

NAVIGATOR

THE

Inspiring professionalism in marine navigators

FREE

Focus on Pilots

Getting on board with the
Pilot safety agenda



A free publication by **The Nautical Institute** in association with the **Royal Institute of Navigation**

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David Patraiko FNI
Director of Projects, The Nautical Institute

NAV BRIEF

How to look after your Pilots

A successful pilotage operation calls for a huge scope of seamanship – from Pilots and ship’s crew alike. At the most basic level, the pilot ladder needs to be rigged well and safely. This may call upon some of the most traditional seamanship skills dating back to tall ships. At another level, Pilots may rely on some of the most sophisticated modern technology to give sub-meter accuracy in positioning and rate of turn – today, that might even mean the use of drones.

In this edition of *The Navigator*, we look at a wide spectrum of pilotage issues, from rigging ladders to working with modern technology. Pilot boarding arrangements are often still unsafe, sometimes due to bad design, but too often by poor seamanship skills. The International Maritime Pilots’ Association (IMPA) works tirelessly to promote safety and not only provide ‘best practice’ guidance for boarding arrangements, but also conduct annual

ALWAYS KEEP IN MIND THAT THERE IS A HUMAN LIFE ON THE OTHER END OF YOUR LADDER - GUARD IT WELL AND IMAGINE IT IS YOUR OWN

safety surveys to identify ways of improving safety. IMPA’s contribution here will provide you with some very good advice for helping Pilots boarding your vessel. Always keep in mind that there is a human life on the other end of your ladder – guard it well and imagine it is your own. After all, many navigators go on to be Pilots. One day it might be you on that ladder!

At The Nautical Institute, we are always interested in how evolving technology can be used to improve ship operations. We believe that the right balance of skills and technology will allow us to achieve great things. We have a working group dedicated to keeping automated

technology under review, which is chaired by Captain Ricky Rouse, AFNI. This group has provided an article on cutting edge issues surrounding Portable Pilot Units (PPU), Under Keel Clearance (UKC) software, the good practice of exchanging route plans in advance and the use of simulation technology.

Our ‘top ten’ feature lists ways to create and maintain good relationships with Pilots. Sometimes this can be very straightforward. Perhaps one of my favourite tips is ensuring that the windows are kept clean (that is, the real windows, not Microsoft!)

As with all editions of *The Navigator*, these pages are designed to start conversations. Discuss pilotage issues with your bridge teams and with your Pilots (when safe to do so). Always pay attention to the condition of your boarding arrangements. Don’t hesitate to contact your Captain or DPA if you are in doubt of providing safe access.

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ALL SEA

Emma Ward

We welcome your news, comments and opinions on the topics covered in *The Navigator*

If you would like to get in touch with us, please contact the editor, Emma Ward at navigator@nautinst.org, or look out for the LinkedIn discussion. We look forward to hearing from you.

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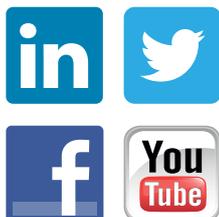
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The Navigator – how do you get yours?

2022 marks fifty years of The Nautical Institute, the organisation that brings you *The Navigator*. It also marks ten years of *The Navigator* itself. Over the years, we've covered many aspects of this vital and exciting career, and we hope you've enjoyed reading these magazines and learning from them. We know many ships use them as a way to share knowledge on board, and we're always delighted to hear that they're valued – and that even old copies are used over and over again.

For the past ten years, *The Navigator* has mainly come to you on paper, thanks to many dedicated volunteers. We're going to carry on providing copies for you to share, keep and pass on, but we're also going to be looking at new ways to for you to exchange, keep and pass on.

From now on, *The Navigator* will be available online as fully searchable text, not just as pdfs, so it's even easier to copy, print and share. We're already much more active on social media, so make sure you follow us there for all the latest news.

It's good to learn from text – but many people find videos more helpful. We hope to start making our own very soon – and we'll be highlighting other people's, too. Have a look at <https://www.youtube.com/watch?v=pfY-Cc40syl&t=2s> for some really clear, practical advice from Lloyd's Register on the topics we cover in this *Navigator*.



