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Seaways

The International Journal of The Nautical Institute

PortCDM

Getting information on port operations in real time **p12**

The Nautical Institute

Contents

Comment & Opinion

Features

MARS

Reporting back

Members & Branches

Cover picture: Danny Cornelissen

Seaways
The International Journal of The Nautical Institute

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Diary

What's on?

Arctic Shipping Summit
05 – 06 December

0800 – 1630, Hamburg, Germany

Please email mahsan@acieu.net to register attendance

ACI are bringing together stakeholders from all parts of the Arctic to discuss their involvement in the ever-changing Northern Shipping Route. Key topics include The Polar Code, insurance concerns and examining new infrastructure developments.

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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'

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Navigation Assessor Course
Glasgow, Scotland
https://bit.ly/2Gtp5Nd
Discount for NI members

03 – 05 December

Ballast Water Management Technology
Hilton Tower Bridge, London
http://bit.ly/BWMTech-FKT3389N
20% discount for NI members

03 December

LNG as a Fuel/Bunkering and Crew Training
London Branch
1730, HQS Wellington, London, UK
Contact: Herald1147@hotmail.com

04 December

Partners & guests social evening
North of Scotland Branch
Woodbank House, Cults, Aberdeen
ni.northofscotland@yahoo.co.uk

07 December

Christmas Party
UAE Branch
The Address Montgomerie, Dubai
nauticalinstitite.uae@gmail.com

12 December

Lunch Meeting
Belgium Branch
1200, Resto Marcel, Antwerp, Belgium

Offshore Vessels (MARS debate)
Belgium Branch
2000, Kerkschip, Antwerp, Belgium

15 January

WWII Arctic Convoys
North of Scotland Branch
Woodbank House, Cults, Aberdeen
ni.northofscotland@yahoo.co.uk

16 – 17 January

Deep Offshore West Africa Congress
Accra, Ghana
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17 – 18 January

Navigation Assessor Course
The Nautical Institute, London, UK
Contact: courses@nautinst.org
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24 January

Painting Ships in the Future
North East England Branch
L Block Lecture Theatre, South Tyneside College, South Shields
31 January

31 January

Maritime Incident Investigation & Analysis
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Contact: courses@nautinst.org
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Captain John Lloyd FNI Chief Executive

Focus

Safety in mind

> I am confident that raising differing perspectives will help us all understand examples of good practice in the context of our own operations.

It was sobering and saddening to read in the maritime media that yet again some of our seafarers have succumbed to the dangers of entry into enclosed spaces. As an industry we are not alone facing appalling statistics for deaths in confined and enclosed spaces, but the mantra of 'get home safely' should be the overriding message in all of our operational activities, risk assessments and safe working practices. Many of those who die are would-be rescuers who are inadequately prepared for an emergency response.

As members of the world's leading professional body in the maritime sector, we have a great leadership responsibility in this regard. I urge you – take care and take care of those around you. Do not be tempted into short cuts thinking 'it won't happen to me' – it just might. At the same time, be alert to the commercial pressures that can sometimes be exerted from others who are less well informed than you. Of course, we all strive to deliver an efficient and effective service, and one that helps deliver a sustainable and profitable outcome for our stakeholders. However, that should never be at the expense of personal safety. That is your responsibility.

Understanding the onboard environment

It is important those supporting our ships appreciate the environment seafarers work in and so I am sure that our new course to be launched in January will help create a positive environment and shared understanding in this ship-to-shore interface. Our programme An Introduction to the Maritime World* will explain the importance of maritime trade to help non-mariners understand the maritime industry, the role played by our seafarers and the reality of life on board ship in this key transport sector.

Communication and a shared understanding are key in every workplace and I am pleased to see the level of interest sparked by recent articles in *Seaways*. I would not expect us all to have the same view on professional matters – that would be very dull. So, thank you to those who contribute to the discussions. I am confident that raising differing perspectives will help us all understand examples on good practice in the context of our own operations.

Communication and co-operation

On the subject of communications, courtesy and respect are things we all expect in the workplace. In our ships there is a hierarchy of responsibility and accountability, but treating others civilly and with understanding is central to a positive workplace.

I wonder how well these thoughts sit with the vocabulary we have developed in bridge teams when there is a question about the actions of the pilot (or even the Master). We tend to use the word 'challenge', with its inevitable confrontational connotations. I wonder if there is a softer, but equally effective, way of verifying an order or instruction when the team is in doubt about the actions to be taken? Something along the lines of 'confirmation of intention' perhaps.

In closing I would like to extend my thanks to the teams, members and their friends in Bangladesh who helped organise such a fascinating visit for me. As well as branch meetings, technical seminars and social events I am delighted to note we attracted 15 new members into our Nautical Institute family. Thank you and a warm welcome to all of our new members across the globe.

* If you would like to help your staff appreciate the factors affecting our maritime sector and enhance their understanding of our unique industry through this two-day programme, please contact: courses@nautinst.org. Our team will be delighted to help you.


p10


p21


p27


p32

Captain Rich Madden AFNI

Captain's column

Graded assertiveness: Captain, I have a concern…

Last year, I was inbound to a port-that-will-remain-nameless, with the local pilot at the con as we manoeuvred up a winding channel. The channel curved to port, yet the pilot ordered starboard rudder as we approached the next turn.

Our third officer, who had been on board for over two months already and was well drilled in bridge resource management theory, piped up and said, 'Mr Pilot – the channel goes to port, why are you using starboard rudder?' The pilot responded by glancing at the rudder angle indicator and out of the window. He then turned and told the helmsman, 'Midships', followed shortly by, 'Port 20'.

The pilot then turned, smiled at the third officer and said, 'Thanks'.

The PACE model

The third officer had effectively implemented the first step of the PACE model for 'graded assertiveness'. Originating in the medical field, graded assertiveness and the PACE (Probe-Alert-Challenge-Emergency) model were necessary to overcome the power dynamic between nurses and doctors. Much like the power dynamic between the pilot and the third officer, the power dynamic between doctors and nurses is such that nurses are frequently hesitant to question a doctor, even when a patient is at risk of harm.

Probe – 'Mr Pilot – the channel goes to port, why are you using starboard rudder?'

Alert – 'Mr Pilot – the channel goes to port. We will ground if we continue to turn to starboard.'

Challenge – 'Mr Pilot – we will ground if we turn to starboard. I recommend turning to port immediately.'

Emergency – 'Hard to port!' (or other appropriate order).

Despite the experience and knowledge of maritime pilots, captains and officers on vessels, they are not infallible. The bridge team (including the helmsman, lookout, cadet, deck officers and captain) are all there to assist in error trapping. Unfortunately, this safety net sometimes fails entirely, such as in the 'heavy contact' of *CMA CGM Centaurus* with the berth (and gantry cranes!) in Jebel Ali in May 2017.

The UK Marine Accident Investigation Branch (MAIB) report detailed the failures in bridge resource management that contributed to this incident. Shortly afterwards, the vessel's parent company, CMA CGM, issued guidance to its fleet, which included the instruction, 'Once pilot decision looks unsafe to you, challenge and be ready to take over command.' In the manoeuvre to the berth, utilising the PACE model might have avoided or mitigated this incident.

The Five Step Assertive Statement Process

The PACE model is effective in acute situations where immediate actions need to be taken to correct the situation, such as the rudder order or speed directed by the pilot. When a concern needs to be raised in a less immediate situation, a less aggressive, but equally effective, method is the Five Step Assertive Statement Process.

The Five Step Assertive Statement Process comes out of the aviation industry. The aviation sector leads the transport industry in human factors studies. It had experienced multiple serious incidents where a problem had been identified by the co-pilot or first officer. Yet, these concerns had not been properly communicated to, or had been ignored by, the pilot due to the power dynamic between pilot and co-pilot. Much like aviation, the maritime industry has its fair share of egos, where the senior officers or advisers (marine pilots) feel themselves to be above reproach or beyond questioning.

The five steps are :

1. Start with the person's formal title (eg Captain/Pilot). Starting with anything else can diminish the importance of the message.
2. State, 'I have a concern.' This is a trigger statement. Within the aviation sector, policy determines that this statement requires the captain to acknowledge and consider the concerns of the crew member. Shipping companies might consider adding such a policy to their safety management system (SMS).
3. State your concern and provide details.
4. Suggest an alternative plan.
5. Seek permission to implement the alternative plan.

In practice, this statement might sound something like:

'Captain, I have a concern. There appears to be a crack between 1 port bunker tank and 3 port water ballast tank. The level on 1 port has gone down while 3 port has gone up with no ballast or fuel transfer operations taking place. I recommend we treat 3 port ballast tank as contaminated and do not discharge it as planned in the next port. Does that sound like a plan?'

Reality

In reality, neither of these systems will be effective without buy-in from all parties. There are plenty of captains, chief engineers, pilots and other senior officers still out there who will reprimand a subordinate for questioning their decisions. There are probably just as many junior officers and ratings who are unwilling to voice their concerns due to lack of training or because they have previously had negative responses. The combination of these two groups often prevents adequate communication, which then becomes a causal factor in incident investigations.

The solution? A strong first step is the institution of a 'just culture' within an organisation and on its vessels. A just culture provides the safe space within which concerns and safety issues can be discussed without fear of repercussions. Implementation of such a culture first requires policies, then actions that support those policies. Plus, it is critical to have policies and training in place to support the concept of graded assertiveness at all levels. If junior officers and ratings are never encouraged to voice their concerns, are they likely to do so? Even worse, what about the captain that won't question the pilot when he is concerned? What can you improve on your vessel?

This article first appeared on gCaptain.com and appears here with permission.

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Rewriting the rules?

A recent decision in the UK Court of Appeal appears to up-end the conventional wisdom about the application of Colregs in the approaches to narrow channels

Captain Chris Bordas
CMMar

For generations, the staple diet of a young professional who studies to qualify as a watchkeeping officer on board a ship has been the Collision Regulations 1972 (as Amended).

The Colregs, as they are fondly known, are often learnt verbatim. They form the basis of any decision-making process that prohibits the development of a close-quarters situation between two or more vessels.

It appears that this is not the opinion of the English Court of Appeal, which has decreed that this baseline of vessel interaction does not, and never did, apply to vessels when navigating in the approaches to and from a 'narrow channel'. This case is a significant one for all Masters and pilots who approach and depart major estuaries and narrow channels, and it is worth looking at the decision in more detail.

What is a narrow channel?

It is when a vessel is navigating in the approaches to a narrow channel, where the Court of Appeal departs from the Colregs. The central question is:

Do the 'Crossing Rules' (15, 16 and 17) apply or not to a vessel openly crossing from port to starboard, openly showing a green starboard light and maintaining a steady compass bearing while navigating in the approaches to a narrow channel?

This question was applied in the High Court and the Court of Appeal when the container vessel *Ever Smart* was in collision with the tanker *Alexandra 1* while approaching the Jebel Ali Channel, UAE, in February 2015 (see MAIB Report 28/2015).

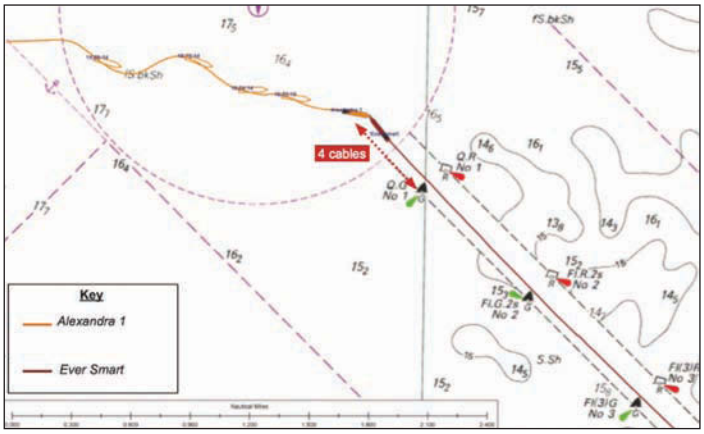
The clear answer of both courts was that the Crossing Rules did not apply when vessels were navigating in the approaches to a narrow channel.

At this stage it may be helpful to define the meaning and context of the term 'narrow channel' and what constitutes the approaches to a 'narrow channel'. After all, Rule 9 of the Colregs is devoted to the subject of narrow channels. Sadly, there is nothing within the Colregs, or anywhere else, which could assist with the interpretation of the term. [Editor's note: *Seaways April 2017* offers an overview of how the 'narrow channel' has been defined in legal terms over the years.]

Facts of the case

The 300m-long container vessel *Ever Smart* departed her berth and proceeded outward bound with her pilot in the Jebel Ali Channel.

During this period, the Master of the 269m-long tanker *Alexandra 1* misheard a VHF conversation from the port VTS. He thought the VTS had directed *Ever Smart* to alter course to port for him as he approached the channel. He maintained his course and increased speed to approach the entrance to the channel. The pilot of the *Ever Smart* disembarked to the pilot cutter while the vessel was still outward-bound in the channel and then proceeded towards *Alexandra 1*.



The collision occurred four cables outside the channel while the pilot was in transit between the vessels and amid much shouting to both vessels to go hard to starboard.

The court's decision

It is easy to become distracted at this point by the actions of the port VTS, the Masters and the pilot. The courts wanted to know whether the Crossing Rules applied before looking at other relevant issues such as maintaining a good lookout and the application of Rules 5 and 9. The latter were also considered by the court when apportioning blame.

Courts often reach their decisions after considering other similar cases and the application of common law. Here the court focused on a number of cases as well as expert evidence provided by court assessors both in the High Court and Court of Appeal. The court posed questions to the assessors regarding both the situation in the case and a hypothetical scenario where the *Alexandra 1* was approaching the channel from the opposite direction, showing a red aspect. The judgment expressed by the Court of Appeal was:

'…both sets of answers show that the crossing rule has no role to play in the approaches to a narrow channel.'

The court ruled that the actions of converging vessels in the approaches to a narrow channel are governed by Rule 2. In the case that the *Alexandra 1* had been approaching from the opposite direction her navigation would also be:

'…governed by Rule 2, thereafter by Rule 9 (once within the channel)'.

This judgment is applicable only in the approaches to a narrow channel (which is not defined) and not on the high seas, but it still appears to me to foster subjectivity and uncertainty. As a full-time pilot, I am confronted by this situation in the approaches to the channels of the Thames Estuary, sometimes on a daily basis.

I have canvassed opinion widely, and the consensus is that the Crossing Rules should always apply when convergence is going to take place outside the confines of a narrow channel. Where the Crossing

Rules cannot be applied effectively – for example at a pilot boarding area – then Rule 2 may be applied as an alternative, but only after clear and unambiguous bridge-to-bridge agreement from both vessels.

Traffic separation schemes

There are many instances where traffic separation schemes (TSS) form the lead-in to a pilot boarding area and a narrow channel. While navigating within a TSS, the advice is quite clear and contained within MGN 364. It states: *'Vessels proceeding in a TSS do not have priority over crossing traffic.'* Within the confines of a TSS alone, therefore, the Crossing Rules will apply.

