given to the right person will give them a commercial advantage, well, that's the end of it.

→ From voluntary facilitation gifts to demanded commodities - where's the difference? It's similar misconduct under a different hood. A thoroughly professional approach by both ship and shore, working for the same cause, will assist in uprooting many of the evils we face today.

→ I personally believe that corruption and toxic culture have become a disease permeating the entire maritime sphere.

→ This does not surprise me at all. As we all know, before the crisis there was an even bigger shortage of seafarers. This means that after some years there will be - and currently is - a huge shortage of shore personnel with (strong) sea-going experience that used to take shore based roles in operations, Health, Safety, Environment and Quality (HSEQ), vetting etc. This means (shipping) companies nowadays have to fill in these vacancies with inexperienced young people that have never seen a ship or do not even have a maritime education at all. Herein lies a great cause of the problems.

This report attempts to give a representative summary of the discussion - it is not possible to include all comments. To see the discussion in full, please visit LinkedIn.

➔ Representing The Nautical Institute to the maritime industry and beyond

Bridget Hogan from NIHQ attended the Central Scotland branch AGM in Scotland, celebrating three years in its new format. After the election of officers, members heard from Bridget about the plans to improve membership retention in future. The branch has been active in holding meetings over the year and members discussed plans for future meetings.



HQ staff represented the NI at the Seafarers UK Festive Centenary Reception onboard HMS President in London



David Patraiko FNI, Pradeep Chawla FNI and Kuba Syzanski FNI deep in conversation at The Nautical Institute Safe Manning Conference in Hong Kong (see p26).



Congratulations to the Maria Tsakos TCM Academy, one of The Nautical Institute's world-wide network of 96 approved training providers, winners of the Lloyd's List Award for achievement in education and training. They kindly invited CEO John Lloyd and DP Certification Manager Jenny Daintree to the awards dinner.

Members of the NI Council enjoy a break after the December meeting in London.



Thank you to Commodore Syed Ariful Islam TAS NDC PSC BN, Director General of Shipping, Bangladesh and his team for visiting NIHQ this month for a courtesy call. Left to right: Capt John Lloyd FNI, Capt Duke Snider FNI, Cmdr S Ariful Islam, Captain Jashimuddin Sarkar (Chief Nautical Surveyor), Mr. Abedin (Councillor, Bangladesh High Commission in London), Capt Ghulam Hussain FNI.

NIHQ celebrated Christmas accompanied by the NI President, Capt Duke Snider FNI, with dinner and drinks in Covent Garden, London. 'Many thanks to the CEO, the NIHQ team and all the Council members that make the NI work' said the President.





New members

The Nominations Committee has nominated the following for election by Council:

Associate Fellow

Ahsan, A Captain/Master (India (North))

Arora, G Captain/Master (India (North))

Babajee, A Mr/CEO (Mauritius)

Boekel, C Captain/Master /SDPO (Netherlands)

Broomhall, N Captain/Fleet Captain (UK/NW Eng. & N Wales)

Chalmers, G R Mr/Technical Manager (UK/N of Scotland)

Diekmann, C Mr/Managing Partner (GER/Hamburg)

Hameed, A Rear Adm/General Manager (Pakistan)

Leeming, P R Captain/Master (Spain)

Manrique, D A Captain/Master (US Gulf (Florida))

Mohan, R Captain/General Manager (India (North))

Roach, K Captain/Manager (US East Coast (N))

Saieem, M R Captain/Master (Bangladesh (Chittagong))

Shukla, P Captain/Talent Manager (India (North))

Tsetskhladze, A Captain/Master (Georgia)

Zolkifli, O B Capt/Master SDPO (Malaysia)

Upgrade to Associate Fellow

Bru, J A Mr/Managing Director (Panama)

James, N Mr/Director (UK/London)

Zaimis, T Mr/Insurance Consultant (GRC/Hellenic)

Member

Andrew, S B Mr/3rd Officer (UK/SE England)

Aquino Chávez, L A Captain/DPO (Mexico)

Darvall, R B L P Mr/Chief Officer (AUS - TAS)

Delée, M Mr/Consultant (Belgium)

Fiorda, E Mr/Chief Mate (Argentina)

Gillespie, J W Mr/3rd Officer (UK/London)

Gray, R D Captain/Commanding Officer (CAN/Maritime Provinces)

Hall Hyderuiz, C H Mr/DPO (Honduras)

Hamilton, T Mr/Chief Mate (US East Coast (N))

Henderson, S W Mr/Chief Mate (UK/Forth)

Kalongua, N A Mr/Chief Officer (Angola)

Kim, K Mr/Marine Superintendent (Japan)

Labay, P B P Mr/Marine Deck Officer (Philippines)

Lebang, A N Captain/Master (Indonesia)

Leyland, J Mr/Programme Leader (UK/NW Eng. & N Wales)

Lima, A L D S Mr/DPO (Brazil)

***Matso, J** Captain (Baltic States/Estonia)

McDaniel, P L Captain/DPO (US Gulf (Houston))

Nae, C I Captain/Master (Romania)

Namasivayam, S Captain/Vetting Manager (India (South))

Psaradakis, I Captain/Master (GRC/Hellenic)

Sagar, R Mr/MD (AUS - WA)

Sieniewicz, S Mr/1st Officer/SDPO (UK/SW England)

Singh, M Mr/Chief Officer (India (North))

Smith, D J Mr/2nd Officer (UK/SW England)

Sporek, R M Mr/Chief Officer (Poland)

Vazquez Zuñiga, H A Captain/Master (Mexico)

Vynokurov, O V Captain/Master (Ukraine)

Weldetinsae, M G Mr/DPO (UAE)

Williams, C Captain/Yacht Master (UK/London)

Wood, J G Mr/Manning & Marine Manager (China: Hong Kong SAR)

Associate Member

Bouvier, M Mrs/Navigation Cadet (CAN/BC)

Guniava, A G Mrs/Watch Officer (UK/Isle of Man)

Sleddon, S Miss/Watch Officer (UK/Isle of Man)

Zizos, A Mr/Student (UK/NW Eng. & N Wales)

*Signifies members who have rejoined

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THE NAUTICAL INSTITUTE'S

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Fees: NI member: £750 (plus VAT) Non-member: £900 (plus VAT)

Delegates successfully completing Part A will be awarded a course certificate and will be eligible to proceed to Part B – the onboard assessment. Delegates completing both Part A and Part B will be awarded The Nautical Institute Navigation Assessors Certificate.

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To book your place or register your interest in future courses, please email
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