We're going to hold a webinar about every *Navigator*

– that's an online session where our Head of Project, David Patraiko, chats with others about the topics covered in the most recent *Navigator*. It's a chance to go in more depth and ask questions of the experts in person. And if you can't make it live, you can always watch again later. The first one will be on **Thursday 14 April**. Keep an eye on our social media for more details – or visit <https://www.nautinst.org/event-listings.html>

We love hearing stories from people at sea – about you, about your life, what you do when you're not on board. Navigators often go unnoticed, so we're hoping to start a podcast featuring *Navigator* readers, to show the world who's driving their ships and what it is they do all day. Sound interesting? Drop us an email at navigator@nautinst.org, or send us a message on Facebook if you'd like to take part. We'll provide all the support you need; all you need to do is have an Internet connection and be willing to chat!

And we're restarting our photo competition – see the back page for more details. We look forward to seeing all your photos.

Many things have changed – but there's at least one thing that hasn't. Being a navigator is a truly important profession, and being a good navigator is something to be proud of.

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PILOTAGE TECHNOLOGY

A look inside a Pilot's technology toolkit

Ports around the world are investing in digital technology for better safety and commercial outcomes. Among other things, this is improving the efficiency of cargo movements, coordinating shipping arrivals more efficiently and enabling remotely monitored mooring hooks. **Captain Ricky Rouse AFNI**, a working Pilot and Chair of The Nautical Institute's Automation Technical Advisory Group, looks at what this means for pilotage.

Ports are continually looking at methods to improve their ability to handle larger and deeper ships within their existing infrastructure. In terms of pilotage, this means in particular the introduction of digital tools to enhance situational awareness. In this article, we examine some of these methods.

Portable Pilot Units

One of the most widespread pilotage tools is the Portable Pilot Unit (PPU). PPU's have existed in various formats for decades, though in recent years their use has become more widespread. It is fast becoming uncommon for a Pilot to board without one. The PPU provides the Pilot with an electronic chart that can enhance situational awareness in a format with which they are familiar, while also providing features and data that might not be otherwise available on ECDIS.

There are numerous different PPU hardware and software options. Equipment often consists of a tablet or laptop loaded with electronic chart software, and either independent antennae to obtain GNSS positional data or a unit that connects to the Pilot plot and uses

the ship's equipment-provided position, heading and AIS data.

Commonly used features are port-specific tidal and chart data. This includes the ability to present the most up-to-date local hydrographic data, rather than what is available on official ENCs. This can be important in rivers and estuaries, where shifting mud or sand banks might result in the ENCs loaded on the ECDIS being long out of date by the time they are available to the ship. Live tidal data can also be incorporated, providing the Pilot with a visual representation of safe water, especially where the tide is above or below the prediction in the tide tables.

Manoeuvring data, such as predictors and lateral speeds, provide Pilots with greater confidence when operating in tight spaces, especially where visibility is restricted by obstructions such as containers. The PPU is often seen as a control measure in complex manoeuvres, so Harbour Masters might mandate the carriage of PPU for those manoeuvres. In some ports, they might be mandated for all movements.

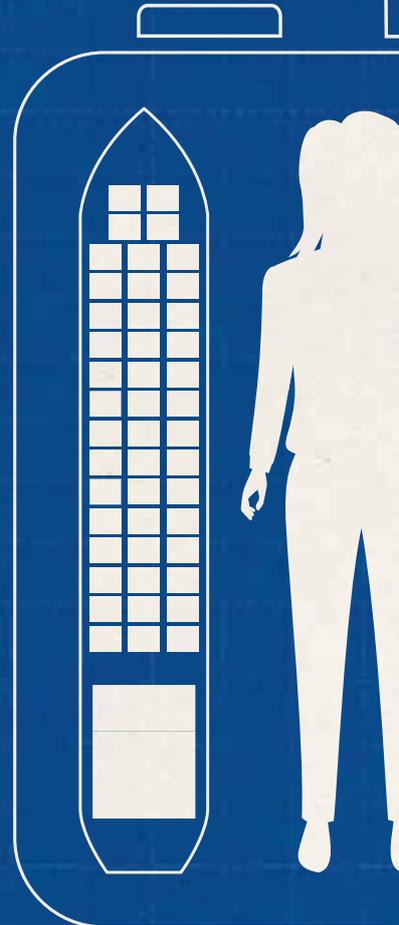
Much like other electronic aids to navigation, the PPU has its limitations and should be used appropriately in conjunction with all available means. A Pilot will be trained

in proper scanning techniques between visual references, the PPU, ECDIS and radar.