In the complex traffic systems that serve many of the major European rivers it becomes even more important to understand what collision avoidance rules apply in defined and specific circumstances. I am not confident that this judgment has achieved this objective.

The courts also supported a second argument against the application of the Crossing Rules: namely that *Alexandra 1* was not maintaining a sufficiently defined course for the Crossing Rules to apply and make her the give-way vessel. The ruling of the Court of Appeal was:

> This judgment appears to me to foster subjectivity and uncertainty when, as a full-time pilot, I am confronted by this situation on a daily basis.

'The mere fact that there was a risk of collision through convergence, is not determinative of whether the crossing rules apply.'

For me, a vessel on a steady bearing and showing a green crossing aspect on my port bow would clearly be a give-way vessel.

Thankfully, the courts discounted a third argument, that *Alexandra 1* was restricted in her ability to manoeuvre by the fact she was embarking a pilot. The basis of disqualifying this argument was that the pilot did not get close enough to board *Alexandra 1*.

'She was not restricted in her ability to take such action by reason of embarking the pilot because that work had not commenced (and never did commence)…'

I had not considered this scenario before and do not wish to contemplate it while approaching a busy pilot station at night. I feel uneasy about any possibility of further interpretation of what might define a vessel restricted in its ability to manoeuvre in the future, but this door seems to have been left open.

Differing opinions

The Marine Accident Investigation Branch, with its considerable experience in collision investigations, drew different conclusions regarding the *Ever Smart/Alexandra 1* collision. By statute, MAIB findings cannot be considered by the courts. This is to protect the MAIB's mandate of carrying out investigations without assigning blame and also to help prevent similar events occurring in future. However, its investigators' expert views deserve an airing if only to highlight the way they contrast with the courts' decisions.

In particular, the MAIB did not consider the application of the Crossing Rules at all, but focused on Rule 5, the use of scanty VHF information and the actions of the VTS, pilot and Masters. My own view is that all participants in this collision believed that the Crossing Rules did apply once the vessels were outside the channel, based in part upon the VHF calls for *hard to starboard*.

This case has considerable significance for Masters and pilots. The rules of application must be clear. We shall wait in the approaches to this fairway to see which channel the mariner is directed to. However, the old phrase *'Let's pass conventionally'* may soon have little meaning if specific passing arrangements have to be made between all vessels navigating in the 'approaches to a narrow channel' – once we have a definition of what constitutes a narrow channel and its approaches, that is.

For those wishing to read the judgment in full, it is available free online at http://www.bailii.org/ew/cases/EWCA/Civ/2018/2173.html
The MAIB accident report can be found at https://bit.ly/2DAQr6O

Where's the confidence in CATZOC?

Where's the confidence in 'Zone of Confidence'?

Richard Leedham
Master Mariner BSc FNI FRIN

With the arrival of ECDIS and vector charts came the concept of the category zone of confidence – CATZOC. The idea was that it would be an easily understood visual reference indicating the quality of the data on which the chart was based. CATZOC is expressed as a series of letters A to D, plus U (unassessed) and also in the form of star ratings, with A1 (six stars) indicating the highest level of data quality and U (two stars) the lowest. Some enquiring mariners may well have explored this new phenomenon, but for the most part it was probably given scant attention – much like the survey source diagram on paper charts.

Ship operators are increasingly being asked to explain in detail how they use CATZOC data within their passage planning and monitoring processes. With that in mind, it is worth looking at CATZOC in some depth and also at the potential issues with the system.

The starting point

With paper charts, the diligent mariner could refer to the source diagram to gain an appreciation of how old the survey data was and how it had been obtained: this gave an indication of the likely accuracy of the survey. The experienced mariner knew that the surveys of certain areas, such as the South Seas, could date back as far as the eighteenth century. They would have been obtained by magnetic hand-bearing compass and lead line from a small tippy boat, with longitudes often dependent on chronometer error by lunar distance observations. Mariners might come across comments like 'This island is reported to lie five miles west of the charted position.' These were all evidence of what we would now call 'data quality'.

We took this in our stride. Day-to-day celestial navigation was generally even less accurate than the survey, and the prudent mariner made appropriate allowances for any errors in the chart.

The source diagram itself was easily understood but not particularly helpful. Other than alerting the mariner to the possibility that the charted data was not very reliable or accurate, it offered no practical means or guidance for assessing the degree of inaccuracy – certainly nothing of a numerical nature. It inherently recognised that the data, such as it was, was largely unqualified and unquantified.

With the coming of electronic charts, those curious mariners who investigated their new vector charts would have been amazed to discover the abundance of data attached to even a blank area of sea floor, such as M_QUAL (quality of data), M_ACCY (the average shift of data), M_SREL (survey reliability information), QUAPOS (quality of position) and so on.

Assigning CATZOC values

S-57, the data standard that defines how an ENC is constructed, allows the quality of survey data to be recorded using many such metadata values. However, these are not easily assembled into a coherent mental picture. CATZOC is intended as a single composite indicator for bathymetry, taking into account vertical and horizontal uncertainty along with an assessment of the completeness of the survey. It uses an algorithm to combine all these features and assign a single rating indicating the quality of the bathymetry overall. This replaces the source diagram of the paper chart.

However, a questionnaire issued by the IHO Data Quality Working Group (DQWG) and completed by more than 600 mariners worldwide clearly indicated that CATZOC was not well understood, nor liked, nor did it allow mariners to make adequate decisions based on data quality. The working group subsequently decided that CATZOC (in its currently recognisable form) will be dropped from the new S-101 chart standard. For the moment, however, the use of CATZOC remains a key part of the onboard audit process for some organisations – and is creating some problems.

A surfeit of data

In fact, much of the ENC metadata, other than CATZOC itself, is only relevant for data exchange between regional hydrographic offices. The philosophy appears to be that there is no particular reason to suppress it, rather than a specific intention that the mariner should use it. Recent requests to hydrographic offices elicited little help on how this data could or should be practically used by the mariner. Other organisations with arguably less knowledge or expertise have not been so reticent, however. This can lead to demands such as using CATZOC values to calculate underkeel clearances.

The problem seems to stem from the fact that, unlike the source diagram, CATZOC has numbers associated with it. When numbers are available, there is an unfortunate human tendency to try to coerce them into some kind of mathematical process. This probably reflects the equally unfortunate tendency to regard any information which is digital or numeric as somehow implying higher accuracy. We often see this manifested in unrealistic expectations of accuracy from electronic charts and other navigational equipment.

On paper charts, there was never any suggestion to try to make numerical depth allowances from the source diagram. The mariner (and those in other positions of influence) might do well to remember that it is precisely the same data on the ENC.

Taken to its logical extreme, using CATZOC values to reduce underkeel clearance implies that a ship navigating on electronic charts would be unable to load to the same draught as the same ship navigating on the equivalent paper charts, where no such values exist. Although there is no suggestion that this is actually happening, some anecdotal evidence suggests that ship operators are retaining or even moving back to using paper charts as their designated 'primary' system, partly as a result of the problems surrounding the understanding and use of CATZOC.

Practical issues

So much for the general concept of using CATZOC to determine underkeel clearance. When considering the practical detail, there are a number of problems that arise:

- In many cases, and particularly for old and very old survey data, there is little or no recorded information on the accuracy of the survey data from which to determine the metadata used for the calculation of CATZOC. Much of this therefore has to be estimated using broad generalisations. Footnote 3 to the CATZOC table states that 'Depth accuracy need not be rigorously computed for ZOCs B, C and D but may be estimated based on type of equipment, calibration regime, historical accuracy etc.'
- CATZOC is further degraded by certain hydrographic offices assigning unduly distrustful values to their published survey data. While this might assist them in reducing their liability in the event of a navigational incident, it is of no help at all to the poor Second Mate attempting to determine a sensible and workable underkeel clearance. Whatever the reason – technical or commercial – most of the world is currently rated as CATZOC D or 'unassessed'.
- To complicate matters further, CATZOC cannot currently indicate temporal degradation. The start and end dates of the survey may be encoded, but these are not represented. This is illustrated by the Goodwin Sands, where the banks have moved 1,500m between consecutive surveys (2.4m per week), resulting in drying heights where depths of 20m were available 12 years earlier. The ENC shows a CATZOC of A1 (ie accurate to within 5m), based on the quality of the latest survey, but the banks could be half a kilometre from their charted positions. While ENCs generally warn of shifting sands, unfortunately there will nevertheless be a tendency among some users simply to focus on the numerical data.
- CATZOC is a statistic and not an absolute. Footnotes 2 and 3 of the CATZOC table explain that the positional and depth accuracies quoted for each category are estimated only to 95% probability; in other words, there remains a 5% chance of the errors being greater. If we wanted an increase of the accuracy to, say, 98%, and assuming a normal distribution, the CATZOC margins would double – eg A1 would become +/-1 metre, C would become +/-4 metres etc. Even this would only reduce the risk to 2%. Finally, if we demanded <0.1% risk of grounding – as well we might – the CATZOC values would become so preposterously large that they would exceed the charted depth.

Dangers of misuse

Long before CATZOC came on the scene, we made broad empirical allowances in our underkeel clearance calculations – 10% of draught for ports and approaches, 25% for coastal passage etc. These broad-brush margins *included* the allowance for perceived charting inaccuracies. If we add a CATZOC allowance on top – as I have seen on some ships – we are unwittingly doubling these safety margins. When the navigating officer adds the 'CATZOC D: worse than (2 metres + 5% depth)' allowance on top of the 10% UKC allowance he has already made, it is little surprise that his vessel cannot enter the port.

So where does this leave the poor mariner? We can perhaps look to the guidance given in *NP 232 Guide to ECDIS Implementation, Policy and Procedures*. Section 12.4, for example, recommends allowing a blanket 10% of the calculated vessel draught in CATZOC A1/A2 areas, 15% in CATZOC B areas, and so on. This can be subsumed into the established UKC allowances we would make for in-port, coastal and deepsea stages to give a simple matrix giving the percentage UKC to be allowed in any combination of CATZOC and sea stage.

This could give a simple and easily applied criteria to replace the staged underkeel clearances we formerly allowed. However, although simpler, this approach tends to be more pessimistic than the detailed CATZOC calculations, especially at deeper draughts.

Alternatively, we can use dedicated software to generate the appropriate CATZOC allowance, together with tidal height and all the other underkeel allowances we want to apply.

Coping with the unassessed

Whatever method we use, one big question remains. How do we decide on a suitable allowance for areas that are either 'unassessed' or those rated D? Perhaps more importantly, what entitles us to do so, considering that the hydrographic organisations have conspicuously avoided doing so?

In the face of poor data, the only practical solution is to obtain up-to-date hydrographic information from the port. But the mariner is still left with a ship which – at least on paper – can't get into the port. The SMS has a specific procedure for this: a risk assessment is prepared. This acknowledges, among other things, that the vessel and other ships like it have safely visited this port at such draughts for many decades before, so an 'exception' is allowed by management. The danger is that such exceptions become the norm and are no longer properly scrutinised, which is how accidents happen.

In the way that it applies CATZOC, the industry has created a problem of its own making, where arguably none really exists. I leave the last word to Explanatory Note 10 to the CATZOC table, which states:

'The depth accuracy guidance found in NP 100 does not require the accuracy values to be deducted from the charted depth but for the mariner to be aware of the likelihood of a different depth within the accuracy values.'

This is sensible advice and puts us right back in the realm of the source diagram – and how we used it, all those years ago.

Is commercial pressure taking over?

Lack of understanding about operational issues is putting safety at risk

Vashchenko Leonid
MNI

The rise of communication technologies over the past two decades has changed relations between ship and shore unrecognisably and irreversibly. We have unmatched capabilities for information exchange, we can get rapid responses to a whole range of issues, we have immediate access to up-to-date information related to safety of navigation and shiphandling. It's all very inspiring, at first glance. But these benefits come with a down side: increased influence on shipboard operations by office personnel, who are often poorly informed or even incompetent in shipboard environment and operation.

This is not the first time this point has been raised, as displayed, for example, in the research by Prof Helen Sampson (*Seaways*, November 2017). However, the problem is not yet solved. On the contrary, the events described below show that in some cases priority is being given to commercial benefits rather than safety of navigation.

Pilotage payment

A post-panamax bulk carrier with maximum draught of 13.20m was bound for a port in the Baltic Sea, with charterer's instructions that pilotage was accepted from Grenaa to Gedser *only*. A few years ago, a vessel of approximately the same draught passed through the Great Belt in the opposite direction with similar instructions, which led to the Danish Maritime Authority sending an official letter to the flag state administration and internal investigations being conducted.

With this incident in mind, the navigational officer advised the Master to request full pilotage via Great Belt Route T. This is in line with IMO SN.1/Circ.263 of 23 October 2007 sections 1.9 and 1.14, which recommends use of pilotage from Skagen to Gedser and *vice versa* for ships with a draught of 11m or more following Route T.

The Master's request also cited the official opinion of the local authority: *"The Danish Maritime Authority would like to point out that international consensus on recommending use of pilotage was achieved owing to the risk of groundings or collisions of large ships navigating through Danish waters.… The Danish Maritime Authority… believes that the knowledge of a pilot would have improved the safety of navigation. Therefore the Danish Maritime Authority highly recommends that a ship with a draught of 11 metres or more uses the pilotage services established by the coastal State on its entire passage from Gedser to Skagen and vice versa."*

Charterers again refused payment in full, basing their decision on the grounds that they accepted 'only compulsory pilotage' and full pilotage 'was not recommended'. The most upsetting issue in all this case was that the crew received no support from vessel's management office, even though they were aware of similar circumstances in the past. The Master and mates felt that this was ignoring possible risks in favour of customer satisfaction. Fortunately, the Master's overriding authority and the support of the owner's representative, also a former Master mariner, ruled that the situation was incompatible with navigational safety and good seamanship, and a pilot was taken on.

We should note that in arguing his decision, the Master relied on formal international documents. This is in contrast to the next case, where the decision was based on experience, navigational knowledge, common sense and internal company requirements.

Under pressure

A vessel was about half day a day out from a Spanish port on the Biscay coast, with no fixed ETA under the charter party. The weather was worsening as an area of low pressure approached and the Master decided to alter course back to the open sea to have a safe margin, as prescribed by company policies, among other things. However, for some company officials, the major concern was not the safety of crew, ship, cargo and the environment, but only the delay in arrival.

Handling the ship during the adverse weather was not the most difficult task the Master faced. Quite apart from the effects of the barometric low, the mariners also encountered high pressure from

Office staff may be unaware of the issues faced by crew onboard
Photo credit: Capt N Chalaris AFNI

the office, dealing with a fair amount of emails and even borderline abusive telephone calls, in an effort to override the Master's decision.

In spite of the Master referencing company requirements for heavy weather navigation, and giving proof of the conditions (ship's log, meteorological data, weather forecasts and anlyses), he was called in to the office to account for his actions. Fortunately, the investigation was concluded without any further consequence.

