

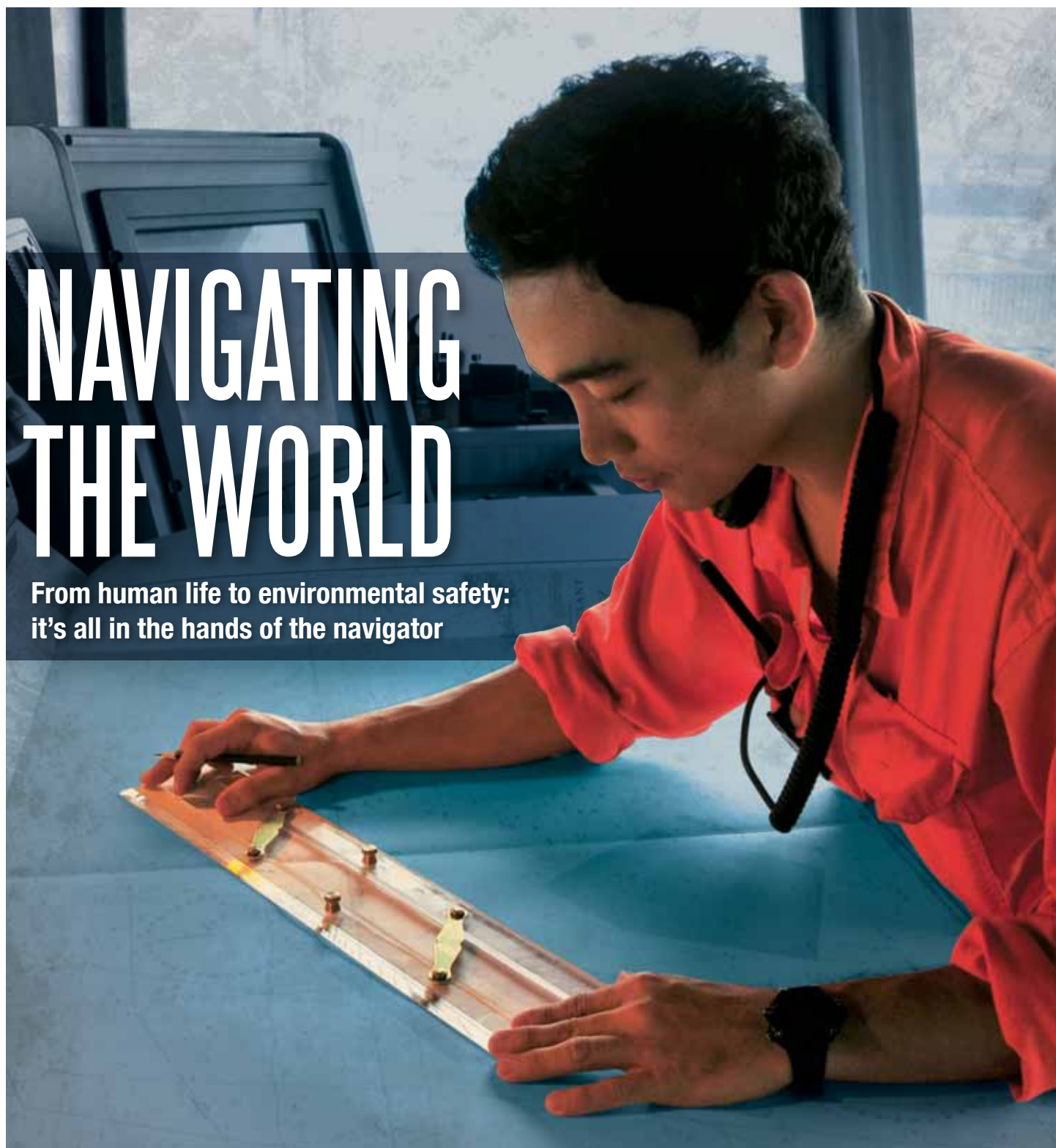
NAVIGATOR

THE

Inspiring professionalism in marine navigators

NAVIGATING THE WORLD

From human life to environmental safety:
it's all in the hands of the navigator



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



All aboard for the first issue of *The Navigator*

Welcome to *The Navigator*, a brand new publication from The Nautical Institute. Shipboard navigators are essential maritime professionals who hold the delicate balance of safety and commercial success in their hands. A navigation officer of the watch is responsible not only for the lives of the crew and passengers aboard the vessel, but also for millions of dollars of company assets in the form of the ship itself; hundreds of millions of dollars in cargo value and billions of dollars in terms of liabilities and environmental impact. On top of that, of course there is also the reputation of their company and themselves.