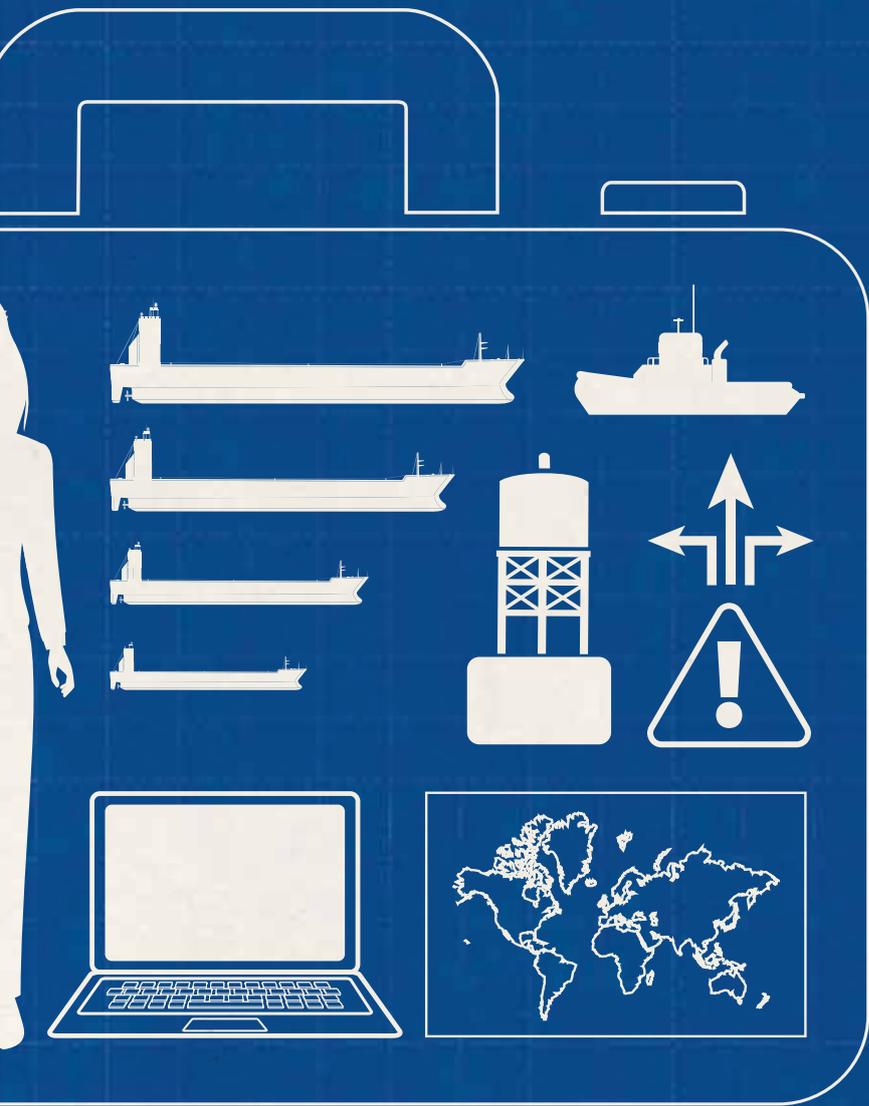
All members of the bridge team should feel confident asking the Pilot to explain the information that they are using on the PPU, if a safe opportunity arises. Usually, the PPU will be placed in a position that is easily visible to all users.

Under Keel Clearance Software

While ports are introducing longer and wider ships into their ports, they are also identifying ways to make it easier for deeper ships to call. Highly advanced software can calculate squat, heel and wave response using a combination of a ship's stability data, live weather, predicted weather and tidal data, combined with complex algorithms and modelling. Some ports directly link their cargo loading to



PILOTAGE TECHNOLOGY



the UKC software, allowing an increased cargo load if the tides or weather are better than expected.