A low bar

A capesize bulk carrier of about 180,000dwt was considered for loading in a North American port situated on a river. The river navigation included passage under a bridge. There was a mismatch in the vessel's air draught and the bridge height, which the Master determined to be a limiting condition. The operational department suggested adjusting the vessel's ballast to 'port use'. On the face of it, this was a reasonable solution for passage on inland waters, but they failed to take into account the following factors:

- No suitable anchorages along the river before the bridge
- Pilot boarding position situated just before bridge passage
- Exceeding draught by one inch is grounds for pilotage cancellation
- Not enough swinging room in the pilot boarding area.

In other words, what was being proposed was a risky attempt to adjust the capesize's ballast while underway on a river where water density can fluctuate, with no ability to make a turn if the draught was exceeded and pilotage cancelled. The Master evaluated this as a high-risk manoeuvre and explained this to the office.

His judgement was not considered to be sufficient reason to withdraw the vessel. The managers insisted on the importance of the anticipated high profits, which were necessary during a period of bulk market stagnation. They criticised the seafarers for refusing voyage orders, contrasting them to those on a similar vessel that they said was in full readiness to carry out such operations. The Master contacted his counterpart on the ship that had been mentioned and found that he was under exactly the same pressure. The only difference was that the operational department was holding up the Master of the first vessel as an example of full readiness to co-operate. The two captains combined their skills, experience and authority to carry out a comprehensive risk assessment and insisted on their judgement.

The operational department dismissed the voyage instruction only after the intervention of the local agent, who obtained advice from the local pilot service and supported the two Masters' summaries. The persistence of the operational department seems particularly strange here as there was no loss of freight. The problem could have been solved simply by nominating a panamax or even post-panamax vessel for this charter.

What's in a name?

The combination of a lack of specialist knowledge and desire for high profits may lead to a mariner's expert opinion being distrusted. This can lead to some curious discussions.

An operations department was genuinely surprised that a partly discharged capesize bulk carrier with a draught of about 13.5m and breadth of 45m was not able to complete discharging operations in a terminal with available depths of not more than 9m and a width of 35m between wharfs. They explained that the vessel's sister ship had fully discharged at this terminal without any problems. When the dimensions of the supposed 'sister ship' were examined, the vessel turned out to be a handymax – the only family resemblance between the two vessels was the name of the shipyard that built them.

The dispute was not prolonged, as the scale of the port facilities disposition and ship's breadth are static values and not subject to argument. This is a contrast to the case above, where lack of awareness of issues regarding dynamic values and port limitations resulted in more controversial negotiations.

Identifying trends

In the first two case studies we see a refusal to accept additional expenses by shore-based managers who interpret the voyage as fixed financial income with fixed costs. In the first case, pilotage was considered as an optional extra; in the second, there was no appreciation of the sometimes unpredictable natural forces that seafarers deal with every day. This (mis)understanding of vessel passage as nothing but a line in a spreadsheet, combined with amateur attempts to interfere in shipboard operations, often leads to additional risk being imposed on the vessel and seafarers.

It is obvious that the freight market crisis is forcing operators into making unorthodox decisions. It is also apparent that operational employees can be unaware of shiphandling limitations. Nevertheless, it is incomprehensible why risks to reputation and of financial loss are not thoroughly evaluated.

These situations occur frequently, and most Masters and mates are likely to have faced something similar, for example:

- Lack of awareness of basic shipboard operations
- Ship's voyage considered as fixed budget income. Well-founded but unexpected expenses are seen as financial losses or optional services
- Doubt is regularly cast upon Master's and mates' judgement and risk assessments
- Attempts to prevent Master and crew from taking action that they believe to be in the best interests of their own safety and that of the vessel, in some cases even overriding the Master's authority, often in favour of commercial interests
- Problems are solved in favour of shipboard personnel only after other shore-based employees intervene
- Overall lack of respect in communication, with use of an abusive tone or even shouting, especially during telephone calls
- Pressure applied through threats of demotion or dismissal.

All of this looks like a 'white collar' desire to steer oceangoing vessels using email and cellphone. Such attempts seldom result in effective management. The vessel already has its own managers certified under STCW A-II/2, and this onboard management is very different from the system found in offices ashore.

In this age of the highest level of ship-shore interaction ever, the adoption of an international resolution or convention for maritime industry office workers seems to be a potential solution. This document should codify the issues for which shore-based personnel are answerable, and set out terms of liability and a code of conduct. The authority of the Master and officers as a general component of industry management needs to be legislatively protected from intervention by shore-based personnel.

It is also important that senior figures in the shipping industry pay more attention to these cases and understand the gravity of the situation.

Seafarers understand the situation on board better than anybody else. Notwithstanding the huge advances made in communications and other technology at sea, seafarers remain the only people who can effectively respond to the everyday challenges they face. They must be given full scope to exercise their own professional knowledge, skills and experience, to have confidence in their decisions and the ability to assert them. Only in this way can we avoid unnecessary hazard to life and health, risk to property and environment, and possible financial and reputational loss.

SIRC has recently launched a free training resource to help make shore staff more aware of the issues faced by those onboard. See page 23 for more information

Port Collaborative Decision Making

Making port calls more predictable can improve the experience for ships' Masters and ship operators alike

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Research Institutes of Sweden (RISE),
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How many times have ships been delayed and not arrived at a port at the allotted time? How many times does a ship arrive at a port which is not ready to serve the ship when it does arrive? In many cases, the issue arises because not all parties are aware of the delays in time to take remedial action and save on the unnecessary use or deployment of resources.

Port Collaborative Decision Making (PortCDM) aims to improve this by enabling captains, ship operators, ports and the other parties involved in the marine transportation chain to keep each other informed of progress and take appropriate actions as soon as any delays or changes to the existing plan become known.

Informed by the aviation sector (AirportCDM), Port Collaborative Decision Making (PortCDM), as an enabler of the Sea Traffic Management (STM) concept, is being brought to the maritime sector to enhance port operations. Benefits of PortCDM include meeting the demands from shipping companies for improved just-in-time arrivals and departures, as well as faster turn-around during port visits. This is of particular relevance in the context of delivering efficient and environmentally sustainable sea transport. PortCDM aims for closer integration between sea operations and port operations through shared and common situational awareness

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Developing the concept

The MONALISA and the STM Validation Projects, sponsored by the European Commission, have been used to define, validate, and disseminate the PortCDM concept. The PortCDM concept builds upon universal standards for data sharing that are part of the common maritime data structure (CMDS) – a key factor in IMO's vision for e-Navigation. With the support of IALA and the International Electrotechnical Commission (IEC), the port call message format (PCMF) and the route exchange format (RTZ) enable all involved parties to share situational awareness of the progress of key events in the marine transportation chain with a focus on port call activities. A number of PortCDM concept notes have been published by Fathom World (to be found at www.ipcdmc.org) to highlight the operational and business improvement opportunities emerging from enhanced data sharing related to port operations. A section of one of these notes appears in the box below.

> "Under PortCDM, as plans and progress changes, it should be possible to trigger automatic alerts to those affected further along the marine transportation chain, so that they can take appropriate action."

An example in practice – short sea shipping

Short sea shipping is particularly challenging because of the short horizon for the planning of operations. PortCDM can assist by supporting the exchange of standardised messages between neighboring ports.

The STM validation project identified a desire for the next port in line to know about the progress in the previous port and also to know about the status in the next port in a sequence of port visits. Special focus is directed towards the provision of timestamps of the estimated and actual time of departure from the previous port visit (ETD, ATD) and the estimated time of arrival (ETA) to the next port. When accurately communicated between ports, these timestamps can form the basis for better coordination of the port call activities at the port of destination, especially when there is only a short distance between the ports.

Equally important is to continually track the vessel at sea, either by continuous ship-2-port communication or by other means of tracking, once the voyage begins. Ship-2-port communication within STM is enabled through the exchanging of voyage plans in a standardised format between the ship and the destination port. At this point we should emphasise that the various decisions made at the previous port are just an information component contributing to situational awareness. It is always the captain of the ship who decides when to leave berth.

For this vision to become reality the ports and ships have to be able to communicate by digital means in a common language. STM addresses this need by promoting information services using standardised data exchange formats (eg the route exchange format (RTZ) and the port call message format (PCMF)).

What is PortCDM?

PortCDM is an organisational concept. It is aimed at enabling more predictable timings and operations in sea transport by building on unified and standardised data exchange protocols. PortCDM addresses the need to ensure a continuous flow of data about intentions, outcomes, and possible disruptions related to movements and service provision among all those involved in the berth-to-berth maritime transport process. This results in a high degree of predictability in the planning and execution of all associated operations and activities.

PortCDM enables all the actors to share the same situational awareness based on input from multiple sources. Under PortCDM, as plans and progress changes, it should be possible to trigger automatic alerts to those affected further along the marine transportation chain, so that they can take appropriate action. The availability of such a holistic view enables and fosters collaboration. In turn, this enables efficient and successful coordination and synchronisation, which benefits everyone, not least the end customer or recipient of the goods being transported.

How does it work?

As far as possible, the exchange of the information that underpins the PortCDM concept is achieved automatically using existing equipment as part of the ever-increasing shift towards a digital data environment at sea. A combination of equipment can be used onboard ships to ensure a solid flow of communication between a ship and its dependencies. This includes ECDIS equipment, onboard computers and tablets/mobile phones. Cyber security is addressed throughout the exchange of data. A simple demonstrator provided via GooglePlay and Apple IOS was used in the STM validation project to provide ships' captains with situational awareness related to their port visits (see screenshots below).

The PortCDM process is intended to be dynamic and transparent through the use of standardised messaging and interfaces that trigger and prompt the various actors to review exception alerts and take actions based upon their physical capabilities, preferences, and requirements. Provided everyone is kept informed, multiple revisions or iterations to plans can take place during a single port call while at the same time minimising the overall disruption to the final outcomes.

PortCDM does not call for process changes but focuses on a more dynamic and effective delivery of the existing processes through greater collaboration and the availability of high quality, near real-time data to all the relevant and authorised actors in the maritime transportation ecosystem. PortCDM will be underpinned by appropriate protocols to ensure robust data integrity and access control.

When will it happen?

The International PortCDM Council (IPCDMC) has been formed to cater for the emergence of the PortCDM concept on a global level. The IPCDMC provides guidelines for the global governance of PortCDM that should be implemented at regional and local levels. Because PortCDM is a scalable concept, one of the tasks of the IPCDMC is to maintain a PortCDM framework for maturity levels. This will enable all actors to know how well advanced each port is in embracing PortCDM and what level of information service it can support: from the exchange of basic information at Level 1, to Level 6 or 7, where all the stakeholders represented in a port have agreed to use PortCDM for optimal planning of port calls.

The ultimate goal is to enable the ships' Master, the ship operator and other shore authorities to connect to ports that have adopted the PortCDM standardised interfaces to enhance situational awareness of the plans and progress of forthcoming port operations. The journey towards more globalised and harmonised data sharing has just started.

More information about PortCDM can be found at www.ipcdmc.org or www.stmvalidation.eu, or from:

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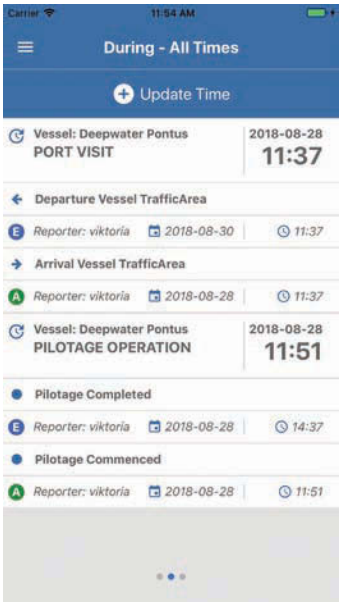

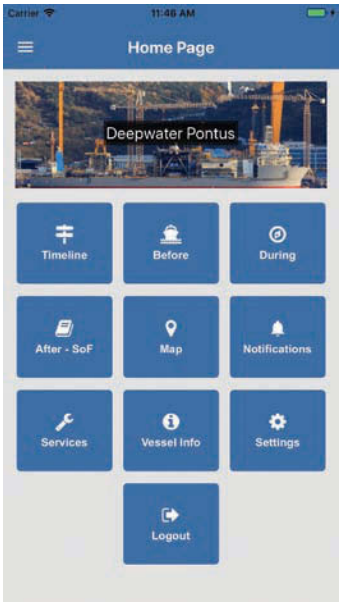

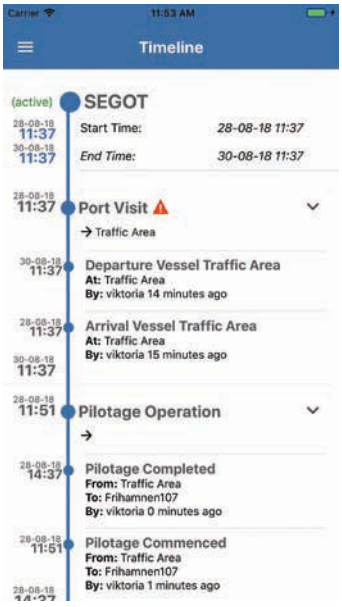

Environment principles and the law

International environmental law, navigation regimes and the law of the sea

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The sea needs to be protected from pollution, extensive use and resource degradation. To this end, international environmental law is meant to manage natural resources and environmental quality. The Stockholm Declaration, the Rio Declaration and various charters and conventions all incorporate important principles of environmental law. Article 192 of the United Nations Convention of the Law of the Sea (UNCLOS) emphasises that all states must 'protect and preserve the marine environment,' both within and beyond national jurisdiction.

This article briefly reviews the essential elements of UNCLOS and the ways in which they interact with the principles of international environmental law.

International environment law principles

The principles of international environment law, as set out by Phillippe Sands in 1995, are incorporated in various international agreements and non-binding documents. Several of these principles interact with navigational regimes under the Law of the Sea:

a. States have sovereignty over their natural resources and the responsibility not to cause environmental damage
b. Preventive action
c. Good neighbourliness and international co-operation
d. Sustainable development
e. The precautionary principle
f. Polluter pays
g. Common but differentiated responsibility.

Maritime zones

UNCLOS divides the maritime environment into 'maritime zones' and 'navigation regimes'. The maritime zones are:

- Territorial seas
- Exclusive economic zones
- Continental shelves
- Areas beyond national jurisdiction such as the high seas.

These zones are crucial when deliberating on principles of environment law.

According to Article 192 of UNCLOS, marine conservation is the responsibility of the coastal state. As the authority of the coastal state terminates at the high seas, the convention also sets forth the responsibility of all states to protect the environment and reduce pollution beyond that point.

Navigation regimes

UNCLOS identifies four navigation regimes (that is, sets of rules governing the behaviour of vessels in certain circumstances) in addition to customary international law. All of these regimes are influenced by and interact with environment law principles. These regimes are:

a. Innocent passage through the territorial sea and archipelagic waters
b. Transit passage through straits used for international navigation
c. Passage through archipelagic waters
d. Navigation of the high seas.

Navigation regimes are particularly important to the protection of the marine environment and have paved the way in ensuring the conservation of the marine environment and wildlife.

