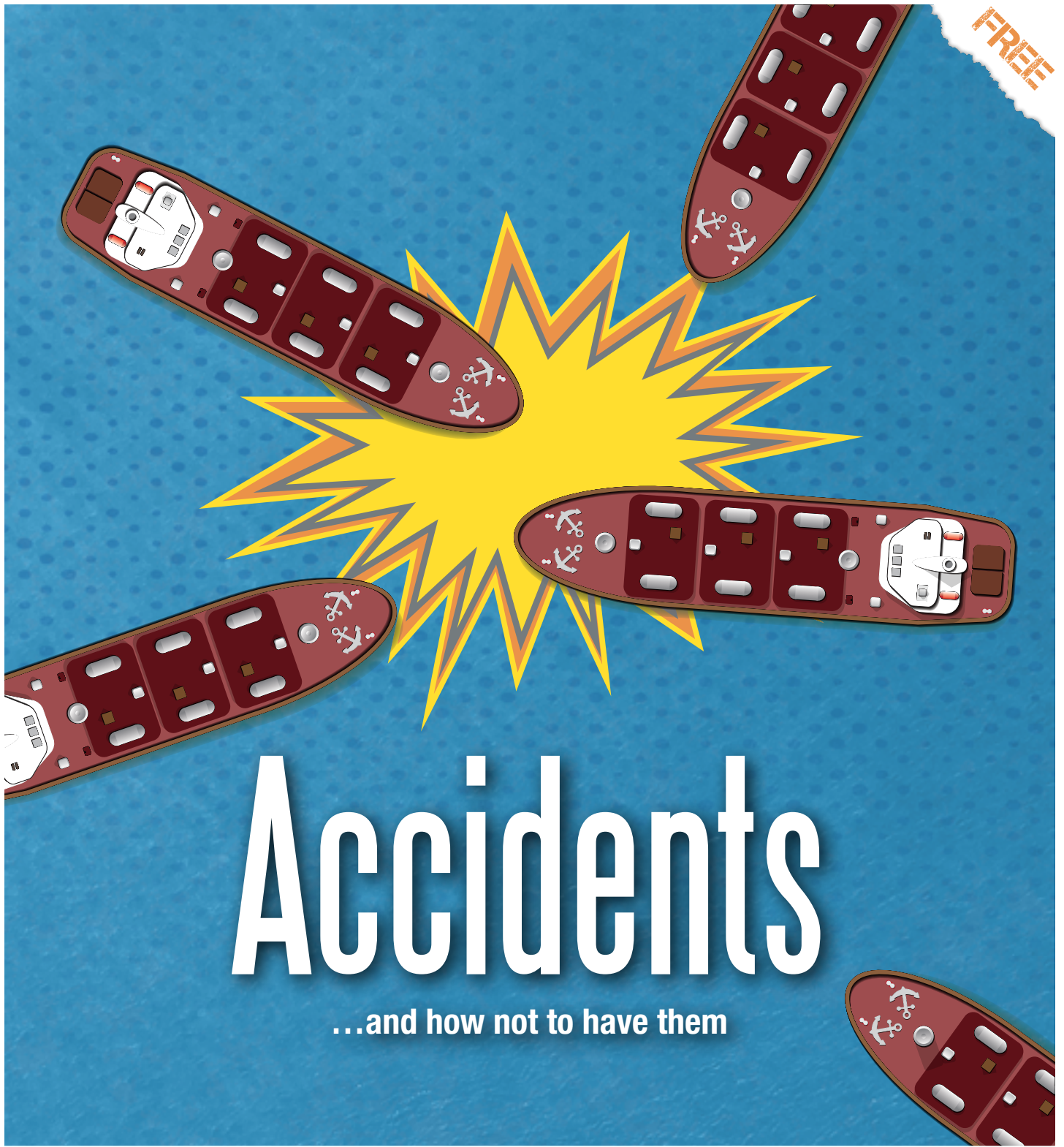


NAVIGATOR

THE

Inspiring professionalism in marine navigators

FREE



Accidents

...and how not to have them



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Accident alert

There are some who claim that there should be zero tolerance for navigational accidents, while others feel that accidents are inevitable. Still others seek to define a 'lowest acceptable limit'. On a personal level, no-one wants to be involved in an accident, but we all know that they do happen. The best we can hope for is to be as educated as possible as to how to mitigate our risks and then hope to be lucky.