The reliability and accuracy of digital UKC calculations can not only improve commercial efficiency, but also provide alerts and notifications when poor environmental conditions or a change from the original ship loading plan and/or stability could adversely impact the UKC.

In this age of big data, electronic UKC software is often capable of continuous monitoring. It is becoming a valuable tool to analyse trends.

Some ports will provide a printout or electronic copy of the UKC data. However, if they don't, you should feel confident asking the Pilot to show you the data that they are using, especially if it is below your company's usual minimum static UKC requirements.

Port-provided routes

Navigators can spend hours preparing a route with hundreds of waypoints in a long pilotage to ensure that a berth-to-berth passage plan is available. Yet, within a few minutes of the Pilot boarding, they are presented with a new plan which everyone is expected to execute – and that plan will usually be quite different.

An increasing number of ports are offering ships a solution by providing their own recommended routes, either in the pre-arrival paperwork or through their websites. The result is a plan that has been carefully risk assessed with the local knowledge from the port taken into consideration. This port-provided plan should be the one that is mirrored on the Pilot's PPU.

As a seafarer, you will now have measurable outcomes for the pilotage,

allowing you to effectively monitor the Pilot's (or navigator's) execution of the plan and confidently challenge any deviation from the cross-track limits or speed where necessary.

Simulation

Simulation is an integral part of Pilot training, used primarily to build competencies that are otherwise difficult to train on-the-water. These can include emergency response, adverse weather and abnormal situations. The standards of simulation are continuously evolving, with improvements in both graphics and hydrodynamics in each new generation of simulator. For most types of Pilot training, a highly realistic simulation is not necessary. The limiting factor in quality is how much the port is prepared to invest in collecting high-level bathymetric and current data, in addition to engaging graphic designers to accurately model the visuals.

Simulation is also used for port development, allowing Pilots to trial and train for new berths, ship types and changing conditions in the port. Some of the larger cruise operators invite Pilots to attend their in-house simulators to share competencies and knowledge, while port operators will involve shipping companies in trials of new ship types for the same reason.