Principle of sovereignty over natural resources

According to Article 56 of UNCLOS, the coastal state has the supreme right to explore, exploit, conserve and manage natural resources. Article 61 gives it the right to determine the permissible catch of the living resources in its areas of jurisdiction. However, it also directs the coastal state to ensure that living resources are not endangered by over-exploitation.

Principle of sustainable development

Article 61 further indicates that the sustainable development principle directs states to maintain or restore populations of harvested species at levels that can produce the maximum sustainable yield. This permits coastal states to apply their own laws to preserve the navigational regimes under their jurisdiction to prevent unregulated fishing.

In spite of the freedoms of the high seas, environment law principles still have great relevance to issues concerning the freedom of fishing and freedom of scientific research. In this regard, states do not have the jurisdiction to pass laws concerning sustainable yield on the high seas. However, through Article 116, UNCLOS gives some guidance on how to determine catch limits. These principles of environment law, which are equivalent to Article 118 of UNCLOS, declare that states are bound to co-operate in the conservation and management of resources in the high seas.

Polluter pays principle

Principle 21 of the Stockholm Declaration ascertains the sovereign right of states to take advantage of national resources and their responsibility to guarantee that the activities within their control do not cause damage to the environment of other states. The power of coastal nations to enforce anti-pollution measures differs according to the location and the nature of the waters in question. Article 211(4) of UNCLOS, which incorporates principles of environmental law,

allows coastal states to adopt laws and regulations for the deterrence, reduction and control of marine pollution from foreign vessels, including vessels exercising the right of innocent passage.

Where violations have occurred within the territorial sea, only monetary penalties are imposed unless the vessel has intentionally caused serious pollution. This has a direct bearing on the polluter pays principle, under which the party responsible for pollution or degradation of natural resources is obliged to pay for restoration, clean-up, economic losses and damage to health.

UNCLOS Article 43 provides for co-operation between user states and states bordering a strait to provide navigational and safety aids and to prevent marine pollution. In some cases, this creates a problem because user states have been reluctant to contribute to the costs. However, it has also created a way for user states to be involved in the management of the straits, which is important for navigational safety.

Principle of common but differentiated responsibilities

Under the principle of common but differentiated responsibilities, all countries have equal responsibility for the protection of the global environment; however, the richer countries have a particular responsibility to undertake and pay for remedial action, such as the maintenance of straits. States with archipelagic sea lane passages (ASLPs) are eligible for support under this principle. A good example is the Cooperative Mechanism for the Malacca and Singapore Straits. This joint project aims to:

- Improve navigational safety by removing wrecks
- Replace aids to navigation destroyed by the 2004 tsunami
- Build capacity for response to accidents involving hazardous and noxious substances
- Provide financial contributions to the Aids to Navigation Fund.

Principle of preventive action

The principle of preventive action is also an obligation under the international environment law. The designation of archipelagic sea lanes to protect a delicate marine environment, or the use of domestic legislation to declare zones of restricted access, are just some of the countermeasures that may be applied to prevent, reduce or limit marine environment degradation. The Philippines consists of a span of atolls that are rich in marine biodiversity. In order to preserve this environment, the country has chosen not to designate an ASLP in the archipelago, citing the principle of preventive action.

High seas, straits and flag states

The high seas are shared by all. Due to this commonality, the conservation of the oceans has become a matter of priority. Environmentally irresponsible conduct on the high seas can be punished via the flag state of the offender. Flags of convenience, or vessels registered with states that do not prescribe or enforce rigorous fishing practices, sanitation and pollution control standards, are weaknesses of the high seas regime.

Straits play a key role in navigation, but are vulnerable to pollution. This can create situations in which the interests of the flag state are at odds with those of the coastal state. Unimpeded navigation of these waters is of considerable importance to flag states. Coastal states, on the other hand, are confronted by a range of risks brought about by heavy traffic, creating concerns for the marine environment. Accidents are more likely to happen in straits than in open seas, and spills of harmful substances may have more serious consequences near the coastline and in shallow waters.

Flag states have the same expectation and interest within archipelagic waters as they do in straits used for international navigation. Coastal states will also have more or less the same concerns, due to the often enclosed character of archipelagic waters. Articles 37 and 38 of UNCLOS introduced the concept of the right of transit that applies in straits used for navigation. A legal provision to control and regulate vessel-source pollution in such straits is modelled under Article 42(1) of UNCLOS Part III. However, there are no particularly relevant provisions for coastal states enforcing jurisdiction over ships carrying hazardous cargo and any pollution they may cause.

Vessel source pollution – opposing views

UNCLOS defines the exclusive economic zone (EEZ) as 'an area beyond and adjacent to the territorial sea' in which the rights and jurisdiction of the coastal state and the rights and freedoms of other states interrelate. The United States takes a different view. It asserts that freedom of navigation on the high seas should be available to military vessels and aircraft, with rights to conduct military operations, exercises and activities to be enjoyed by all states in the EEZ. However, military operations have environmental implications, including key environmental challenges such as sonar operations.

In addition, the United States does not recognise the right of innocent passage through archipelagic waters. The USA once manoeuvred aircraft carrier USS *Carl Vinson* and operated aircraft within Indonesian archipelagic waters, claiming freedom of the seas. This challenged Indonesian domestic law and undermined precautionary laws imposed to protect the environment.

China has ratified UNCLOS but has a different stance on the issue, asserting that a third country must obtain prior permission if it chooses to use China's EEZ for military – or even other – purposes. It considers warships or similar vessels entering the Chinese EEZ without such permission to be in violation of both national and international law. China has used force at sea towards US ships in an incident of bravado that confirms the Chinese hard line against states that engage in unauthorised military activity within its exclusive economic zone.

These different state practices demonstrate the various interpretations of navigational regimes and the associated environmental laws to prevent vessel-source pollution. UNCLOS Article 220 paragraphs (3), (5) and (6) are concerned with the coastal state enforcing jurisdiction over vessel-source pollution within the EEZ. This reflects an exercise of enforcement that depends on the seriousness of the damage.

Can maritime law and international environment law support each other?

The principles of international environmental law can be considered as basic elements of a framework statute that can be used as a base or general guide for introducing laws on the marine environment. The legal status of international environmental law principles and concepts varies. Some have already been constituted into laws; others are evolving and in the process of gaining acceptance.

The following discussion looks at how environment law principles are interacting with legal treaties and maritime laws. Mostly they are brought into use to fill the legal gaps in a particular law related to the environment, thus providing guidance on law enforcement.

UNCLOS's navigational regimes for regulation of vessel-source pollution build mainly on rules originating from the principles of international environment law. Any state has both the fullest rights over its natural resources and a duty not to cause damage to its environment. These obligations are reflected in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration. These principles support the sovereign rights of the state, while providing a legal basis for bringing claims for environmental damage. However, increasing numbers of substandard ships and pollutants entering navigational regimes has become a common tragedy.

The other principle of environment law, which applies especially to navigational regimes under state jurisdiction and state sovereignty, is

the Principle of Preventive Action. According to this principle, every state is under an obligation to prevent damage to the environment within its own jurisdiction. This includes the obligation to take appropriate regulatory and administrative measures.'

Article 74 of the UN Charter directs states to practise the principle of good neighbourliness and international co-operation. This principle is subject to many treaties and other international acts and is further supported by state practice. Principle 24 of the Stockholm Declaration has declared general political commitment to international co-operation in matters concerning the protection of the environment. Furthermore, Principle 27 of the Rio Declaration directs states and people to co-operate in good faith while fulfilling the obligations of the declaration.

The principle of sustainable development focuses on the adoption of standards for the management of specific natural resources and marine living resources. This concept considers the conservation needs of present and future generations while limiting the exploitation of natural resources. UNCLOS 1992, EEA agreement, the 1989 Lomé Convention and 1987 'Bruntland report' have effectively incorporated and used the principle of sustainable development.

Prevention of harm

Rules of liability and compensation for damage establish an incentive to prevent harm, and also may require restoration. Several treaties have been adopted to establish rules of liability in relation to pollution or damage to the environment. There is evidence to suggest that conventions such as MARPOL 73/78, the Oil Pollution Liability Convention and the dumping conventions have contributed positively to the protection of the marine environment. This particular law incorporates the essence of the 'polluter pays' principle, whereby the cost of environmental restoration has to be borne by the polluter.

Australia, which is reliant on the shipping industry, has recognised the environmental and economic impacts of the introduction of marine pests via ships' ballast water as a threat to its marine environment. Accordingly, it has introduced mandatory ballast water management (BWM) requirements to reduce the risk of introducing harmful aquatic organisms into its waters. All internationally plying vessels intending to discharge ballast water anywhere inside the Australian territorial sea are required to manage their ballast water in accordance with these mandatory BWM requirements.

The approaches enshrined within the United Nations Convention on the Law of the Sea on marine environment protection do not have much to do with pollution from land-based and other sources. However, the environment principle developed in Agenda 21 on improving coastal zone management and regulatory human habitats recognises that the protection of the ocean and seas from land-based pollution will ultimately be achieved only by integrating considerations derived in international environment law, such as the precautionary principle.

One of the main sources of pollution from vessels is operational discharges, such as from the cleaning of tanks, deballasting or from discharges following accidents. The prevention of such pollution is addressed mainly by UNCLOS and MARPOL 73/78. Article 208 of UNCLOS directs that a state should protect the sea bed environment through national laws, but these laws should not be diluted to be less effective than international rules, principles and recommended practices. This precautionary principle has the widespread support of the international community.

Legal obligations

Principle 7 of the Rio Declaration states that signatories 'shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem'. The special needs of developing countries and their capacities, and the principle of common but differentiated responsibilities, have also resulted in the establishment of an institutional mechanism to provide financial, technological and other technical assistance to developing countries by helping them to implement the obligation of particular treaties.

In contrast to environment principles, treaties and conventions have derived rules in a practical and binding manner. The environment principles have evidently guided these treaties, laws and conventions and served as a theoretical basis for various issues. Hence environment principles and rules point to particular decisions on legal obligations in special circumstances, but the directions that they give differ in character. Environment principles embody legal standards but the standards they contain are more general in nature. Unlike rules, they do not specify particular action.

Future of environment law

The complexity of this discussion reflects the extremely complex nature of the passage regime laid down in UNCLOS. Environment principles have been incorporated into many environment laws, treaties and conventions. Their application when it comes to navigational regimes can be ambiguous, particularly whether there are complications in identifying which passage regime applies. The application of environmental factors leads to unresolved questions and is not commensurate with the right of innocent passage, transit passage or non-suspendable innocent passage etc. Certain articles in bodies governing environmental law, including UNCLOS, use ambiguous language with undefined key words, which could lead to vague interpretations. This ambiguity allows countries in the Asia-Pacific region to affirm opposing views on the application of UNCLOS and its environment obligations in different navigation regimes.

Certain states have introduced domestic/international legislation to overcome particular articles of UNCLOS that are contrary to their maritime interest, and they have also confused the validation of UNCLOS in navigational regimes. It is a duty of all states to have a greater clarity and understanding of the Law of the Sea, particularly with regard to navigational regimes and environment protection.

UNCLOS is without qualification the single most important and far-reaching legal instrument to address issues of marine conservation. The comprehensive nature of UNCLOS provides a framework to address future issues in the law of the sea, and its provisions can foster additional progress in environment conservation. However, the future of marine conservation depends upon the ability and willingness of states to interact comprehensively with these common objectives and on the capacity of individual states to prescribe and enforce their own marine conservation laws according to the environment law principles.

This is an edited version of a paper first given at AMFUF. A full, and fully referenced version is available from editor@nautinst.org

Mariners' Alerting and Reporting Scheme

MARS Report No. 314 December 2018

Note to our readers

Some readers may have noticed that certain MARS reports based on official accident investigations sometimes contain 'lessons learned' that are not found in the published report. It is true that most official reports do not actually contain 'lessons learned' but rather findings, conclusions and/or probable cause. Investigators are required to limit the scope of their published findings to the facts contained within the report and are also limited by the investigative agency's precisely defined mandate. In MARS, we have more latitude, and can use the accident report to serve a wider purpose through encouraging potential improvements to safety.

Astute readers may also have noticed that some MARS reports leave out a few of the findings contained in the official accident report. This is unavoidable when a 50- or 100-page report has to be compressed into just three paragraphs. Clearly, a choice has to be made about which of the lessons learned are the most important to bring to readers' attention. We strive to create the biggest positive impact from the most concise report.

Although we use official reports in MARS, we strongly encourage readers to send in their own reports of accidents or close calls. You can submit a report either as a pro-forma company report or on the form available at https://www.nautinst.org/en/forums/mars/submit-a-report.cfm. Don't forget to send photos – each one is worth a 1,000 words! Reporters must identify themselves to the editor for quality assurance purposes, but we carefully edit all reports and images published in MARS to remove any names or other identifying marks.

MARS 201875

ECDIS shortcuts contribute to grounding

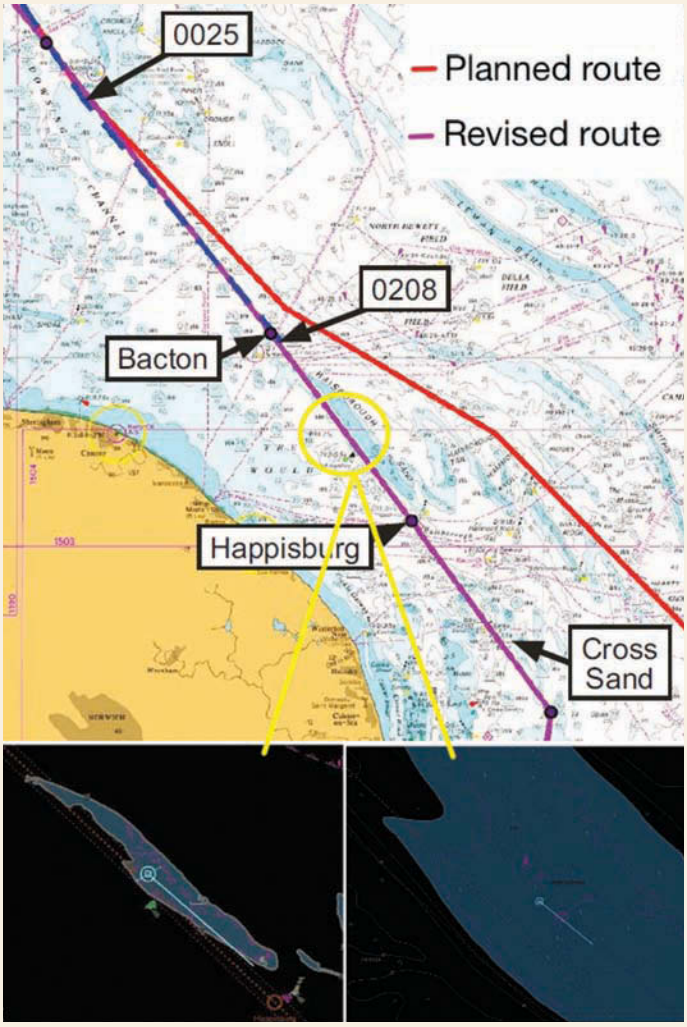
As edited from official UK Maritime Accident Investigation Branch (MAIB) report 22-2017

➔ A small bulk carrier was on passage at night with good visibility and fair weather. The vessel was following a track displayed on the ECDIS and was making good a course of 146º in autopilot steering at a speed of about 11kt.