The whole purpose of *The Navigator* since it launched in 2012 has been to highlight some of the risks that exist and to start onboard discussions to help bridge teams work together to reduce those hazards as much as possible. With this in mind, please take another look at our past editions online, or use the *Navigator* app to return to any subjects you might have missed, or that you would like to bring to the attention of your bridge team. Some of our more popular editions have

**ON A PERSONAL LEVEL,
NO-ONE WANTS TO BE
INVOLVED IN AN ACCIDENT,
BUT WE ALL KNOW THAT
THEY DO HAPPEN**

been about avoiding collisions, passage planning, positioning, ECDIS, radar, BRM, communication, lookout and error management, to name just some of the past 21 issues.

This issue of *The Navigator* looks at some of the more common causes of accidents that continue to happen to help you learn from others and make it less likely that an accident might happen to you. Not surprisingly, insurance companies (notably P&I Clubs) produce a wealth of information on accidents and how to avoid them and we are delighted to feature a contribution from Captain David Nichol

who focuses on some all too common causes of accidents on page four. Captain Paul Drouin, who is the editor of The Nautical Institute's own *Mariners' Alerting and Reporting Scheme* (MARS), also shares some of the industry's best sources of 'lessons learned' on page eight.

Most of the issues raised in this issue of *The Navigator* are based on existing issues in shipping. However, new technology inevitably leads to new ways to have accidents. Mariners must always remain alert to their surroundings and have the ability and confidence to identify and mitigate risk. These new risks may come from new procedures, developing technology or even changing regulations.

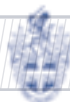
As with all issues of *The Navigator*, we do not propose that by reading these 12 pages you can prevent every kind of accident, but we do hope to start discussions, stimulate thinking, promote mentoring and, as we say on the front cover, 'inspire professionalism'. Please share this edition and your thoughts with your fellow navigators, and stay out of trouble.

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Published by

The Nautical Institute

The Navigator (Print) – ISSN 2058-6043
The Navigator (Online) – ISSN 2058-6051

Printed in the UK by

Stephens & George,
Merthyr Tydfil, UK

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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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The Nautical Institute's book, *Navigation Accidents and their Causes*, looks at major casualties to illustrate the lessons that can be learned from them. It sets out practical ways for those on the bridge to consider risks, plan for them and then take action to avoid them. Each chapter can be read individually, forming a valuable onboard resource. The overall message is that everyone can learn from the mistakes of others and everyone has a part to play in ensuring that training and experience are used effectively to keep vessels safe. Order your copy at: <https://www.nautinst.org/shop/navigation-accidents-and-their-causes.html>

I look for this magazine every time I join the ship. I always find a few old copies onboard, but they are still worth reading. The paper may be old, but the content is not!

Gerald Choy Columna

I'm cadet Wenhao Xia from China, do you remember me? I'm very happy to tell you that I have joined my last cadet vessel: *VLCC Landbridge Glory*.

I enjoy my seafarer life very much and I want to thank our *Navigator* again. I learned so much from *The Navigator*. Since I've seen so many great pictures in *The Navigator*, I have become a sea shutterbug too. So I take plenty of pictures at sea of vessels, oceans, skies and so on. Recently, I waited for the best chance to take a photo of the Little Dipper, because the North Star is such a well-known navigation star.

Wenhao Xia

I saw your publication today, *The Navigator*: really informative! My college is Nyk-Tdg Maritime Academy. I'm not yet a member of The Nautical Institute, hopefully someday when I establish my roots as a seafarer.

Lance Rada

Cadets are more than welcome to join The Nautical Institute – it's a great place to find a mentor, hone your skills and start developing your career. It's never too early to start your professional development! We even have a special membership rate for cadets and students. Find out more at www.nautinst.org/membership

The Navigator team

I am a second-year engine cadet at NYK-TDG Maritime Academy in Calamba, Philippines.

I find *The Navigator* interesting even though I am from the engine department. I am really looking forward to seeing the next edition.

John Zedrick Gaanan

We're really glad you enjoy reading The Navigator! You might be interested in a new publication from our team, too. The Ship's Officer is a free publication aimed at deck officers and engineers, looking at all the many topics they have in common. Visit



www.nautinst.org/theshipsofficer to find out more and download your copy.