Into the future

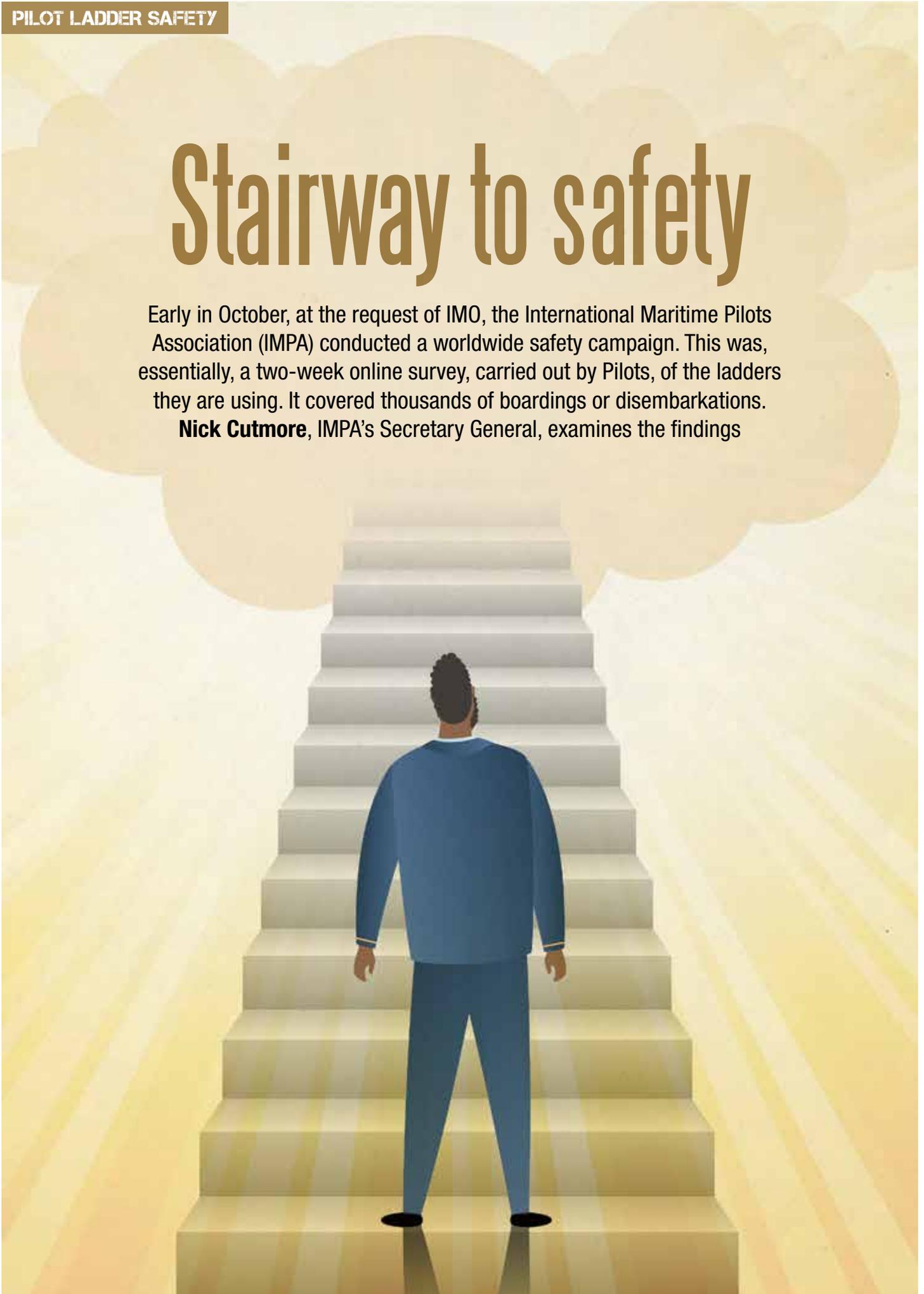
Port regulators are carefully considering future developments, calculating the different risks associated with autonomous ships and identifying best practice to safely facilitate their visits. While mainstream pilotage on board manned vessels will most likely remain the same for the foreseeable future, increased autonomy may drive an increase in remote pilotage. This could see opportunities for Marine Pilots to perform their roles ashore, perhaps as an integral part of a vessel traffic services team.

We are also seeing alternative fuels becoming available in both tugs and Pilot boats. Electric tugs are already in operation in some ports, while trials of remotely operated tugs are currently ongoing. Increased automation and technology will almost certainly require further investment in skills for the future Marine Pilot. Digital acuity will become a necessary skill in the training and recruitment of future seafarers – and Marine Pilots too.

Stairway to safety

Early in October, at the request of IMO, the International Maritime Pilots Association (IMPA) conducted a worldwide safety campaign. This was, essentially, a two-week online survey, carried out by Pilots, of the ladders they are using. It covered thousands of boardings or disembarkations.

Nick Cutmore, IMPA's Secretary General, examines the findings



The results of the 2021 survey were in line with previous results and disappointing as ever. Why? We found high levels of failure in ladder safety – deeply concerning if you are the person using that ladder to get on and off the ship. This safety is amongst the simplest things on a ship to get right and hardly involves new technology. What’s more, we found that the level of SOLAS compliance on Pilot ladders compared poorly with the maritime industry’s speedy and comprehensive adoption of new bio-security measures over the past two years.

When the 2021 statistics are broken down some stark numbers jump out. For instance, nearly 30% of defective ladders had poorly rigged retrieval lines and 14% had steps that were not horizontal. These are failures that should be clearly visible to those rigging the ladder, and indeed may have been actually created by poor deck work. Nobody wants to rig an unsafe ladder, so it raises the question whether the responsible officer understands what they are supervising.

In 27% of reported cases (Pilots are also encouraged to report compliant ladders!) there was no lifebuoy visible on deck.

What’s the cause?