A common phrase in the maritime industry is that "a collision at sea can ruin your whole day!" This is, of course, an understatement: such accidents can cost lives, bankrupt companies, irreparably damage the environment and ruin coastal communities.

The professional men and women who navigate the ships of the world – vessels transporting more than 90% of global trade – must be recognised, valued and supported in their crucial role at sea.

Navigators are not simply trained in a classroom and then sent to sea to perform their task unsupported. They need to be continually stretched and developed, both formally and informally. Classrooms, simulators, and other modern teaching methods can offer formal support, while onboard mentoring and personal development provide highly effective informal backing.

Navigators must make best use of traditional, well-proven techniques, such as visual observations, to navigate, avoid collisions and monitor weather; as well as more modern tools, including ECDIS, GPS, route optimisation software and the

evolving field of eNavigation. Getting the balance of these tools and techniques right all the time, every time, requires investment, support, training, experience and good procedures – all of which can be achieved through teamwork between the individual, onboard crew and company managers.

The Navigator magazine will be published three times a year and will aim to explore the evolving role of the modern navigator and the tools and techniques they must master, and to provide tips for continual improvement and development.

Crucially though, our main aim is to instil a sense of pride and respect in the role of the navigator, in order to motivate those carrying it out to recognise their value to the industry and society. In addition, we will endeavour to reinforce this critical value to those who do not have the privilege of serving at sea.

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MENTORING MAKES THE NAVIGATOR

Captain Andre L. Le Goubin examines why mentoring is crucial to navigation; and how it works best between junior and senior officers when the process works both ways.

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If you would like to send us your letters, comments or ideas, please contact the editor at navigator@nautinst.org

The Navigator is your magazine, dedicated to covering the differing aspects of the navigator's role. As such, we want to hear from you with your thoughts on our articles, advice for your fellow navigators and your own experiences at sea. For this first issue, we asked members of our LinkedIn community what they hope to see from *The Navigator*.

"It seems the pendulum has swung too far towards the 'tools' and 'aids' so that the modern day navigator is short on the practical and daily usage of 'knowledge of principles'. By all means embrace what the miracle of technology has made available, but not to the point of blind, unthinking adherence to the read-outs, to the exclusion of common sense and double-check practices."

Fergus Moran

"A very timely initiative from The Nautical Institute as numbers of incidents continue to occur, with one notable catastrophe receiving world-wide publicity, which brings the whole subject under scrutiny."

Capt. Russ Garbutt FNI

"I like the idea. As a professional second mate for most of my career, I was close to the navigational side of things for a long time. There is much to discuss: not only new ideas and technologies, but the traditions and methods of terrestrial and astronomical way finding around the globe."

Clive Raymond MNI

"A long overdue initiative. I am pleased that The Nautical Institute has once again taken the helm. A mariner is so much more than a display monitoring technician."

Capt. Mark Grosshans MNI

"I would like to see the Art of Navigation from a sail boat view point and the skills that they put into practice on a daily basis, either doing their job or just out there enjoying themselves."

John Percival

"My suggestion is to let the onboard guys, from all ranks and ratings to share views. I would like to listen to those who have something to say."

Shahrokh Khodayari

"I see many younger officers these days (as well as much more experienced officers and Masters) and there are varied approaches to navigation being employed at sea. We all should be contributing to assist those that follow us."

Warwick Conlin

"It may solve many problems with things like recruitment, and setting a high standard for seafarers, which really is borne of the urgent need to recognise the vital vocation it is, in serving the world economy."

Arthur David

The Very Model of a Modern Marine

Navigator

Steven Gosling MNI, Training and Quality Manager at The Nautical Institute reflects on his experiences at sea and explains why the modern navigator's role is pivotal to the smooth running of a vessel.