During the watch handover at midnight, the Master instructed the OOW to amend the passage plan to follow an alternative route. The OOW amended the passage plan on the ECDIS and adjusted the vessel's heading on the autopilot to 140˚, following the revised track. The OOW then sat in the starboard chair while the lookout alternated between standing on the bridge's port side and sitting in the port chair. The lookout routinely reset the bridge navigation watchkeeping alarm system (BNWAS).

The vessel was 600m to the north-east of the revised track when the OOW adjusted the heading to 146º towards the waypoint 'Happisburg' to the south of Haisborough Sand. About 40 minutes later, the OOW felt a change in the vessel's motion. On seeing the speed reduce quickly, the OOW called the Master. The Master and chief engineer arrived on the bridge one minute later. Meanwhile, the OOW had zoomed in on the ECDIS display and changed the chart view display from 'standard' to 'all', which showed more detailed depth information. The Master realised that the vessel was aground and put the engine telegraph control to stop.

It took five days to refloat the vessel, which subsequently had to be towed to port to repair a damaged rudder.



ECDIS 'standard' view

ECDIS 'all' view

Some of the report's findings include:

- The OOW's visual check of the revised route did not identify that the track over Haisborough Sand was unsafe; it was neither planned nor checked on a chart of appropriate scale.
- The revision of the passage plan conflicted with the OOW's watchkeeping duties and the Master did not check and approve the revised route.
- The audible alarm and the guard zone had been disabled, removing the ECDIS barriers intended to alert bridge watchkeepers to imminent danger.
- The use of the 'standard' chart view limited the information displayed. Relying on visual checks when passage planning meant the process was prone to error.

Lessons Learned

- Changing a passage plan 'on the fly', in this case at night, while underway and without the Master's final check, introduces additional risks.
- Select the appropriate level of zoom and chart view when using ECDIS, especially when navigating coastal waters.

■ **Editor's note:** While ECDIS is undoubtedly a leap forward in continuous situational awareness when compared with paper charts, like any tool it must be used appropriately. The ease with which a route can be changed should not relieve the mariner of the need to verify that the route is actually safe for their vessel.

MARS 201876

Charcoal fire in container

As edited from official BSU (Germany) files 455/15 & 58/16

➔ On two container vessels, fires broke out in containers loaded with charcoal in bulk even though the charcoal had passed the UN N.4 test and was not classified as self-heating. In both cases, the charcoal cargo originated in the island of Borneo, Indonesia, and was destined for the same consignee. Due to the similarity of the cause of the fires, the investigation of the two cases was summarised by the BSU in one investigation report. On each vessel, the fires were controlled and extinguished with a minimum of damage to surrounding containers.

Charcoal as loaded in container

The report's findings include the following:

- It is not possible to fully determine the hazardous material properties of charcoal based on the UN N.4 test alone. This is at least true of charcoal that passes the preliminary test and is then transported in large packages or in bulk in large sea containers, for example.
- The UN N.4 test does not sufficiently address the dependency on the volume of the goods transported.
- In multiple instances, the cargo documents examined in connection with this case could not be definitely linked to the cargo transported – see Lessons Learned below.

Lessons learned

The website CargoHandbook.com provides the following recommendations for the transport of charcoal that is not classified in documentation as dangerous goods:

- Check that the laboratory certificate is applicable to the customer…
- Check that the laboratory is accredited by the competent authority…
- Check that the manufacturer's name is shown on the laboratory certificate…
- The laboratory certificate must accompany the shipment. After the containers have been stuffed, the container numbers are to be added to the certificate (hand written is acceptable) and placed on board the vessel…

MARS 201877

PFD will float, you just can't put it on

As edited from US Coast Guard Safety Alert 1118

➔ During recent US Coast Guard inspections it was discovered that the securing strap of many lifejackets produced by a particular manufacturer were defective. The securing strap was fused at a point where it should have allowed sliding movement. As a result, a user would not be able to separate the halves of the personal flotation device (PFD) to allow proper donning of the vest.

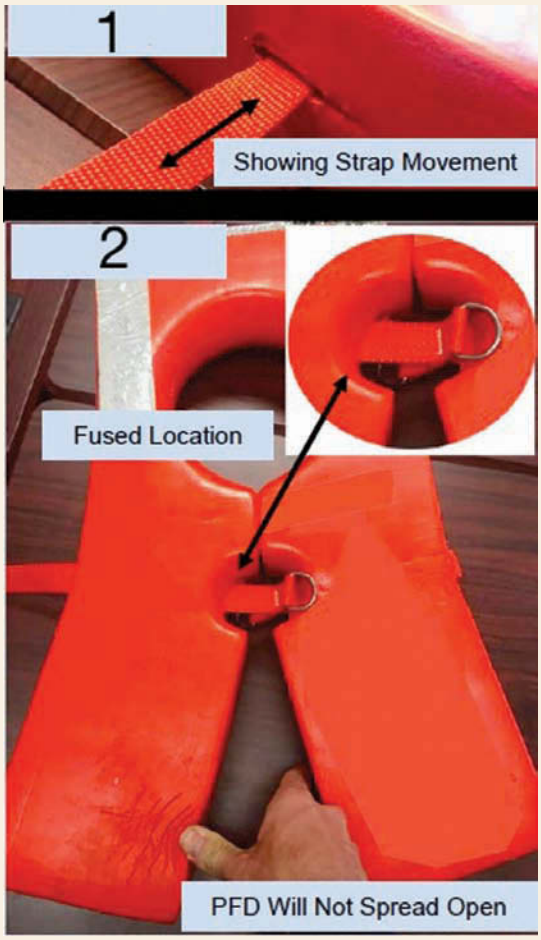


Figure 1 shows a proper lifejacket while Figure 2 shows a defective example.

Lessons learned

- Lifejackets are there to save your life – inspect them regularly and with diligence.

MARS 201878

Fingers squeezed by crane wire

➔ Three crew members were in the process of reeving in the topping wire of the provision crane. One crew member was guiding the wire on to the warping drum while another signalled to the bosun who was using a remote control on deck to run the drum.

At one point, wire pinched the fingers of the crew member guiding it, causing him to cry out in pain.

The bosun reacted quickly but, out of confusion and panic, he operated the crane in the wrong direction, which resulted in the crew member's hand being further squeezed by the warping drum. First aid was immediately administered. Because of the severity of the injury, however, the victim had to be signed off from the vessel and sent ashore for further medical attention.

The company investigation found that the bosun, who had just joined the vessel, was not sufficiently familiar with the safe and smooth operation of the crane.

Lessons learned

- A toolbox meeting (or Take-5 system) that exposes the job hazards and mitigation measures can help reduce accidents.
- Co-ordination and communication techniques should be agreed upon while performing any job that involves more than one person.
- Proper familiarisation should be given to any newly joined crew members. For example, the first few operations of the crane by a newly joined member of crew should be done under supervision of a qualified officer or other experienced crew member.
- Operating procedures and the instructions on the crane's key controls (with photographs) could be posted near the provision crane operating position for easy reference.

MARS 201879

Fire feeds on unnecessary materials stored in engine room

As edited from NTSB official report MAB 17/28

➔ A tug was towing a loaded barge in coastal waters when a fire alarm for the upper engine room activated on the wheelhouse fire panel. The OOW tried to reset the alarm and to establish whether it had activated falsely; however, the alarm continued to sound. Moments later, a crew member alerted the wheelhouse that he had seen smoke.

The Master and the rest of the crew quickly arrived in the wheelhouse with lifejackets and immersion suits in hand. The Master instructed an officer to take a radio and investigate the fire. The officer reported that the space was inaccessible and said to start the fire pump due to the severity of the smoke. The fire quickly spread to the dining room, galley, and several cabins located on the main deck. The Master attempted to slow the vessel and manoeuvre in such a way as to prevent the barge from over-running the tug, and to prevent the fire and smoke emanating from the upper engine room from being carried aft. However, the vessel quickly lost all power. Thereafter, the crew ceased attempting to fight the fire due to its intensity and rapid growth.

The Master informed the coast guard of the situation and the crew made preparations for abandonment. With the vessel now dead in the water, the Master was concerned about the fire and smoke engulfing the entire vessel and crew. They inflated and boarded the liferaft and then manoeuvred away from the tug to escape the extreme heat and explosions now occurring aboard the vessel.

The crew were picked up by a nearby private sport fishing vessel and taken to the closest port. When the fire burned itself out the following morning, the hulk was towed back to port. Due to the extent of the fire damage, the vessel was later declared a constructive total loss.

Finding of the official report

The probable cause of the fire was an ignition originating near an electrical fuse box in the upper engine room. Contributing to the intensity of the fire was the presence of combustible materials in the upper engine room, which included a drum of waste oil.

Lessons learned

- Engine room areas should be kept clean and free of unnecessary objects and stores, as these can act as fuel for any potential fire.

Before **After fire**

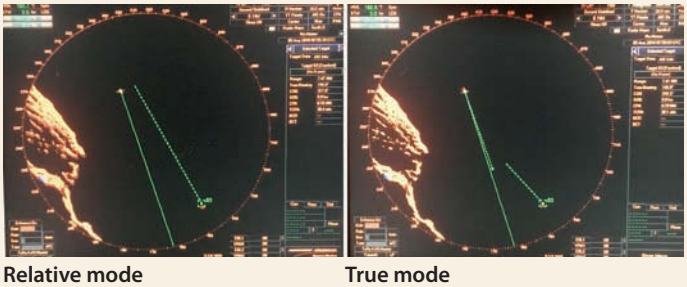
READER'S COMMENT: MARS REPORT 201841

Collision goes unnoticed

➔ A reader commented that another lesson learned from this accident – reported in the July issue of *Seaways* – would be to highlight the importance of OOWs fully understanding the strengths and weaknesses of relative and true radar displays. We can only agree with this point.

The reader also remarked that one of the lessons learned, 'For collision avoidance with a radar, use relative mode instead of true to have a better visual representation of collision risks', was not included in the findings of the source report. Additionally, the reader maintained, this is not good practice for collision avoidance.

Although it is true that this lesson learned is not a 'finding' *per se* in the source report, MARS staff have more discretion than the accident investigators to direct readers' attention to what can be improved. The source report is nonetheless concerned with this issue; using relative mode gives an intuitively simple visual representation of collision risk. This is made abundantly clear by the photos below, which are for the same target at the same moment, with a CPA of 0.76nm.



Relative mode **True mode**

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InterManager
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www.marine-salvage.com

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Louis Dreyfus Armateurs
www.lda.fr

Maersk Training
www.maersktraining.com

Marine Society & Sea Cadets
www.ms-sc.org

Marlins
https://marlins.co.uk/

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http://martechpolar.com/

Menezes & Associates
www.menezesandassociates.com

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MSI
www.msiships.com

North of England P&I Club
www.nepia.com

NorthLink Ferries
www.northlinkferries.co.uk

New Zealand Maritime School
www.manukau.ac.nz

Norwegian Hull Club
www.norclub.no

The Port of London Authority
www.pla.co.uk

The PTC Group
http://ptc.com.ph/

IHS Safety at Sea
http://magazines.ihs.com

SAIMI
saimi.co.za

SDT
www.sdtultrasound.com

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Pilot ladders – time for a rethink?

Peter Hay MNI

I once tried to board a brand new ship on its way to pick up its first cargo. The pilot ladder had been properly secured to its allocated ringbolts. The trouble was that there was a big horizontal gap between the top pilot ladder step and the lowered gangway – a clear design fault. Equally obviously, this had not been tested on trials. Under the prevailing circumstances I would have been prepared to have done the full climb on the pilot ladder (now that I am retired I can own up to my misdemeanors!). However, as a cost cutting measure the pilot ladder rungs finished at the level of the gangway. While we were trying to tell a confused junior officer what to do, he was getting increasingly vociferous, and contradictory, orders from the bridge. It was a long night.

Pilot ladders from the main deck to the waterline worked well until ships started getting exponentially bigger in the 1960s. As ships got larger there should have been a major rethink, but generally this was not done. In fact, the answer was there all along. Forty years ago, I sailed on a containership that had pilot doors. As well as pilot access, they also housed the bunker connections, for which they were admirably sited. After a short climb up the pilot ladder the pilot entered the pilot door which was adjacent to the elevator outside the engine control room, and then straight to the bridge. And yet, many years later, as a pilot myself, I usually had to climb up outside the hull on the pilot ladder until I could step over onto the lowered gangway. The transfer from the pilot ladder to the accommodation ladder was frequently badly thought out and dangerous.

With their high freeboard, passenger ships have often used pilot doors for access to the wharf. When dedicated car carriers were invented they did the same. Both work well – and work well as a means of pilot access. When cargo ships, and particularly bulk carriers, started getting exponentially bigger in the 1960s they should have followed suit. Instead their answer seemed to be to keep on adding more steps to the gangway ladder (and ever more rungs to the pilot ladder). It would be interesting to see what the rules ashore are for the length of a single span of ladder. I do not think the 'bounce' in a long aluminum ladder would be acceptable ashore, either.

Pilot access to any vessel should be similar to that on a car carrier, with a short climb up a pilot ladder to a gunport door.

Accountability

If you were ashore and you tried to say that access to a work site was via a three storey climb up a rope ladder with no safety net, you would be laughed out of court. I also suspect that a lot of people who write the work safety procedures for ships base them on shoreside practices. That is why they miss pilot ladders while making it mandatory, for example, to wear hard hats in the open. OK on some ships, but on a gearless bulker? There is nothing above shoulder height. They could do with a bit of sea time.

The key word when setting up pilot boarding arrangements should be accountability. If an accident occurs through bad design, the firm that ordered the ship, the yard that built it, and the maritime safety authority of the building country should be held accountable. On trials the boarding arrangements should be tested by senior representatives from these three bodies. Age should not be used by senior staff as a reason to delegate this task to junior (younger) staff. I last climbed up a pilot ladder onto a lightship capesize at the age of 70. (While they are at it, they could get the same team to test the lifeboat release mechanism – see numerous MARS reports.)

If Nelson were to be reincarnated and come on board a modern ship the only thing he would recognise would be the pilot ladder. Despite protestations to the contrary the main reason for the archaic and unsafe pilot boarding practices is cost. Only when shipowners realise that if they cannot provide safe access from a pilot boat, they will have to provide a helicopter, will we get improvement. It is high time for change.

Pilot boat technology continues to develop – but the means of boarding remains the same

Introduction to ship tonnage

Clearing up confusion

Captain Donal Linehan FNI

The International Convention on Tonnage Measurement of Ships (1969), abbreviated to TM69, is a universal system of measurement that provides the maritime industry with gross tonnage (GT) and net tonnage (NT). Contemporary maritime usage of the term 'tonnage' specifically refers to a calculation of the volume of a ship and its cargo space volume with appropriate multipliers.