The Navigator team

We welcome your news, comments and opinions on the topics covered in *The Navigator*. We reserve the right to edit letters for space reasons if necessary. Views expressed by letter contributors do not necessarily reflect those held by The Nautical Institute

Find us on social media and let us know what you think **#NautInst**

Look out! Accidents and their causes

Captain David Nichol, Senior Loss Prevention Executive from the UK P&I Club, casts a spotlight on several common accidents and examines their likely causes, linking back to previous issues of *The Navigator* for further help and advice



A modern ship's bridge is equipped with an impressive array of integrated, state-of-the-art navigational and communications equipment, designed to enhance navigational safety. Nevertheless, ship collisions, groundings and other navigation related accidents, sometimes involving loss of life or damage to the marine environment, unfortunately continue to occur.

Various factors around human error, including complacency, commercial pressure, fatigue and even an overload of information, play their part. The need to follow correct and thorough safety procedures around navigation is as important as ever. It is the experience of the UK P&I Club that the following fundamental issues persist:

Look out for your lookout

Despite advances in shipboard navigation technology, the basic principle of keeping a safe navigational watch, as set out in SOLAS and STCW regulations, remains as important as ever. Too many accidents are caused by

watchkeepers simply neglecting to look out of the window regularly, or to use radar properly.

Find out more: Navigator issue 19, Lookout

Situational awareness

Situational awareness means knowing what is going on around the ship at all times, enhancing the ability of the OOW to quickly recognise any ambiguities in the navigational situation and to take action before a hazardous situation develops.

Find out more: Navigator issue 6, Radar

ECDIS made simple

Unfortunately, ECDIS is not always used properly or to its full potential. In particular, continuously overlaying the display with radar imagery, AIS and other navigational input may clutter the display and cause difficulty in processing or recognising information. Too much information is as dangerous as too little, so it is important to maintain the distinct functions of the chart, radar and other aids to navigation.

Find out more: Navigator issue 5, ECDIS

TOO MANY ACCIDENTS ARE CAUSED BY THE SIMPLE NEGLECT OF WATCHKEEPERS TO LOOK OUT OF THE WINDOW REGULARLY

Over reliance on GPS

GPS is an invaluable aid to navigation. However, the exclusive use of GPS in coastal or confined waters may not always be appropriate and is often a contributory factor in ship groundings. Full use of radar ranges and bearings, visual bearings and transits should also be made as a primary means of fixing the vessel's position.

Find out more: Navigator issue 4, Positioning

Bridge Resource Management

Sometimes, the presence of the Master on the bridge has resulted in confusion as to who has responsibility for the navigation of the vessel. The guiding principle is that OOWs must continue to execute their duties normally until the Master positively declares that they have the conn. Junior officers should be confident to express doubts or ask questions without fear of being reprimanded.

Find out more: Navigator issue 7, Bridge Resource Management

Dangerous distractions

Superfluous or persistent bridge system alarms are distracting – and may result in the alarms being inappropriately disabled, so they do not sound when they are needed! Keep distractions to a minimum, including music and videos, and even any duties not essential to keeping a safe navigational watch. OOWs should not do any other tasks that would compromise their core duties.

Find out more: Navigator issue 2, Collision Avoidance

Fatigue causes failures

A fatigued or overworked watch-keeper is likely to make mistakes or fall asleep on duty with potentially serious consequences. Where practical compliance with STCW is not possible due to the demands of the trading pattern of the vessel, appropriate additional crew should be engaged.

Find out more: Navigator issue 8, Communication

Commercial pressure

Sometimes Masters, under real or perceived pressure to arrive at a port in time to make a tide or preserve the vessel's itinerary, have taken unacceptable risks by cutting corners or not proceeding at a safe speed in areas of high traffic density or restricted visibility. The safe navigation of the ship must always be the clear priority.

Find out more: Navigator issue 20, Navigation Assessments

Complacency costs

A familiar routine and low levels of stimulation may induce boredom and a lack of attention to detail in navigational duties. This will erode the ability of the OOW to recognise or react to a changing situation. This can be a particular problem on regular liner services.