The navigator as a tactician

Shipping boasts a long, rich history in which profound, sometimes perilous change has challenged the navigator to master new skills, acquire new knowledge and engage new practices at sea. The transition from sail to steam, from paddlewheel to propeller and from paper to electronic charts are all examples of the slow evolutionary change that has taken place in an industry

dependent on bright, professional mariners called upon to literally 'drive it forward'.

Modern day navigators skilfully traverse the globe in all weathers to move commodities and goods from areas of supply to areas of demand. In doing so, they bring opportunity, prosperity, convenience and comfort to millions of people who, unlike cruise ship passengers, are unable to acknowledge, recognise or praise them for their efforts. Notwithstanding, their work is equally as worthy and their positions as highly regarded.

With recent media coverage of the *Costa Concordia* tragedy and renewed interest in the *Titanic* disaster earlier this year, I have been contemplating how my performance as a former Deck Officer might have been influenced by the adverse circumstances that besieged these mighty ships. I am constantly reminded of the colossal responsibility placed on the ship's navigator – an unseen, unsung hero, tirelessly working to move goods and passengers between ports and terminals in the most valued assets of our industry – our merchant ships.

For hundreds of years the marine navigator has played a pivotal role in promoting economic development and the wealth of nations. Today the men and women of the merchant navy are instrumental in the running of a lean, highly efficient multimodal transport network, in charge of some of the most valuable cargoes in the world.

They command the largest moving structures ever built by man in not one, but two dynamic fluid environments. Many of the comforts and conveniences of post-modern living, from the technology in our pockets to the parts in our cars, have reached our shores thanks to the skill and professionalism of a marine navigator.

For hundreds of years, shipping has been fiercely competitive. Costs are heavily scrutinised and commercial pressure readily applied. No longer is the navigator insensitive to the wishes of the charterer, and no longer is the charterer out of touch with the Master once the ship sails. The navigator is thus something of a tactician, juggling commercial risk with the obligations of primacy, that is, to get the ship from A to B safely, efficiently and securely with minimal impact to the marine environment.

Today's bridges would make navigators

Cruise control

At the ripe age of 29, equipped with a crisp Masters' ticket and an aspiration for fresh milk on the table, I decided to swap my seafaring shirt and stripes for a suit and tie ashore in London: the maritime capital of the world. Having accrued 10 years' experience deep sea in the cruise sector, the lure of carrying business cards over passengers took hold and in March 2011, I joined the secretariat of The Nautical Institute, the world's international representative body for maritime professionals.

As the 'honeymoon period' of my new role slowly begins to fade, I find myself recalling the purpose, pride and privilege I felt not so long ago as a watch officer on a 113,000 grt cruise ship, fully laden with all the trimmings needed for a two-week voyage. Deck Officers in any trade will be well versed in navigating a ship, passage planning, watch-keeping, mooring and anchoring, ballasting, storing and bunkering. For the cruise ship navigator this means:

- > considerable forward planning – courtesy of known future itineraries

- > comprehensive operating procedures – to enhance safe practice and assure quality
- > continuous refresher training – to update knowledge and competence
- > extensive drills onboard – for incident and emergency preparedness
- > a strong shipboard safety culture – to reduce exposure to hazards and danger
- > a smart personal appearance – to respect the cruise 'product' that is being paid for.

And so, beneath the pressed uniform and neatly aligned name badge of a cruise ship Deck Officer stands a specialist navigator, same as any other in the merchant navy; qualified to complement the bridge team of any ship, of any tonnage, anywhere in the world. This is no small responsibility and I was frequently reminded of this when meeting passengers at sea who would take great pleasure in talking to or being photographed with one of the navigators. This was not an admiration for the uniform but the position one filled in wearing it.

of the last century quiver. Complex technologies, legal frameworks, evolving practices and service provisions demand that today's navigators are consummate professionals, savvy of the business they serve and attuned to the need to keep up, both on and off ship.

Modern integrated bridge systems have placed a new emphasis on the monitoring role of the navigator, who spends much of the watch facing flat-panel displays exhibiting every conceivable piece of information with staggering degrees of

accuracy. Technical skills are as important as non-technical and the technology that supports the navigator as vital as more traditional practices of seamanship, perhaps most prominent in the *Titanic* era.

As a young boy at school, I remember one teacher decreeing: "You'll get nowhere in life looking out of the window". Some 20 years later I find myself serving an organisation that exists to support and promote the standing of professional navigators; people who spend their careers at sea doing just that!