Gross tonnage is the measure of the overall size of a ship; that is the volume (V) of all totally enclosed spaces with a coefficient (K1) or multiplier applied. The formula for gross tonnage is GT=K1V.

Net tonnage is a separate measurement and is a function of the volume of the useful capacity of spaces for cargo and/or passengers. The volume for net tonnage also has its relevant coefficients (K2) and multipliers applied; hence these two tonnages denote dimensionless figures.

To date, 157 member states of the IMO, representing more than 99% of the world fleet in terms of GT, have ratified and incorporated TM69 into their respective national laws.

The use of gross tonnage is to provide a parameter or threshold for IMO and International Labour Organisation (ILO) conventions and their ratifications, laws and national regulations. These include manning regulations, numerous safety rules, registration fees and crew accommodation space requirements. Gross tonnage is the basis for statistical data relating to the size and ship types of the national and world fleets. Either tonnages (GT or NT) may also be used for port and harbour charges and light dues. A ship's length is also used to calculate charges and is a threshold for some regulations.

Where does TM69 apply?

TM69 applies to all ships on international voyages, except ships of war and ships less than 24 metres (79 feet) in length. To comply with TM 69, ships are required to carry an International Tonnage Certificate (ITC69) on board. This certificate is issued by the ship's flag administration or recognised organisation(s)/person(s) approved by the flag. The ITC69 lists the gross and net tonnages, along with other relevant information. Ships transiting the Panama Canal (Pacific/Atlantic) and/or Suez Canal (Europe/Asia) require separate certificates. An inspection of ITC69 may be carried out in foreign ports in accordance with TM69.

Common confusions

Tonnage should not be confused with mass weight, such as deadweight tonnes or lightweight (displacement) tonnes (see box). Deadweight and lightweight tonnes are not referred to in TM69, although they are important and crucial criteria for ship operations, particularly stability computation. Deadweight is commonly used to indicate cargo weight in tonnes for oil and chemical tankers, bulk carriers and general cargo ships.

Gas carriers often refer to cubic metres or cubic feet carried in cargo spaces, and container ships refer to TEUs (twenty-foot equivalent units). Passenger ships may vary between GT and passenger capacity. Anchor handling tugs and offshore supply vessels may refer to bollard pull and rig/platform supply capacity including available deck space. The Convention allows for novel craft with the IMO interpretations acknowledging special types such as livestock carriers, dockships and open-top container ships.

Implementing the convention

TM69 is acknowledged as the first successful international convention on ship measurement. It was adopted in June 1969 and ratified on 18 July 1982 through the IMO (previously known as IMCO). The rules apply to all ships built on or after 18 July 1982. A ship built before that date was allowed to retain its existing tonnage for 12 years until 18 July 1994. Since 1994 the terms gross register(ed) tonnage (grt) or net register(ed) tonnage (nrt) have been redundant. The 12 year phase-in period was intended to ensure that ships (companies) were given reasonable economic safeguards, as many charges were assessed at the time according to ship tonnage of the day as determined by their flag. The convention attempted to ensure that gross and net tonnages calculated under TM69 did not substantially differ from those calculated under the previous national rules.

Deadweight and lightweight

- Deadweight is the difference between lightweight and displacement at summer freeboard at a specific gravity of 1.025. The definition is in SOLAS and MARPOL.
- Lightweight is the displacement of a ship without cargo, fuel, lubricating oil, ballast water, consumable stores, fresh water and feedwater in tanks, and passengers and crew and their effects. The definition is in SOLAS and MARPOL.

Captain Linehan has experience as Master, OIM and rig mover, surveyor and consultant.

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

InterManager safety campaign

InterManager has launched a campaign to encourage seafarers to help create solutions to the safety risks associated with working in enclosed spaces.

Announcing the campaign at CrewConnect in Manila, Captain Kuba Szymanski FNI, InterManager Secretary General, said: 'The shipping industry has produced a wealth of rules, procedures, guidelines and leaflets concerned with the risks of working in enclosed spaces aboard vessels, and yet seafarers are still dying while engaged in these activities.'

To help identify why fatal mistakes continue to occur, InterManager would like to hear the ideas and opinions of mariners working in enclosed spaces themselves. 'Is there a simple, user-friendly procedure, change or technology gadget which would be universally beneficial for colleagues working in enclosed spaces?' Captain Szymanski asked.

The seafarer who provides the best response will win a Macbook Air and $2,000 for their vessel's welfare fund.

Responses should be sent to kuba.szymanski@intermanager.org by 1 January 2019.

STCW revision

The Chairman of the International Chamber of Shipping (ICS), Esben Poulsson, has called for a comprehensive revision of the IMO STCW Convention, which governs global standards for the training and certification of around two million merchant seafarers.

Although STCW was reviewed in 2010 with the adoption of the 'Manila amendments', ICS increasingly views these as an interim revision that does not make the structural changes needed to accommodate new developments in training or the competences that would be required to operate ships in the future. The last major review prior to 2010 took place 25 years ago.

Mr Poulsson explained: 'It's now commonplace for employers to routinely provide additional training and assessments prior to the deployment of many officers holding STCW certification, which raises questions as to whether the convention as currently drafted is still fit for purpose in the 21st century.'

A fully revised STCW regime would allow the industry to adapt more effectively to technological developments, including increased automation, and should provide a structure flexible enough to meet the demands of a changing world fleet.

Mr Poulsson added: 'A revised STCW should improve transparency and the robustness of implementation oversight. The so-called STCW "White List" of nations that have communicated information to the IMO about compliance now serves little real purpose as it includes virtually everyone.'

Mr Poulsson went on to recall that during the early 1990s, the IMO responded positively to industry requests to address concerns about training standards in many of the newly emerging seafarer supply countries, several of which now have world class training institutions.

'With the involvement of all industry stakeholders, we think the time is now right to consider the next comprehensive revision of the STCW, akin to that completed by IMO Member States back in 1995,' he concluded.

Shipping costs to rise

Total vessel operating costs in the shipping industry are expected to rise by 2.7% in 2018 and by 3.1% in 2019, reports accountant and shipping consultant Moore Stephens. Increasing regulation is seen as the greatest factor in cost increases. However, while costs generally are expected to rise, it is expected that crew costs will remain at current levels.

According to its latest annual survey on future operating costs, drydocking is the cost category likely to increase most significantly in both 2018 and 2019, accompanied in the latter case by repairs and maintenance. The cost of drydocking is expected to increase by 2.1% in 2018 and by 2.3% in 2019, while expenditure on repairs and maintenance is predicted to rise by 2.0% in 2018 and by 2.3% in 2019.

The cost of hull and machinery insurance is predicted to rise by 1.3% and 1.6% in 2018 and 2019 respectively, while the projected increases for P&I costs are 1.2% and 1.4% respectively. Management fees are expected to rise by 1.0% in 2018 and by 1.2% in 2019.

Regulation was also highlighted, with one respondent commenting: 'New regulations will lead to extra costs for all owners, for example the Ballast Water Management Convention and IMO's 0.50% global limit on the sulphur content of fuel oil used on board ships.'.

Maritime Labour Convention Guidelines

The International Chamber of Shipping (ICS) and the International Transport Workers' Federation (ITF) have jointly released new *Guidelines for implementing the Welfare aspects of the Maritime Labour Convention (MLC)'*.

Adopted by the International Labour Organization (ILO) in 2006, the MLC aims to ensure comprehensive worldwide protection and enforcement of seafarer rights, and to establish a level playing field for ILO member states and shipowners committed to providing decent conditions.

ICS and ITF emphasise that several countries with highly developed arrangements for providing seafarer welfare services are not yet signatories to the MLC, while many seafarer supply countries have also not yet developed welfare organisations to provide services either at home or abroad.

ICS Secretary General Guy Platten explained: 'This new complementary publication is intended to assist governments and welfare agencies in drafting their own guidelines for implementing the welfare provisions of the MLC. While some countries may already have their own laws and policies in place, they may, nevertheless, wish to adapt these new guidelines to complement their current practices.'

The guidelines can be downloaded from the ICS and ITF websites.

Conferences

Reporting back from conferences, seminars and discussions across the maritime world. Join the discussion at LinkedIn, or email **editor@nautinst.org**

DIGITALISATION – WHO IS IN COMMAND?

➔ The annual seminar held by the North West England & North Wales Branch took an in-depth look at the future of shipping, including the implications of recent developments in technology on the command structure on board and ashore. Branch chairman Ian Mathison FNI welcomed around 60 attendees.

Digital spaghetti

Graham Wagstaff MBE, Academy Director Wärtsilä, introduced the audience to the concept of digital spaghetti – that is, the convoluted connections required to link up the various items of equipment on a vessel. This is needed because equipment comes from multiple suppliers, each with its own digital protocols and security protocols. Integration can be a veritable nightmare. Unlike the aircraft industry, where equipment rationalisation is well established, there is no common driver to achieve the same integration in the maritime sector. Two global suppliers can now offer a degree of integration of certain elements, but there is still a very long way to go.

The problem reflects a potential shortage of skills spanning the established engineering and electrical disciplines. Little thought seems to have been given to the skillset of the 'electronic' officer needed on the latest vessels. It was acknowledged that the tentative next steps in the digitalisation of the shipping industry would probably be shoreside route planning, but unmanned vessels are unlikely to be in widespread use soon.

The question and answer session following this presentation raised issues that included:

- Current automation technology is rarely fully marinised;
- There is a perception that aircraft are more hazardous than ships, hence the drive for standardisation – but this ignores the risk posed by, eg, fully loaded LNG tankers;
- There are far too many suppliers for the same product – ECDIS is a stand-out example;
- The need for backup links in case of loss of satellite comnunication connection has not really been addressed in automation scenarios;
- The legal implications of collisions for those few vessels that are automated remain uncertain – will it be the system programmer who is held responsible, the onshore 'operator' or the shipowner?
- It remains unclear if there are any shipowners willing to make the substantial additional investment in autonomous vessels because of equipment redundancy considerations. Masters and mates are still going to be in demand.

Industry 4.0

Captain Mathison then introduced Stuart King, Client Manager, Marine & Offshore Business Team, Lloyd's Register. Stuart pointed out that many within the industry now referred to the march of digitalisation as 'Industry 4.0'. It was accepted Industry 4.0 was pushing many suppliers to review their operations as new technology had the power to transform how they operated and interfaced with their clients. The stakeholders in marine are many and varied, from owners, charterers and the supply chain to manufacturers, regulators, lawyers and others. In 'big data' terms, the costs within the marine industry are huge, so even a small saving of time or cost could extrapolate to valuable savings overall.

Many automatic systems are already in operation on ships, but the only autonomous vessels in use are three or four testbed vessels with very limited operating scope. However, artificial intelligence (AI) is a catalyst for perhaps even more significant change.

How do classification societies manage these new demands? Owners and operators will need assurance that their marine systems can be integrated with the correct protocols and security management. Class will be needed to manage this at larger manufacturing centres, and smaller suppliers. Vessels are already seeing new ship notations on class certificates, initially to cover cybersecurity.

Digital compliance is seen as a continuum rather than just a new step in the regulatory/classification process. In the Q&A it became evident in many areas the outcomes remain foggy (a good marine term!). New forms of piracy, digitally enabled, may emerge. If vessels have smaller teams on board, is traditional piracy likely to make a comeback?

Legal implications

Mr Matthew Dow, Associate at HFW London, gave a presentation on the legal implications of digitalisation. This is a topic that is frequently cited as a major concern. Maritime autonomous surface ships (MASS – another one for the acronym file) have been operating for some time now, but they are generally less than 5m long. They are limited to deepsea research areas and are not to be confused with ships with cargo-carrying capability.

One argument supporting a drive towards MASS for cargo-carrying vessels is that it offers a way to reduce the human element – reported as the cause of at least 50% of maritime accidents. Costs are another factor, with the latest P&I data indicating that 34% of ship costs go to claims related to crew injuries and fatalities. Over the past five years, this category has accounted for $1.6 billion in claims.

On the other hand, the introduction of MASS opens up shipping to cyber risk and perhaps to more claims.

Levels of autonomy vary, from the 'assisted' manned bridge with enhanced collision avoidance capabilities, the periodically unmanned bridge and potentially even the completely unmanned bridge. Improvements to control system architecture, communications bandwith and situational awareness are all in hand. A vessel can be assigned a technical readiness level (TRL), indicating the level of autonomy with which it is capable of operating.

THE NAUTICAL INSTITUTE'S

MARINE INCIDENT INVESTIGATION & ANALYSIS COURSE

Based on IMO Model Course 3.11, this course introduces the processes and procedures to support a marine casualty investigation in accordance with IMO Assembly Resolution A.849(20) and the Code for the Investigation of Marine Casualties and Incidents.

Content includes:

- How and why to carry out an investigation
- How to collect evidence
- Essential interview techniques
- Causes of incidents and accidents
- Human failure and human error
- Analyses, root cause, tools and techniques
- Evaluation

The course is suitable for:

- Ship safety officers
- Company safety officers
- Designated persons ashore (DPA)
- Captains and senior ship officers
- Operational ship managers
- Technical and marine superintendents

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

CHENNAI: JANUARY 2019

LONDON: 31 JANUARY TO 1 FEBRUARY 2019

ANTWERP: 25-26 FEBRUARY 2019

The Nautical Institute

Register your interest by emailing: courses@nautinst.org
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The higher the number the higher the degree of potential autonomy, with TRL 07 being a wholly unmanned vessel. While no unmanned cargo vessels are currently in operation, references to a number of ongoing projects can be found on the internet. The most notable of these is probably *Yara Birkeland*, a 120teu container vessel designed to operate within Norwegian coastal waters. Some projections indicate that some MASS may be operating on shortsea routes by 2025.

The current legal framework in the UK is the Merchant Shipping Act 1995. It is believed that unmanned vessels will be regarded as ships within the interpretation of that act. Concerns may be raised around the meaning of 'good seamanship' when there is no one on board. Other countries may interpret their own shipping regulations differently. Practical guidance is available for MASS of up to 24m, but it is not yet legally binding. There remains the question of the legal 'duty of care' – and in any collision the MASS operator would come under intense scrutiny. Insurers will have to review their terms and conditions; for example, P&I cover does not currently extend to cyber issues.

The general conclusion is there is a need for considerable international co-operation before MASS can be a genuine option.

Comments included:

- Major flag states appear to show minimal engagement with MASS to date;
- Criminal liability in the event of a MASS accident remains unclear at this time;
- It is not clear if society is ready for MASS – consider the likely attitudes to the risks posed by autonomous LNG vessels, oil tankers etc;
- Ultimately, it is likely any change will be driven by research data – as with the driverless Docklands Light Railway in London.

Skills for today and tomorrow

Our final speaker was Captain John Lloyd, better known to *Seaways* readers as CEO of The Nautical Institute. John stated that disasters are often the catalyst for major change. The *Titanic* is a textbook example, as its loss prompted significant safety improvements and the introduction of SOLAS. The *Torrey Canyon* had a similar impact on pollution legislation and the introduction of MARPOL.