Find out more: Navigator issue 13, Error Management

A Navigator's guide to accidents

Lucy Budd, Editor of *Seaways*, The Nautical Institute's main membership publication, looks at how learning from experience – both your own and that of other people – really can make all the difference when it comes to accident prevention and safety best practice



It sometimes seems unusual to hear good news about shipping. All too often, the media concentrate on difficulties and disasters. So, here's some good news for a change. Last year, the number of ships that were lost at sea dropped by 50%. That's a total of 46 vessels, down significantly from 98 in 2017 and 207 in 2000, according to research carried out for the *Allianz Safety and Shipping Review*.

Unfortunately, that doesn't mean seafarers can relax. Despite this encouraging news, the number of incidents remains as high as ever, and navigation errors and collisions are a frequent cause. Human error remains a major concern.

At The Nautical Institute, we are always concerned to see that our books on what to do after an accident sell much faster than the books which offer advice on safe seamanship and navigation. In other words, the books that offer advice on how to prevent the accidents happening in the first place! Perhaps the best way to prevent an accident is to be aware right from the start of the risk that it might happen, and to understand what you can do to mitigate that risk.

Learning from others

Learning from experience is often the most effective tutor – but when it comes to accidents, it is always better to learn from other people's experience, rather than your own. It can be useful to look at what happened in an accident and why, and what changes were made afterwards. Some companies and P&I Clubs put out safety bulletins highlighting incidents which occurred in their own fleets, so that other crews can learn from them in their own safety meetings. Even if your company doesn't do this, you can find resources online from MARS and CHIRP, as well as from the international accident investigation authorities (see page eight for more details). The aim is not to discuss who was at fault, but to identify what went wrong and to see if any of it is a potential risk in the way that you operate.

When you study an accident report, it can be very easy to think, 'What

an idiot! I would never do that!' or, 'They should have seen that one coming...' That's not necessarily a helpful reaction. Nobody intends to have an accident, and it's likely that those involved thought they had good reason for their actions. It's worth looking at why they might have thought and behaved the way they did, as well as what they should have done instead. Maybe there is something there that could apply to your own behaviour.

If, on the other hand, your reaction is, 'That could have been me!' ... you've already got an idea of which areas you should be looking at.

Responding to errors

You can, and should, also take the opportunity to learn from your own experiences and near misses. In an article which appeared in *Seaways* earlier this year, safety expert Nippin Anand reflected on his own experience as a young third officer, when he was very nearly involved in an accident himself (you can read the entire article online at www.nautinst.org/seawaysarticles):

'Arriving in port or negotiating heavy traffic had never been a concern for me, I was in my third year as an independent watch officer. I had never missed arrival time in port, nor shown hesitation in a difficult situation. But things changed from here. ... I started to lose confidence. In every manoeuvre I performed, my watchman could sense my anxiety no matter how hard I tried to maintain calm.'

Since then, he says, 'I have changed my approach to failings and chosen to respond to failures in a more positive way.' ... 'Acknowledging failures and sharing our experiences is not a sign of weakness. It is a commitment to learning and development and moreover, an immense source of inner resilience.'

Risk management for life

Preventing and avoiding accidents is a task that is never done. This issue of *The Navigator* is an alerting exercise, not a solving exercise. We can't tell you everything you need to know to avoid accidents in just twelve pages – but we can show you the most frequent causes of accidents, and highlight where you can find information about particularly tricky areas.

For example, a large proportion of groundings take place when ships drag while at anchor, so it might be worth checking anchorage procedures and safety precautions when you know that the passage plan includes anchoring.

Be aware of the other factors that may increase the obvious risk. If you know that you are entering an area with a high risk of collision, how will you maintain situational awareness? What other factors – like fatigue, or potentially distracting bridge alarms – could cause a problem?

To some extent, you are also managing other people's risk, particularly in busy waters. You might be thoroughly familiar with Colregs, the draft restrictions, the weather forecast, the passage plan – but are the other vessels you will encounter? It pays to be ready for the unexpected.

Despite all the equipment onboard today, the safety of the ship still comes down to the people on the bridge and in the engine room. We still need training, mentoring, knowledge, skills, attentiveness and management to ensure that our knowledge and skills are used to the maximum benefit.

The role of the navigator has never been more important.