IMPA’s perception is that there are two main issues that explain the lack of compliance:

- > Lack of training in basic seamanship skills
- > Poor outfitting of vessels and provision of non-compliant kit from the outset

All Pilots can give examples of finding that the ladder they have just climbed is secured by a scrappy piece of line with

an unknown knot; or indeed by a crude bar jammed through the side ropes. The poor deck crew may not have ever learned decent rope work, or might think that a piece of steel plate welded to the deck at 90 degrees is the correct way to hang a Pilot ladder.

So, how will this situation end – will it ever be rectified? Although IMPA anticipates that SOLAS will soon be re-opened for revision, this will doubtless be a long-term process. Frankly, if ships cannot offer a simple manila and wood ladder compliant with the requirements that are in place now, then what’s the point of bringing in new rules?

Pilots seeing their colleagues killed or maimed in ladder accidents are increasingly reluctant to climb ladders that appear to be non-compliant. This is counter-intuitive to Pilots with their ‘can-do’ attitude, but has yielded some interesting outcomes.

A very large box vessel was recently declined entry to a European port because of non-compliant arrangements. The cost of the idle time spent at the anchorage far exceeded the cost of installing the new accommodation ladder platform. This sort of behaviour ought not to be necessary, and is not the way Pilots want things to go. However, it did result in rapid activity from the company concerned, who ordered new accommodation ladder trapdoor platforms for a large section of its fleet. The company’s explanation was that “The rules are hard to understand.” Really?

Testing and tracing

Some Pilots Associations have their own ‘App’ for ladder information on ships due, and IMPA is currently working on a global reporting system. For ships, there are benefits to offering a good, safe ladder beyond the obvious ones of avoiding delay or interest from Port State Control (PSC). Pilots arrive on the bridge in a better frame of mind, having climbed a clean, well-secured ladder with properly rigged ancillaries.

IMPA is working with Southampton University on a project to test ladder securing arrangements when rigged at intermediate length. The results of tests using traditional knotwork against mechanical restraint systems will be shared via IMO. Work is also well advanced on a revision of the familiar IMO bridge poster showing the required arrangements.

However, for IMPA, we feel that only a worldwide concentrated inspection campaign will yield the kind of results to finally make a long-term, permanent change for the better.

30%
**OF DEFECTIVE LADDERS
HAD POORLY RIGGED
RETRIEVAL LINES**

14%
**HAD STEPS THAT WERE
NOT HORIZONTAL**



There are many ways that a pilot ladder can be unsafe – would you want to climb any of these?

WATCHOUT



An incorrectly secured ladder and uneven steps - just two examples of bad practice to avoid

Safety on the ropes

In this series, we take a look at issues around maritime accidents and the lessons that can be learned.

Captain Kevin Vallance MNI, licensed deep sea Pilot, looks at how sharing information online can lead to better rope ladder safety compliance

Although use of rope ladders in the year 2022 might seem antiquated, it remains the predominant means of effecting a Pilot transfer. The **#dangerousladders** project is a closed group on Facebook. The aims of the project are to improve the safety of Pilot transfer arrangements. There are approximately 4,000 members from around the world. Anyone is free to apply to join the group and the administrators reject very few applicants. In addition to serving seafarers, members include port authority officials, vessel superintendents, flag state inspectors and Pilot ladder manufacturers – to name but a few.

Despite SOLAS Regulation 23 being reviewed and revised in 2012, Pilots are still encountering non-compliant, unsafe arrangements on far too many occasions. Each instance of non-compliance has potential for serious injury or worse.

TWO AREAS WHERE THE GROUP HAS MADE POSITIVE CONTRIBUTIONS INCLUDE THE SHARING OF INFORMATION IN HOW TO CORRECTLY RIG A RETRIEVAL LINE AND HOW TO SECURE A PILOT LADDER USING A ROLLING HITCH

On the Facebook page, members are free to post photographs, which hopefully lead to active discussion and improvement. It is not the aim of the group to 'name and shame' offenders, but rather to identify problems and offer solutions through positive engagement and education. It is a fact that the vast majority of deficiencies are easily and quickly resolved by ship staff.

Information sharing

Two areas where the group has made positive contributions include the sharing of information in how to correctly rig a retrieval line and how to secure a Pilot ladder using a rolling hitch. Members of the group have contributed written articles to many industry publications globally. In addition, one of our administrators gave a well-received webinar to Pilots in Africa earlier this year.