In general, though, most marine regulations have the effect of preserving the status quo rather than encouraging innovation. As a consequence, improvements tend to be piecemeal. Automation is already in use in many areas in the form of autopilots, course tracking, engine bridge controls and fire alarms, for instance. 'Does the extra technology we now have help?' John asked. 'Well, we still suffer collisions in broad daylight!'

One key question to be looked at is how we deliver innovation. We need to create effective partnerships with any technology, and we need bridge teams to be more knowledgeable and hence able to make better-informed decisions. We need to hone two sets of skills – hard (technical) and soft (man management and teamworking) – but the current compliance-led culture leads to complicated systems. We need to leverage the best from technology to motivate our seafarers.

If we do integrate automation based on the arguments above, it may be safer and reduce some costs. Its introduction may also risk degrading seamanship skills, resulting in ineffective monitoring and over-reliance on the new technology. We need a critical thinker operating the ship, and this should be the Master. We still hear of shore-based managers pushing Masters to take risks they would otherwise avoid. This sort of attitude has implications for MASS as well!

A final, lively Q&A followed, during which it was restated that a MASS deepsea vessel was likely to be far too costly to operate at present. The extra redundancy would be expensive and would reduce potential cargo-carrying capacity. Another commenter asked why all the emphasis was on technology, when we have too many rope injuries with little (or perhaps no) investment in safer alternatives.

In closing the seminar, Captain Mathison thanked all four speakers, who had brought many issues together and raised some thought-provoking ideas. It is clear that the human element remains key to operating vessels. There were many questions but few definitive answers, which perhaps indicates that there is a long way to go before we are likely to see significant changes in the way international fleets operate.

The evening dinner was well attended, and we were pleased to welcome cadets from Fleetwood Nautical Campus and John Moores University, Liverpool.

Captain Ian Mathison FNI

INTERNATIONAL NAVIGATION SIMULATOR LECTURERS' CONFERENCE

➔ The 20th International Navigation Simulator Lecturers' Conference was held in Auckland, New Zealand, at the New Zealand Maritime School. Key discussions focused on the use of virtual reality and augmented reality in training seafarers.

Some key points to note from the conference:

- Development of 3D virtual reality for simulation training and familiarisation is developing rapidly, leading to reduced costs for equipment.
- A 3D camera costs around US$700, while a headset can be purchased for about $200. This makes it extremely cost-effective to use 3D familiarisation.
- Simulation sickness/feeling of disorientation is a key issue. New cadets have grown up in a gaming world, however, so the problem seems to be diminishing.
- Some simulators incorporate 3D gaming aspects in their training. Examples of this were noted on a visit to the Navy Engineroom simulator.
- The use of peer monitors for simulation sessions and to assist with assessments is being incorporated in an increasing number of areas.
- Consistency in simulation assessments remains a key concern.

The conference was well organised by the New Zealand Maritime School, with a solid team put in place by Kees Buckens FNI.

Engagement with NI members in attendance was excellent. The event provided ample opportunity to promote the role of the NI, and to highlight the benefits of membership.

Jillian Carson-Jackson FNI
Vice-President, The Nautical Institute

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

SOUTH WEST ENGLAND BRANCH

World Maritime Day

➔ This was the 11th celebration of World Maritime Day organised by the South West of England Branch of The Nautical Institute, supported by the Devon and Cornwall Joint Branch of IMarEST and RINA and the University of Plymouth's Marine Institute.

L-R Bob Allen (IMarEST) Paul Wright (Marine Institute) Richard Walker (The Nautical Institute) Cllr Chris Mavin (Plymouth's Deputy Lord Mayor and Richard Clayton (Lloyd's List)

L- R Cllr Chris Mavin (Deputy Lord Mayor of Plymouth) and keynote speaker Richard Clayton (Chief Correspondent Lloyd's List)

The theme of World Maritime Day 2018, *'Our Heritage – Better Shipping for a Better Future',* was chosen to commemorate 70 years since the IMO Convention was agreed. Keynote speaker, Richard Clayton, is Chief Correspondent at *Lloyd's List* where he writes thought-provoking analytical insight pieces.

Richard's opening comments described his early experiences as a student at the University of Plymouth, or as it was then, Plymouth Polytechnic. He stated that he became totally absorbed in the maritime world after finding it to be the 'most stimulating, exasperating, challenging and engaging industry anywhere'.

He went on to share conclusions reached from a CEO round table he had chaired at the SMM exhibition in Hamburg in September. The organisers had asked him to lead on how 'dirty old shipping' could fit into the clean, smart and sustainable world of the future.

This led to questions about the meaning of sustainability. Shipowners used to view sustainability as adherence to corporate social responsibility and quality management. However, sustainability should be viewed from other perspectives. For example, it may be concerned with the need to mitigate climate change by aligning maritime with the logistics sector to reduce total emissions.

Richard suggested that better shipping could be described as more efficient shipping. At a business briefing, which he also chaired at SMM, it was recognised that efficiency has three elements – technology, regulation and human resources. He suggested that this leads to three questions; How is next generation technology being developed with people in mind? How are regulations addressing the future needs of technology? How are human resource experts ensuring at least the minimum levels of skill needed for the future?

He went on to suggest that better shipping will encompass next generation technology. Richard also stated that a vital role for maritime regulation is to help meet the needs of a sustainable society while providing room for commercial return. 'If shipping is not profitable then shipowners will find it difficult to invest in technology which enables compliance with regulatory requirement'.

Richard stated that there is insufficient communication between those involved in the three elements of technology, regulation and human resources. There tends to be a silo mentality in which knowledge is often only shared on a need-to-know basis. Getting to a state of 'better shipping' must recognise the significance of good communications between different disciplines.

No part of the shipping industry can exist in a vacuum. The key to better shipping is partnership. Partnership means interaction between different overlapping elements, that silo thinking is breached and that there is a recognition that not all skills are held in-house.

Through his activities, Richard senses that within the shipping industry there is enthusiasm for forming a series of non-binding partnerships to gain access to skills without the cost of buying a company. He has observed that millennials show interest in problem solving but tend to ignore traditional divisions, whereas any new work ethic tends to be a challenge for older employees.

In his conclusion, he stated that the IMO's determination to push for better shipping is correct, but that a better future does not lie on a distant horizon – it is now!

Following Richard's talk, the Deputy Lord Mayor of Plymouth, Cllr Christopher Mavin, made a brief comment about the future marine and maritime opportunities being offered at Plymouth. He described the exciting development taking place at 'Oceangates', a maritime industrial park located in the former South Yard of Devonport Naval Dockyard.

Robert Allen, Chairman of the Devon and Cornwall Branch of IMarEST, made the concluding remarks and thanked both the keynote speaker and the Deputy Lord Mayor for their contribution to the evening.

Paul G Wright MNM FNI

DHAKA BRANCH

CEO visit and speech

➔ During his visit to Bangladesh, Nautical Institute CEO, Captain John Lloyd, gave a speech at a seminar hosted by Bangabandhu Sheikh Mujibur Rahman Maritime University.

The Executive Committee of The Nautical Institute's Dhaka Branch were delighted to invite John to a dinner party in his honour. We had a great time together along with the spouses of the EC members. We hope John enjoyed both mingling with the crowd and his stay in Dhaka.

Captain Anis

IRELAND BRANCH

Modern Cruise Ship Bridge Operations

➔ Early in October, The Nautical Institute's newly elected President, Captain Nick Nash FNI, gave a presentation to 40 attendees at the National Maritime College of Ireland on bridge operations on a modern cruise ship. Captain Nash opened by highlighting that the presentation reflected his own views, as a Master with Princess Cruises, rather than those of The Nautical Institute.

The aim of the system operated by Princess Cruises (known as the C-Smart system, after the training facility that developed it) is for anyone above First Officer to be able to manoeuvre and handle the ship. The theory is, that as the Master is deemed to have all the knowledge and experience, they are best placed to monitor in a co-pilot, or ideally, Operations Director role, allowing others in the team to gain experience.

Captain Nick Nash (l) with attendees at the Ireland NI Branch meeting

This is a function-based rather than a rank-based bridge organisation. Indeed, Captain Nash likes to wear a jumper with no rank markings to emphasise that this is a function-based system.

It was identified after the *Costa Concordia* incident that a captain operating at the front of the bridge is not as receptive to information as they can't see all the instruments. With the C-Smart system, the navigator sits forward port side with the co-navigator beside them at the starboard side. The Operations Director sits behind them where they can push their own knowledge forward if necessary. They are deemed to be the eyes and ears of the system. The basis behind the entire system is that human error is inevitable, therefore you build a system that can detect and manage errors before it causes negative consequences.

The system focuses on instrument navigation backed up with visual and pilot clues. Walking around the cockpit-style bridge is not encouraged and cameras and screens are available to ensure situational awareness is fully maintained. Track pilot is used if possible rather than a helmsman, although track mode can be difficult with certain turns. Closed loop communications are paramount and thinking aloud is encouraged.

Equipment is at the forefront of the system, with side/bow/stern cameras, and a navigation laptop with a PowerPoint presentation giving a synopsis of the arrival/departure information, including rate of turn and the speed required for each leg. GNSS compass is preferred as there is no lag compared to gyro. Nick himself uses a heads up display, as in the event of failure the default is heads up and this will lead to minimum disruption/confusion. He has also designed a standard approach chart similar to that used by airlines that could potentially replace the standard planning presentation.

Pre-arrival briefings are used to confirm, discuss, explain, assign and highlight any issues. Nick discussed the importance of debriefs involving the pilots too where possible. There is a debriefing checklist and the most junior member of the bridge team is usually asked if there is anything that can be improved upon in the operation/communication.

Attendees were shown some footage of the C-Smart system in operation. Captain Nash closed by highlighting that we are operating in changing times, where vessel size continues to increase and bridge operations will need to adapt to account for this.

The question and answer session led to some interesting debate. Many pilots were in attendance and noted that they are not against using electronics but that visual clues are so important in their role. Some of the attendees felt that the uniqueness of the system runs the risk of excluding pilots.

Discussion also took place around areas such as whether there is too much emphasis on checklists. Nick suggested that the mariner should know how to deal with the situation in hand and then revert to the checklist. The importance of touch drills, additional training and the re-play facility to look back at manoeuvres was also highlighted. The loss of the helmsman's skills was discussed as well as the resilience of the system if electronics fail.

Deirdre Lane MSc MNI, Master Mariner

SHETLAND BRANCH

Headscarf Revolutionaries

➔ The Shetland Branch recently had the pleasure of organising a visit by Dr Brian W. Lavery, who gave a fascinating talk on his book *The Headscarf Revolutionaries,* which tells the story of the wives of 58 Hull trawlermen who died during the winter of 1968 when three vessels sank within a month. The women went on to campaign for improved safety standards, despite many threats and violence. At great personal cost, they made a huge difference to the future of the fishing industry.

The event was sponsored by local businesses and held at the Shetland Museum, attracting a crowd of over 90 people. The audience was interested and engaged throughout, and the lecture prompted much discussion and reflection. Dr Lavery spoke about how much he enjoyed conveying the story to a community with a strong maritime culture, and the community certainly found his visit very worthwhile.

Shetland Branch Prize

At a recent awards ceremony at NAFC Marine Centre UHI, The Nautical Institute Shetland Branch Prize was awarded to Mr Freddie Hedger. The award recognises the endeavour and achievement of a first year deck cadet, and consists of a valuable and useful Nautical Institute stability publication along with a certificate. Mr Hedger, who is originally from Devon, previously worked for the RNLI before family connections and his love of the sea and travel led him to decide upon a career in the Merchant Navy. Mr Hedger is sponsored by DAO Shipping through Anglo-Eastern. The branch were delighted to celebrate his achievements so far, and wish him well for the rest of his cadetship and future career at sea.

Laura Burden MNI

Freddie Hedger, centre, winner of the Shetland Branch Prize, accompanied by (left to right) Captain George Sutherland (committee member), Captain Errol Smith (Branch Chairman), Mrs Laura Burden (Branch Secretary) and Mr Allister Rendall (committee member)

NW ENGLAND AND NORTH WALES BRANCH

Safe Mooring

➔ Our speaker Jac Spijker, Application Manager for DSM Dyneema, had travelled from Holland to make his presentation. Jac was recently part of the OCIMF working group that resulted in the latest edition of the *Mooring Equipment Guidelines 4* (MEG 4), published in July 2018.

Jac highlighted the stark statistic that 95% of all incidents with ropes and wires result in personal injury. Mooring safety is obviously paramount, and there are a number of points that must be considered whenever mooring operations are to be undertaken. These include:

- Education / training;
- Designated safe areas at each mooring station;
- Mooring layout;
- Types of mooring lines;
- Type and length of mooring tails;
- Maintenance of mooring equipment;
- A rigorous inspection and discard regime.

There are a number of safety rules that must be considered whenever personnel are involved in mooring operations:

- Whenever possible stay away from ropes under tension;
- Adhere to the agreed mooring plan;
- Ensure the same type of rope is used at each lead.

As part of the OCIMF working group, Jac was able to articulate in detail the various sections of MEG 4, which he maintained was a step change in mooring safety for the marine industry. We were told there have been changes in the terminology. These changes included:

- Working Load Limit – WLL;
- Line Management Plan – LMP;
- Mooring System Management Plan – MSMP.

Finally, Jac went through the mooring incident and MAIB report that was produced following an accident on the gas carrier *Zargo*, a case in which he had acted as expert witness. The Officer in Charge sustained serious injuries when a mooring line parted and he was caught on the snap back.

During the whole presentation Jac fielded numerous questions relating to mooring operations.

The evening ended well after the allotted time, which in itself was testament to the knowledge and passion of the speaker and the engagement of the audience.

Captain Ian Mathison FNI

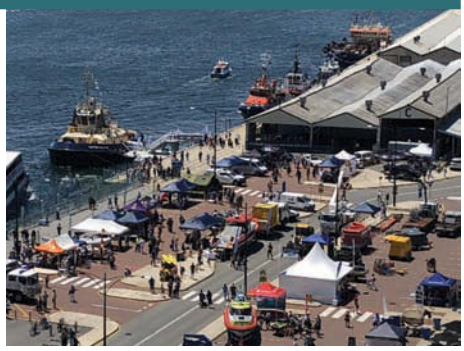
WESTERN AUSTRALIA BRANCH

World Maritime Day

➔ What a great day to celebrate World Maritime Day in Fremantle on 27 October. The crowds started pouring in even before the start time of 10 am. The day started off with the naming ceremony of Svitzer's newest tug, the *Svitzer Newton*, named after a long term Australian employee of the company.

The crowds were greeted with a colourful spectacle and huge array of marine-themed activities. Our own stall for The Nautical Institute was in a great little corner spot and was well presented by Peter Waller and Zubin Bhada, who had everything ready for the first set of guests at 9:45 am.

The sail training ship *Leeuwin* was moored alongside throughout the event, and cadets from the vessel stopped by the stall, as did several master mariners, and provided their feedback on their experience with The Nautical Institute. Our volunteers took advantage of the opportunity to provide each person with a membership application form and an introduction to the benefits of Nautical Institute membership. We would like to thank all the NIWA members who supported us in looking after the stall during the day – Tim Gourlay, Munaf Shaikh, Peter Waller and Zubin Bhada.