FEATURE THE NAVIGATOR AND MENTORING

Mentoring makes the Navigator

Captain André L. Le Goubin MA
FNI tackles the key subject
of mentoring and explains
why a savvy navigator's
experiential knowledge
must never be
underestimated.



I often think about whether the role of the navigator has changed over the years. Equipment on the modern bridge of today's merchant fleet is certainly a far cry from what existed when I first went to sea; but has the actual role changed? Certainly, the basic principles of navigational watch keeping have not. As the Master's representative, the navigator must keep a safe watch to ensure the safety of the crew, vessel and environment and to help get from A to B safely and efficiently.

To undertake this phenomenal task onboard today's ship, navigators have access to a wealth of technically advanced equipment. They also have their own experience to call upon and, if necessary, that of the Master. But where does this experience come from? I want to talk about mentoring: a system as old as seafaring itself. I believe, without wisdom gained from experiential knowledge and transferred by mentoring, navigators cannot perform their task effectively; no matter how advanced their equipment.

Experiential knowledge

Experiential knowledge is knowledge gained from experience that has been reflected upon. I sometimes describe it as where the 'feel' for seamanship comes from; when you do something because it feels right. Navigational

The computer system has suggested a small course alteration to starboard that will give you that one mile passing.

Stop for a minute and put yourself in the same navigational position – on the other ship. Now you have a ship on your port side which you are plotting. It is going to pass astern of you at a distance of 0.7 miles. Far too close, and a little bit scary!

What would I do in this situation? I would look over my shoulder on the starboard side to ensure nothing is overtaking me (experiential knowledge!) and then alter my course to starboard, sufficient to put the other vessel on my port bow (an alteration of about 45°). I would then follow them back, passing under their stern at a distance of one mile, in accordance with my Master's standing orders.

A simple solution. Yet I have seen accidents and near misses occurring in just those circumstances. Why? In my opinion, it is due to a lack of experiential knowledge on the part of the navigator, particularly in their ability to put themselves mentally on the other vessel to consider what the other

Working both ways

The best way for a navigator to learn is through mentoring. An experienced senior officer taking time to help junior personnel sift through the information, break it down and determine what is important before deciding what to do.

Mentoring works both ways. Junior officers often have a far better understanding of modern navigational equipment than their superiors and they can, in turn, pass their knowledge on. For example, when I am navigating, I like the radar set in relative motion, North up, range rings on and relative trails. This is an unusual setting but one I learnt from some highly experienced hovercraft navigators.

Regularly, I am faced with unfamiliar radar and must call on the



navigator to show me the settings. It is usually a junior officer who knows and is invariably willing to show me. If time permits and the officer is interested, I try to take the time in return to show them how I use the relative trails to perform my job.

I love technology and am in no doubt that it has helped prevent numerous accidents. However, I also believe its use must be combined with a firm foundation of experiential knowledge. Whilst some of this originates from college, the majority must come from senior colleagues through the art of mentoring.

So, to those of you who are experienced navigators I urge you to share that experience via the traditional manner of mentoring. As navigators, we have a duty to pass on what we know to those following after us. After all, they too have every right to our invaluable experiential knowledge: something that will stand them in good stead for the rest of their navigational career.

MENTORING WORKS BOTH WAYS. JUNIOR OFFICERS OFTEN HAVE A FAR BETTER UNDERSTANDING OF MODERN NAVIGATIONAL EQUIPMENT THAN THEIR SUPERIORS

equipment cannot feel and therefore we rely on the navigator interpreting the information received, based on their experiential knowledge.

Let me give you a simple example – you are the navigator on a vessel, plotting a target approximately 40° on your starboard bow at a distance of eight miles. It is a clear night with good visibility and you can see the other vessel. The Automatic Radar Plotting Aid (ARPA) says the target is going to pass ahead of you at seven cables (0.7 miles) standing orders say to keep at least a mile distance from all other ships.

navigator is seeing. In essence, they need to take a holistic view, rather than concentrate on the immediate solution provided by computers. This can be difficult: navigators are bombarded with ever increasing amounts of technical information, but they need to develop the ability to assimilate it all and then make a rational decision.