There is still much work to be done around Pilot transfer arrangements. For example, scientific laboratory tests are being carried out to investigate different methods of securing Pilot ladders at intermediate lengths. This work is being funded by the International Maritime Pilots Association, following preliminary work by one of our members.



The Nautical Institute's Mariners' Alerting and Reporting Scheme (MARS) - <https://www.nautinst.org/resource-library/mars.html> - comprises a fully searchable database of incident reports and lessons, updated every month. If you have witnessed an accident or seen a problem, email Captain Paul Drouin at mars@nautinst.org and help others learn from your experience. All reports are confidential – we will never identify you or your ship.

WHO'S NAVIGATING?

No such thing as a dumb question

Nic Gardner MNI talks about challenges, inspiration and experience throughout her career at sea – and what comes next

What led you to work at sea?

I was in Cubs and Scouts as a kid. At the 1994-95 Jamboree in Perth, I spent a few hours on a local sail training ship, fell in love with sailing, and signed up for a voyage as a trainee. After spending the rest of my high-school career volunteering on board, a career at sea was an obvious choice.

Tell us a bit about your career path to date? What did you find most interesting/challenging?

I think careers at sea are just challenges glued together by periods of boredom. Physical challenges are easy and fun (at least afterwards): a knockdown and flooding on a sailing ship, a rogue wave and near-sinking on another sailing ship, and serious flooding on a capesize bulk carrier stand out in my mind.

Mental challenges are completely different. Nearly three years on a twenty-one metre 16th-century sailing ship with

16 crew, and volunteering as safety officer on the hospital ship *Africa Mercy* before and during Covid were completely different types of mental challenge. Right now, my biggest challenge is working in an area with no access to up-to-date charts, so we have to complete our own surveys before we can do anything. It's never dull!

Where do you see yourself in five years time? Ten?

In the last few years I've rediscovered my passion for humanitarian work. If the borders open in the next five years I'd like to be allowed to go home to New Zealand, but apart from that I'd like to spend more time with Mercy Ships and Peace Winds.

I'm studying emergency health care, and hoping to go on to study law and safety science next. During or after my studies, I'd like to work in either refugee rescue or marine accident investigation. If that doesn't happen, it'll be because something more useful came up.

You've worked on many types of vessels – what strengths and skills help you transfer between them?

I was lucky enough to get almost a decade of hands-on experience in practical seamanship and improvisation on square riggers, and sail with incredible mentors who modelled patience and effective crew management. I'd say the combination of practical seamanship, a willingness to ask 'dumb questions' (note: there's no such thing as a dumb question), and great role models have helped me throughout my career.

How can navigators and bridge teams most effectively work with Pilots?

I think if both sides took a few minutes to connect at a human level, it would lead to more effective bridge teams. Pilots are there to help us, not make our lives more difficult.

It often feels as if many seafarers have an adversarial rather than a cooperative relationship with Pilots; language and cultural barriers make it worse. Some officers and crew see Pilots as bossy outsiders, and some Pilots absolutely fit that stereotype. Procedures and paperwork can't force mutual understanding and respect, or overcome fear and cultural norms—only human connection can do that.



Africa Mercy (Image: Wikimedia/Aboubacarkhoraa)



Look out for ladders

A pilot ladder is an outlier among safety equipment. As seafarers, we always inspect our safety equipment before trusting our lives to it; however, Pilots have no choice but to rely on pilot ladders that they can't inspect before boarding. This leaves seafarers – both ratings and officers – responsible for Pilots' lives

**SEAFARERS ARE
THE LAST LINE
OF DEFENCE: WE
MUST BE WILLING
TO SPEAK UP AND
STAND OUR GROUND**

Seamanship is an odd thing. We often think of it as the practical, “fun” side of the job: maintenance, ropework, problem solving and the like, but we often forget the other side: responsibility and professionalism.