Peter Waller (Deputy Chairman) and Zubin Bhada (Branch Secretary)

Tim Gourlay and Peter Waller taking a break. (From Left to Right)

Annual dinner

Our annual dinner was held together with the Company of Master Mariners of Australia (CoMMA) at the Gloucester Park race track, enjoying dinner, music and a magnificent view. Everyone enjoyed the company and took the opportunity to mingle and catch up with old friends.

Zubin Bhada AFNI

Heliwest helicopter open for visitors just outside B Shed

The 'Three Amigos' (NIWA Committee Members)

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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PRO and the reserve

➔ I note that ECDIS is having an impact on traditional, practical, good sense (not necessarily 'common' sense) mariner language where there is discussion about 'corridor' and 'reserve'.

'Corridor' and 'reserve' are ECDIS-driven requirements that are superfluous to the task. If ECDIS was developed such that seafarers are able to dynamically add limiting danger lines (LDLs) and clear ranges (CR) to the ECDIS screen then a heightened appreciation of available water and proximity to danger would be achieved. These dynamic LDL and CR lines would provide for height of tide, draught, squat and a safety factor identified by the company or Master against identified soundings at that chart datum. This capability would then confirm in the minds of young learners that there is a science to the construct of an LDL and CR rather than an arbitrary set of lines established because of the limitations of ECDIS itself.

Granted the 'corridor' permits for ECDIS route planning, but thereafter there needs to be a clear distinction between navigable ('safe', to use contemporary parlance) and non-navigable (unsafe) water.

A line drawn in deeper water adjacent to the LDL, a CR, would identify the point at which the pivot point (shown at the ECDIS ship display monitor) can rest with the ship inclined at, say, 15° from the alignment of the LDL with the stern just touching the LDL but still in safe water. This bathymetry safety margin would be established by the company or the Master.

At this CR and inclination the ship will overcome the impact of wind and stream, leeway, and move back into deeper water.

The 15° could be identified by the Master to account for strong winds and stream where their combined vector and impact on the ship might be planned to be anywhere from 5° to 30°. These angles establish a CR (distance from LDL) on which the pivot point can rest at the calculated inclination for the stern to be safe in that relative profile while the ship is able to overcome leeway and move back into deeper, 'safe' water.

This is not a new concept or language in the maritime domain. It does, however, provide both science and conscious subjective assessment of safety margins to properly identify 'safe' and 'unsafe' water for a particular ship transit. Conducted on a case-by-case basis, this safety management profile brings into sharp focus margins for the conduct of navigation using all available water with less emphasis on the need to rely on distance off track and more focus given to proximity of the LDL, or CR, when off track.

With respect to a 'reserve', this would seem to be a margin on top of a margin and is a dangerous practice. The process described above suggests a need for two subjective assessments – one a standing margin based on bathymetry, the other necessarily dynamic to account for the ship's capacity to counter leeway. Safety margins, the 'reserve', on top of safety margins do not equate to improved safety. This profile compromises safety because there is no immediate appreciation of proximity to danger once off track. Rather, the seafarer is still making reference to distance from track where there is no relevance in practice to a 'reserve'.

It is an expectation that mariners will use all available means to navigate the ship. It should also be an expectation that mariners will use all available water to execute a particular plan. It would be an absurd prospect to collide with another vessel because one was concerned about going into 'reserve' water. And then once in 'reserve' water comes the first distraction: at what point does the team start to appreciate distance from the LDL or CR and the planned inclination while taking action to avoid both collision and grounding. The 'reserve' will inevitably be rapidly produced on ECDIS in the voyage planning phase, in effect making second-best large swathes of navigable water.

Navigators have always used all available means to execute the function that is the good practice of seamen. This would be a visual appreciation (increasingly viewed as 'traditional') supported by an hourglass, log, horizontal sextant angle, metre base range-finder, lead line, lunar distance method, pelorus, LORAN, DECCA, stopwatch, a particular satellite constellation, binoculars, AIS and radar. Together, these make up 'all available means' where the most useful tool in the circumstance ascends the order. This is neither traditional nor modern. It is just what is required to be an effective watchkeeper – part of the good practice of a seafarer.

This should be the emphasis in training and not radar/ECDIS management on their own. The impact/limits of ECDIS in particular appear to have translated into new mariner parlance as 'corridor' and 'reserve', which arguably are superfluous to the vigorous execution of the dynamic navigation task.

Captain Peter Martin AFNI

Colregs update

➔ In his article *Time for a Change* (*Seaways* November 2018), Capt Mark Bull calls for an 'updating' of the IRPCS, and he is not alone in doing so. However, while I have sympathy for many problems encountered by large deep-draught vessels in trying to comply with the Colregs in confined waters, the answer is not necessarily to change the IRPCS.

We must remember that these laws are by definition international, applying in all parts of the world and to *all vessels* (Rule 3(a)), regardless of size. Admittedly, many vessels may not always obey them, fully understand them or even know of their existence (eg some pleasure vessels). The lawmakers who drafted the IRPCS foresaw this situation and included within the rules as they stand, adequate scope (for those who do fully understand them) to use whatever action, manoeuvres or signals as may be necessary to avoid collisions. This principle is enshrined in Rule 2 parts (a) and (b).

Another basic principle of the rules is that the main onus for avoiding collisions always remains with the vessel better equipped to do so in terms of manoeuvrability. In this context, the term 'better equipped' could well be judged to include better technological decision-making aids and higher levels of navigator training/experience. The latter should include better understanding of the reasons different vessels ply the sea and what their particular operations may involve in terms of manoeuvres.

Capt John Simpson AFNI

Captain Mark Bull makes a strong case for changes to the Colregs and I would like to add further changes that would not only help his case but make life a lot easier for many vessels transiting traffic separation scheme (TSS) systems.

I have taken many smaller vessels through the Dover Strait where the Colregs demand that I keep to the traffic separation lanes and I cannot use the inshore zones. These inshore zones are restricted to vessels under 20m long unless the vessel is heading to or from a port along the coastline of the inshore zone. I therefore have had to negotiate with the big ships through the Dover Strait and added a considerable distance to my voyage, particularly if I was heading for the Thames coming up Channel when I had to cross the southbound lane at right angles to get to my destination.

I did not want to be in the main shipping channels and I am sure that the big ships did not want me there, so why not make more use of the inshore zones? At least increase the length of vessel that can use these zones to at least 30m, maybe more, and take them out of the equation as far as the big ships are concerned. This could work just as well in other areas such as the TSS around Ushant, where in theory I would have had to keep to the TSS zones which are miles offshore in exposed waters for small craft. There is a wide inshore zone here although it is possible to circumvent the Colregs requirements here by going through the navigation challenge and strong currents of the Chenal de la Helle. There is no such luxury when going round Land's End, but then there is not such close monitoring of the traffic there as there is in the Dover Strait.

As for fishing boats, they are a law unto themselves and they seem to fish wherever the fish are, irrespective of size or regulation. They are an occupational hazard that navigators have to deal with and I cannot see any solution there to improve the situation short of an active patrolling and enforcement operation.

Dag Pike FRIN AFNI

Representing The Nautical Institute to the maritime industry and beyond

IMRF and The Nautical Institute sign MOU

The IMRF (International Maritime Rescue Federation) and The Nautical Institute have signed a memorandum of understanding (MOU) agreeing to work together on projects that support their shared objective to improve safety at sea.

Theresa Crossley, CEO of IMRF, said: 'I am delighted to sign this MOU with The Nautical Institute, as our organisations' objectives are closely aligned. I am sure that there will be many opportunities to collaborate and share expertise moving forward.'

Captain John Lloyd FNI said: 'Safety at sea and supporting those in peril is a key component of maritime tradition and professionalism. Through this MOU we will increase awareness in shared areas of concern and be stronger at promoting best practice.' The MOU commits both organisations to exchanging information and technical cooperation in areas of mutual interest, and to harmonise training standards and guidelines across the industry while jointly promoting issues which relate to the safety of mariners and others at sea.

Author award

Congratulations to Vladimir Torskiy FNI, Honorary Secretary of the Ukraine Branch, who has been awarded the title of Honored Author by the International Academy of Ecology & Life Protection Sciences for his contribution to scientific literature as an author of books for maritime cadets and seafarers.

Gold medal

Captain Nick Sloane FNI has been presented with a gold medal by the Society of Master Mariners South Africa to mark his achievement and leadership in the salvage of the *Costa Concordia*. The award was presented during the AGM of the International Salvage Union, and is presented to an officer who has brought the highest honour to the profession by exercising marine skills acquired as a result of their qualifications and experience.

Retirement

Captain Christopher Rynd FNI has retired as Commodore of Cunard, having joined the *Queen Elizabeth 2* in 2005 and subsequently commanded *Queen Mary 2, Queen Victoria* and *Queen Elizabeth*. Although retired from Cunard, he remains active in the maritime industry as a consultant.

HQ staff out and about

David Patraiko FNI chaired the 40th session of the Green Award Board of Experts in Rotterdam. Bridget Hogan and Maneesh Varma attended CrewConnect in Manila. Bridget also attended the WISTA international conference in Tromsø.

Senior Vice President Jillian Carson-Jackson chaired the IALA eNav communications working group meeting in France, establishing the eNav workplan for 2018-2022.

New members

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

Associate Fellow

Chowdhury, M A G Captain/GM (Operation) (Bangladesh (Chittagong))
Fisher, L Mr/Lead Superintendent (UK/London)
Galvez, G J Captain/Marine Safety Superintendent (Philippines)
Hammeroy, J A Mr/Captain (Norway)
Hossain, S I Captain/Owner (Bangladesh (Chittagong))
Islam, M M Captain/Assistant Harbour Master (Bangladesh (Chittagong))
Koleda, A Captain/Master (Spain)
Krishnan, P Mr/Managing Director (India (West))
Matak, M Captain/Deputy Fleet Manager (UK/London)
Meyer, M Captain/Mooring Master (South Africa)
Orsini, S Captain/Master (US West Coast)
Poznaks, A Captain/VLGC Master (Latvia)
Rashid, M H Captain/Marine Standards Manager (Bangladesh (Chittagong))
Rodgers, P R Mr/Owner (Singapore)
Romo Cuevas, M F Captain/Master (Mexico)
Semin, M M Captain/Master (Russia)
Sequeira, S J Captain/Voyage Manager (India (West))
Shetty, R N Captain/Manager Marine & HSEQ (UK/London)
Shumylo, A Mr/Director (Ukraine)
Stevens, D Captain/Master (UK/Solent)
Ullah, M H Captain/Master (Bangladesh (Chittagong))

Upgrade to Associate Fellow

Brodje, A Mr/Manager (UK/London)
Davey, S G Mr/Harbour Master (Australia/WA)
Forde, N M Captain/Nautical Surveyor (Ireland)
Heyman, M F Mr/Sales Manager (UK/N Scotland)
Lehmann, M Captain/DPO (Australia/QLD)
O'Regan, R Mr/Master SDPO (Ireland)

Member

Achramowicz, A Mr/SDPO (UK/NE England)
Akpasipeleite, J Mr/DPO (Nigeria)
Banon, M R Captain/Master (Ireland)
Bin Alias, Z Mr/DPO (Malaysia)
Binns, A G Mr/2nd Officer (Australia/VIC)
Bose, B K Captain/DPO (US Gulf (Houston))
Buxton, G N A Mr/Chief Officer (Switzerland)
Castellon, O J Mr/2nd Officer/DPO (Philippines)
de Groen, G P Mr/2nd Officer (UK/NE England)
Duku, J S Captain/Pilot (Ghana)
Even, M A Captain/Master (Australia/WA)
Foxworthy, H L Captain/Master (UK/London)
Gainer, H R D Mr/Chief Officer (UK/Humber)
Gordon, R Mr/Deputy Harbour Master (UK/Shetland Islands)
Hart, M Mr/Chief Mate/SDPO (UK/SW England)
Heriot, S Y Dr/Business Development Manager (UK/N Scotland)
Jimenez, J A Captain/Retired (Ecuador)
Kachurovsky, V Mr/Chief Mate/DPO (Ukraine)
Khumalo, N S Mr/2nd Officer (South Africa)
MacGillivray, I Mr/2nd Officer (UK/Central Scotland)
Maitland, G Captain/Harbour Master (UK/Shetland Islands)
Nandasena, T M H R Captain/Chief Officer (Sri Lanka)
Nasrullayev, I Captain/Master (Azerbaijan)
Ngô, L T Captain/Master (Vietnam)
Nugraha, A Mr/2nd Officer (Indonesia)
Oliver, J Mr/Marine Surveyor (UK/London)
Owens, R E Ms/ Marine Superintendent (UK/Central Scotland)
Palacios, A J Mr/3rd Officer (Panama)
Reid, M A Mr/Mate/JDPO (Trinidad & Tobago)
Scalera, M J Captain/DPO (US Gulf (Houston))
Shkrebko, S Mr/Chief Officer/SDPO (Ukraine)
Stamp, A J Mr/2nd Officer (UK/SW England)
Sufyan, S Mr/Captain (Indonesia)
Thanki, H A Captain/Pilot (Ghana)
Vezina, S Ms/Marine Sciences Instructor (CAN/British Columbia)
Vipond, E D Ms/Marine Sciences Instructor (CAN/British Columbia)
Vredenborg, A D M Mr/2nd Officer (Netherlands)
Wilson, A J Mr/Marine Advisor (UK/NW England & N Wales)
Youn, S Mr/2nd Officer (South Korea)
Zahrial Captain/Master (Indonesia)
Zaw, L Captain/Senior Auditor (Singapore)

Upgrade to Member

Bates, O H Mr/Deck Officer (UK/London)
Chalk, J Mr/Itinerary Planner (UK/Solent)
Fisher, G P Mr/OOW (UK/NW England & N Wales)
Fowler, D R Mr/Chief Mate (CAN/British Columbia)
Ramsaroop, R Mr/HSE Manager (Trinidad & Tobago)

Associate Member

Ballard, D G Mr/Naval Warfare Officer (CAN/British Columbia)
Byrne, R J Mr/Trainee Deck Officer (Ireland)
Fukkong, T Mr/Cadet (Thailand)
Gibbs, A W Mr/Cadet (UK/SW England)
Hopkins, T Mr/Officer Cadet (UK/Bristol Channel)
Hughes, T M C Mr/Deck Officer Cadet (UK/SW England)
Jaiman, P Mr/Cadet (Thailand)
Jobparn, N Mr/Cadet (Thailand)
Nanchai, T Mr/Cadet (Thailand)
Sirisaeng, Y Mr/Cadet (Thailand)
Somboonrat, T Mr/Cadet (Thailand)
Surawichoi, P Mr/Cadet (Thailand)

*Signifies members who have rejoined

Seaways index 2018

This index lists items and authors which have appeared in *Seaways* from January to December. The month of publication is followed by the page number on which the particular item commenced.

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