So how can the navigator gain experiential knowledge and from whom? When I went to sea in 1980, a cadet had to secure 24 months sea time before they could hold their first certificate of competency. A significant amount of that time had to be spent on navigational watch with a certificated watch keeper, learning the job and gaining that all-important experiential knowledge. Today, sea time requirement is much less: many nations now ask only for 12 months.

WATCHOUT



Never is the navigating officer more crucial than in ensuring the safety of a ship and its crew at sea. Responsible primarily for human lives, they also safeguard valuable cargo, plus the ship itself and environmental safety. In this series, we take a look at maritime accident reports and the lessons that can be learned.



Abandon ship!

How navigational complacency sank a passenger ferry

Key facts

- > The working environment on the ferry's bridge was not formal. Officers were allowed to become distracted by personal issues, resulting in catastrophic navigational mistakes
- > The First Quartermaster was unfamiliar with the ship's navigational equipment and did not have a valid bridge watchman certificate
- > The navigational officer did not reduce speed when visibility grew poor due to adverse weather conditions, nor when a fishing vessel ahead changed course, vanishing from the ferry's radar
- > The ferry's course was not altered as required causing her to head straight for an island
- > Navigational system alarms had been switched off and the ECS screen dimmed, preventing prior warning of the erroneous course
- > Action taken when the mistake was spotted was deemed 'too little, too late'
- > Passenger evacuation was 'chaotic'
- > Deficiencies in passenger registration: not all names had been recorded on the passenger manifest

A passenger and vehicle ferry carrying more than 100 passengers and crew set sail for a short scheduled voyage. At 00.21 hours the following morning, the vessel struck the north-east side of an island, drifting for over an hour before sinking, causing substantial damage and the tragic loss of two human lives.

What happened?

The eight-deck passenger roll-on/roll-off vehicle ferry departed port at 20.00 hours. She was equipped with fully functioning navigational equipment, and her bridge team was made up of the Master, Second Officer, two Quartermasters and a Fourth Officer.

At 23.50 hours, the steering was set to auto-pilot. The Master had already retired for the night, and the Second Officer left for his break at midnight after reporting a small southbound fishing vessel ahead. The First Quartermaster, who was at the helm, talked intermittently with the Fourth Officer: it had been reported that the pair were in a relationship which was experiencing problems.

Two minutes after midnight, a squall of heavy winds and rain reduced visibility. The fishing vessel was heading east to seek shelter from the weather and was no longer visible on the ferry's radar. No attempt was made to communicate with it; instead, conversation resumed between the bridge officers.

At seven minutes past midnight, the ferry passed the point where she needed to make a course-alteration to avoid collision with an island a little way ahead. This change was never set, although the Fourth Officer somehow believed it had

been. It took 13 minutes to spot the error, due to various distractions. In addition, the ECS screen had been dimmed and audible alarms deactivated.

As the First Quartermaster stood to make the change at 00.20 hours, she saw trees on an island off the starboard bow. The Fourth Officer ordered her to switch from auto-pilot to hand-steering. She was, however, unfamiliar with the forward steering station and did not know how to comply. DGPS data analysis revealed little or no aggressive action taken to right the ship's course as it headed inexorably for the island, striking at 00.21 hours.

The ferry struck along the island before drifting north. The Second Quartermaster tried to reverse her progress, while the Master ordered the watertight doors – some of which had remained open – to be closed. One door was blocked by debris and could not be shut, causing rapid water ingress to the hull. Listing severely, the ferry sank by the stern, coming to rest on its keel.

Passenger evacuation was chaotic, hampered by inexperienced crew members and no established evacuation plan. Head counts revealed differing figures, with the tragic result of two unaccounted for passengers being declared dead.

What changes have been made since?

Since the incident, the passenger reservation system includes all names and boarding numbers. Enhanced training ensures all bridge officers and quartermasters are familiar with both onboard equipment and effective passenger safety management.

WHO'S NAVIGATING?

In this series, *The Navigator* speaks to current navigational personnel about their motivations, careers to date and thoughts for the future. First under the spotlight is cruise ship Second Officer, **Oliver Chasteauneuf MNI** – a graduate of Plymouth University and lifelong sailing enthusiast.

Life on the ocean wave



Name: Oliver Chasteauneuf MNI
Current position: Second Officer, Holland America Line
Commenced Cadetship: 2004
Length of Time at Sea: Eight years

What interested you in a career at sea?