WATCHOUT

Learning from others' accidents

Captain Paul Drouin, FNI, Editor of The Nautical Institute's Mariners' Alerting and Reporting Scheme (MARS), discusses how we can learn from other people's accidents and incidents at sea to make the marine environment safer for us all

Accidents will always happen, of course. Some people have used this kernel of truth to question the usefulness of accident reports and the purported goal of these reports: learning from the mistakes of others. They suggest that these reports often just point the finger to a guilty party and make the mariner look stupid, incompetent or both. However, this line of reasoning is out of phase with modern ideas, such as continuous improvement. Naturally, the best accident reports do not mention names of individuals involved in the casualty. Instead, they strive to shine a light on the *underlying conditions* that allowed the accident to happen.

The report on the *Herald of Free Enterprise* capsizing in 1987 was groundbreaking, in that it was one of the first to follow the chain of underlying conditions and causal factors all the way to the top company management. Indeed, as modern investigation techniques have since shown, unsafe conditions and unsafe acts onboard vessels often have an intimate and direct link to the management of those vessels. The report has been credited as the catalyst and inspiration for the International Safety Management (ISM) Code that has, over the past 20 years, been an important contributor to the maritime industry in conceptualising a framework for safety and a safety culture.

Risk appreciation

People are hard-wired to learn from their own mistakes. If you put your hand on a hot stove top, you will probably not do it again! So, what if you tell someone who has never experienced such a mishap, 'Be careful, that stovetop is very hot and can burn you'? They will listen, analyse and probably think it



THE MORE KNOWLEDGE MARINERS HAVE OF OTHER ACCIDENTS, NOT JUST THEIR OWN, THE BETTER AND MORE HONED THEIR RISK APPRECIATION WILL BECOME

true and good. Yet their appreciation for the hotness of the stove top – for the searing burn – will not be first-hand and, as such, will not be anchored in their brain quite so profoundly as for the person who actually experienced the event. This is the paradigm that must be overcome.

One of the tools that can help change how this work is done is the development of company- and ship-specific procedures. Procedures are a distillation of best practices that themselves are often honed from past operations that have gone well, but also from those that have not gone well. There is obvious benefit to documenting and adhering to best practice. This was one of the underlying lessons of the *Herald of Free Enterprise* disaster and the resulting ISM Code.

So, the more knowledge mariners have of other accidents, not just their own, the better and more honed their risk appreciation will become. This, in turn, should also lead to a more complete buy-in for procedural integrity and accident reporting. In short, a safer ship and safer crew. Today, accident reports can be easily gleaned from the Internet as many countries publish their reports on the web.

Several can be found under the umbrella of the Marine Accident Investigator's International Forum online: <https://maiff.org/links/members-investigation-reports>. P&I Clubs also publish loss control bulletins and lessons learned that can easily be accessed online. Then, of course, you can read MARS reports in The Nautical Institute's own *Seaways* magazine, or on the free online database, which are themselves edited versions of published reports and members' contributions.

Preparing for safety at sea

Navigation officer, **Jestoni Cruz Balibat** discusses his career to date and explains why we must never take the safety of ourselves and our crewmates for granted

What interested you in a career at sea?

Having a career at sea was never really my plan. I went to maritime college without much of an idea about what I was going to do afterwards. My interest really began during my academic studies when I got to hear personal testimonials about working at sea, and experienced boarding a ship during actual sea practice for the first time. It seemed to be an adventure of a lifetime that would give me the opportunity to meet people, see new places and experience different cultures.

What career path has led to your current position?

One of my goals is to become a ship's Captain someday. This aspiration has led me to where I am now in my career. Currently, I am a Second Officer assisting the Master in voyage planning, acting as emergency radio operator, and deputy to the Medical Officer, among other roles. I obtained my higher licence last year and am now training to become a Chief Officer. This may seem a lengthy journey to traverse, but I know it can be done.

What do you like best about working at sea?

The best thing is when I meet people and talk to them about their way of life. This gives me a deeper understanding of the importance of our profession as seafarers and the significant role we play in worldwide trade. It keeps me motivated to work harder. Apart from supporting my family at home, I can also support other people by providing them with services and commodities they need for their everyday life.

How has your training to date helped you prepare for the eventuality of an accident or incident at sea?

Accidents and incidents at sea are events that people encounter due to several



Name: Jestoni Cruz Balibat

Current Position: Second Officer

Vessel: M/T RHL Flensburg

MAKING SAFETY PART OF OUR LIFESTYLE CAN PROTECT US AND OTHER PEOPLE FROM HARM AND UNDESIRABLE CIRCUMSTANCES

factors – human, machinery/equipment, environmental, *et al.* All the training I have undergone to date, both shore-based and at sea, has made me more aware of the risks involved in my work environment and helped me become more conscious of safety in every single routine or special vessel operation. I can now say that I am more physically and mentally prepared than I was before, should anything untoward happen.