Officers are responsible for ensuring that the pilot ladder is rigged correctly. Unfortunately, on many cargo ships, the officer isn't on deck while the ladder's being rigged – the deck crew actually rig the ladder. The officer is up on the bridge, waiting for the Captain to relieve them. An officer may only have time for a five-second inspection with a dim torch in the dark as the Pilot's boat lines up for its approach. In those conditions, could you tell if the ladder is in good condition and properly rigged? If you were to decide it isn't, do you have a plan for what to do?

The “textbook” answer is to inform the Captain, who will back you up and tell the Pilot boat to stand off until the problem is resolved. But what if you're already using the spare pilot ladder, and it's unsafe? Or if it's physically impossible to rig the pilot ladder correctly due to poor ship design?

Yes, it should have been noticed much earlier. No, seafarers should never be in that situation. Unfortunately, too many seafarers have been there, trapped between safety and commercial pressure, and in the case of pilot ladders, it isn't the seafarers' lives on the line.

Everybody's responsibility

Despite the impressive range of mistakes seafarers make with pilot ladders (see #DangerousLadders on Twitter for some interesting examples), the practical seamanship side of pilot ladders is simple: they must meet certain construction standards, be in good condition, and be rigged in line with the rules. However, “simple” and “easy” aren't the same thing.

Ships should be designed to permit safe and compliant rigging of pilot ladders. Ships should carry appropriate equipment, which should be inspected and tested regularly. Ship procedures and manning should allow officers sufficient time to inspect pilot ladders properly before the Pilot's boat approaches. However, if all of these precautions and systems fail, seafarers are the last line of defence: we must be willing to speak up and stand our ground.

It's simple to identify cracked or splintered steps, chafed or worn ropes, lopsided ladders or insecure attachment points. As a seafarer, you can't control everything, but you must take responsibility regardless. If, the first time you're involved in rigging or inspecting a ladder on a new vessel, you realise that it's impossible to comply with the rules, report it both verbally and in writing.

“We've always done it like this on this ship,” isn't a good excuse if a Pilot dies falling from your ladder.

TAKE TOP 10

Please look after your Pilot! These top ten tips will help make sure everything goes as smoothly as possible

1

Compliant boarding arrangements

First impressions count! This is particularly so for embarkation arrangements, whether that is the pilot ladder, gangway, accommodation ladder or a helicopter deck. A competent person should be at the boarding platform and observing from the bridge wing for cutter transfers.

2

Situational Awareness

Make sure that you know your passage plan. You should have read the sailing directions and any procedures that have been sent to you. Start listening to VTS or Port Control communications early so that you know what to expect.

3

Pilot card

The pilot card should always be prepared with the correct information including drafts, any defects, and the gyro error.

4

ECDIS

Ensure that all Electronic Navigation Charts (ENC) updates have been applied, and both your ECDIS and radar settings are adjusted for pilotage. Many port authorities will provide pilotage passage plans by email. If they don't, you can check the pilotage or port authority website.

5

Know your own ship

You should know the type and power of your propulsion, thrusters and rudder type. If you will be using tugs, know the safe working load (SWL) for the tug bits. A diagram of the bitt locations with SWL can be helpful. If there are deficiencies or limitations it's better to let the Pilot know straight away.

6

Master Pilot Information Exchange (MPX)

The MPX is the most important component of a safe pilotage. This is an opportunity to build a shared mental model of the planned pilotage. Ideally all of the bridge team should be able to hear the MPX, providing a safe lookout can be maintained.

7

Teamwork

Ask questions, monitor the helm orders, use closed loop communication, and monitor the execution of the plan. At every stage, consider if something were to happen to the Master or Pilot, could you put the ship in a safe position? You might not understand all aspects of the operation, but a good Captain or Pilot will guide you if you ask relevant questions.

8

Noise

Noise can affect your focus and contribute to mistakes with helm and engine orders. Acknowledge alarms in a timely manner, avoid raised voices and keep radio volumes to a minimum safe level. Try to avoid distracting conversations on the bridge.

9

Clean windows

Dirty windows are a distraction and unsafe. At night, with the backscatter of lights, they can hinder your ability to see clearly.

10

Bridge wing

Remove or clearly identify anything that would become a trip hazard in the dark, both on the bridge and the bridge wing.

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