As a child I lived inland, nowhere near the sea, yet by the age of 10, I had discovered an interest in sailing. I used to visit Navy Days at Portsmouth and Plymouth regularly with my parents. By the age of 12, I had decided that I wanted to go to sea as a career.

What career path has led to your current position?

As my interest in sailing developed I enjoyed teaching others. I discovered the graduate training scheme at Plymouth University, where I could combine my interests in ships and sailing with a

the cruise ships of Holland America I saw the world whilst developing my passage planning and ocean navigation skills.

Where do you see your career going from here?

I am intent on achieving a Certificate of Competency as a Master Mariner, to have the opportunity of command. My longer-term ambition is to become a marine pilot, where I can combine a stable home life with my professional skills.

How do you feel when you are in charge of a navigation watch?

In my present position as Second Officer

my abilities and skills. There is also the constant pressure of maintaining the ship's schedule whilst optimising fuel usage, satisfying passenger needs and accommodating the unexpected.

What are the greatest rewards from your life at sea?

Financially, the rewards are good, compared to positions ashore and employment in the cruise ship sector is stable. There is also great satisfaction in working with the ship's crew to achieve the standards demanded of the company. And yes, future prospects are bright, with the possibility of command at a reasonably early age.

What do you think are the greatest challenges for future navigators?

I think the greatest challenges for the future navigator lie in job changes as technology advances. I don't fear technological takeover though – despite advances in technology, I cannot ever see a time when cruise ship passengers will accept an unmanned, totally automated bridge. Cruise ships meet exacting navigational standards, however we do not sail the seas alone. Interaction with other ships operating at lower standards causes me concern. This remains a challenge for the whole industry.

I AM ALWAYS CONSCIOUS OF THE 3,000 PEOPLE ON BOARD AND THAT, DURING MY WATCH, THEIR SAFE ENJOYMENT RESTS WITH MY ABILITIES AND SKILLS

professional qualification and degree in nautical studies.

In 2004 I applied to Plymouth University, securing sponsorship from Small Ships Training Group (SSTG). The SSTG gave me sea experience on the general cargo ships of Scot Line and cruise ships of Holland America. With Scot Line I acquired basic seamanship skills, including ship handling; while on

on the *MV Eurodam* I feel a great sense of responsibility. On a cruise ship, the bridge is the central hub. It is associated not only with safe passage making, but other concerns such as ship security, fire control, weather routing and medical emergencies.

I am always conscious of the 3,000 people on board and that, during my watch, their safe enjoyment rests with



GOT SOMETHING TO SAY?

If you are a serving navigator, or are studying with a view to joining a crew, we would love to hear from you. Contact the editor at navigator@nautinst.org



WAYPOINT

Dr Andy Norris FNI FRIN

Drawing parallels between air and sea navigation

Dr Andy Norris, an active Fellow of *The Nautical Institute* and the *Royal Institute of Navigation*, looks at marine navigation in the broader world of navigational practice and technology

The airline industry is often mentioned when marine navigation is under scrutiny. I was recently fortunate to have had a long discussion with Paul Hickley: a Fellow of the RIN and former senior instructor for airline pilots. Although fundamental navigational principles apply equally to both sectors, it is remarkable how different the detailed practice of navigation can be in each. Perhaps surprisingly, however, as technology evolves further, these differences could well become less marked.

Compare and contrast

An aircraft's onboard flight management system (FMS) automates much of the in-flight navigation. In addition, the flight plan is often determined by a specialist 'professional dispatcher', although pilots are trained to be able to do this themselves.

In particular, pilots enter information relevant to the specific flight, such as loading weights — including fuel — which can significantly change the flight characteristics of the aircraft. During flight, the FMS determines the aircraft's position and the accuracy of that position and alerts the pilot to any potential problems.

While the most obvious difference between air and sea navigation is the importance of altitude in aviation, three-dimensional navigation remains important on a ship because of (charted) underwater hazards and low structures, such as bridges. In particular, the tidal height is a highly important aspect of some coastal navigation. In common with aircraft, the loading of the vessel must be controlled so that it remains stable under all conditions

AIR



The use of the third dimension – altitude – is the most obvious difference. Naturally, this has led to particular navigational practices that enable the efficient use of airspace with complete safety.

Increasingly, airline pilots do not see themselves as navigators. They use the FMS as a navigational tool: it is reliable and very safe. In an emergency away from ocean waters they would depend on air traffic controllers to guide them to safety. The airline pilot can be seen as a 'monitoring navigator'.

Airborne navigational errors are much more likely to lead to significant loss of life. Pilots must follow pre-defined airways with closely governed and monitored altitude and airspeed. They have little choice on how to get from the destination to the arrival airport.

MARINE



Depth and air draft issues also involve essential three-dimensional thinking, but this is very different from aircraft navigation.

At sea, bridge officers spend their watches primarily as navigators. The Officer of the Watch (OOW) must continuously assess the positional accuracy of the vessel, based on Global Navigation Satellite Systems (GNSS) such as GPS, as well as visual, radar and charted information.

If GNSS fails or becomes inaccurate, the OOW has to maintain his or her best estimate of position, including using dead reckoning and estimated position techniques. Most ships do not have the equivalent of an FMS, although an Integrated Navigation System (INS) does have some of its functionality.

OOWS... WILL REMAIN NAVIGATING OFFICERS, NOT MONITORING OFFICERS

and the safe under-keel clearance is always known.

Currently, sea-going vessels do not have mandatorily carried equipment, or anything that reliably detects non-charted surface hazards like floating debris or large endangered species, such as whales. This therefore needs constant visual awareness and the correct resultant action by the navigating officer.

What's next for navigation?

In the future there will be greater emphasis on the use of defined seaways and even shore-based instructions for maintaining a passage within the seaway; much like current airways. This is likely to be one consequence of IMO's eNavigation programme. Ironically, in the air there will be some move away from airways, mainly to give more airspace, as many current airways are getting highly congested. This will still be tightly regulated but with a lot of automation.

Inevitably, there will be more automated navigation on ships too, again as a result of eNavigation, but it will be many years before OOWs are allowed to concentrate on tasks that are not navigationally centred. They will remain, for the foreseeable future, navigating officers, not 'monitoring navigators'.

TAKE 10

This first issue of *The Navigator* has looked at the navigator's role in detail, from the importance of mentoring and support to the consequences of allowing attention to wander on the bridge. Here are ten reasons why we should celebrate navigators the world over, and ways in which we can work to ensure they remain supported, motivated and encouraged while at sea.

1

The importance of being human

Navigation equipment is increasingly becoming automated; however critical decisions must still be made by competent human navigators.

2

A whole world of trade

Ships transport over 90% of global trade. The world depends on those ships' navigational officers for safe and efficient transport.

3

Motivation, motivation, motivation

Professional navigators must be motivated in order to be competent. Training alone is not enough to ensure that individuals remain motivated and have self-confidence in their abilities.

4

Shifting goalposts

We are currently in an era of unprecedented rapid change in the maritime industry. Changes in technology, regulation, public scrutiny and demand for ocean space mean that it is essential for navigators to continually learn and update themselves. In other words, to sign up to the process known as continuing professional development (CPD).

5

The human factor

Seamanship skills and experiential knowledge are essential. Navigational equipment cannot 'feel', therefore we rely on human navigators to interpret information, based upon their instinct, knowledge and experience.

6

Carry on mentoring

While the basic principles of seamanship can be taught in the classroom, seamanship can only be mastered through years of experience at sea. Onboard mentoring, or sharing knowledge from one individual to another, is crucial for developing navigational skills, as well as creating an environment where individuals are valued.

7

Something old; something new

Traditional skills and new techniques are both necessary for safe and efficient navigation. It is important to know both and apply the correct balance.

8

Common sense

Maintaining situational awareness is the essence of safe navigation. This is not only done visually, but via all the senses feeling a ship's motion and being aware of sounds and smells. Fundamentally, the most important thing is to keep a holistic view based on judgement and common sense.

9

Stay alert

Many accidents at sea happen due to complacency. One report estimated that 60% of collisions happened when either one or both vessels failed to detect each other until it was too late. There are many distractions on a bridge and it can be tempting to let automation take over. Find ways to manage alertness; a collision at sea can ruin your whole day!

10

Other people's shoes

When avoiding collisions and applying the Collision Regulations (COLREGS), it is always useful to imagine your actions from the perspective of other vessels. What are they seeing right now?