How does your ship prepare for accidents and unforeseen events?

Our ship regularly conducts mandatory

drills, as per SOLAS, and drills/trainings as per our company's safety management system and emergency procedures manual. We perform the drills in a realistic manner, ensuring that all actions are demonstrated properly. We also conduct regular safety meetings where all safety-related concerns and accident-prevention matters are thoroughly discussed. We make certain that all of the crew are well prepared for effective intervention in the event of an emergency.

Do you read accident reports and if so, what do you find most useful about them?

Yes. Lessons learned from other vessels' experience are somethings that I have found very useful to read. The finer details of the accident, facts analysis, conclusion and probable cause, as well as recommendations, can all serve as a helpful tool in the future to prevent the same thing happening again. Whenever new accident reports are issued, our company makes sure that they are circulated across the fleet. Everyone is encouraged to read and discuss them with each other. This enables us to reflect and share insights that can be used as best practice on board.

What do you think is the most important thing to remember when it comes to avoiding accidents?

Always be mindful about safety – your own and that of the people around you. This is something that must never be taken for granted. Although accidents can happen seemingly out of nowhere, it is best to never let our guards down. Making safety part of our lifestyle can protect us and other people from harm and undesirable circumstances, or at least minimise the effects. As they say, it is 'better safe than sorry.'



WAYPOINT

Dr Andy Norris FRIN FNI

Clearing the confusion

Dr Andy Norris, an active Fellow of The Nautical Institute and the Royal Institute of Navigation, takes a closer look at automated alerts and alarms

Automated alerts on vessels contribute greatly towards the avoidance of accidents. They are triggered by systems that are constantly monitoring critical aspects of onboard processes, including those related to navigation, propulsion systems, cargo and security. Of course, all those who use the systems need to understand the audio and/or visual alerts that they generate, and what action to take when they occur.

There are many different types of alert, particularly on the bridge of a vessel. IMO prioritises these by type in its 'Code on Alerts and Indicators' (Resolution A.1021(26)), as follows:

Emergency alarms – indicate that there is an immediate danger to human life or to the ship and its machinery and that instant action needs to be taken, for example in fire and water ingress situations

Alarms – indicate situations that require immediate attention and action to maintain the safe navigation and operation of the ship

Warnings – indicate situations that may become hazardous if no action is taken

Cautions – give awareness of conditions that do not warrant an alarm or warning but need appropriate consideration.

Know your alerts and alarms

Emergency alarms indicate highly dangerous situations that are likely to require necessary action by everyone onboard the vessel, such as assembling in a safe area. Relatively few systems onboard a vessel will generate alerts of this type. Fortunately, their actual activation is quite a rare occurrence, except for tests and training.

Conversely, there are numerous systems onboard, especially on the bridge, that can generate the second alert category – alarms. Many of these have a high probability of being activated, particularly those linked to navigation-related equipment. Great care must be taken in deciding upon user settings for alarms. Poor settings can either fail to give an alarm when one is needed or generate lots of unnecessary alarms, making the system less effective in alerting users to more serious situations (See *The Navigator*, issue 13 – error management).

POOR SETTINGS CAN EITHER FAIL TO GIVE AN ALARM WHEN ONE IS NEEDED OR GENERATE LOTS OF UNNECESSARY ALARMS, REDUCING THE EFFECTIVENESS OF THE SYSTEM IN ALERTING USERS TO MORE SERIOUS SITUATIONS

For example, an ECDIS is required to have alarms for three specific situations:

- > If the safety contour is about to be crossed;
- > If there is a deviation from the defined route;
- > If the Closest Point of Approach limits are breached.

Great care must obviously be taken in choosing appropriate settings.

The third and fourth categories of alerts – warnings and cautions – are far less urgent. They aid the safe operation of a vessel, but do not require an instant response.

Consistency is key

Certain problems can result in numerous alerts being given on the bridge. An extreme example is when a vessel encounters GNSS jamming. Multiple items of bridge equipment rely on GNSS for position and/or timing information and so they all respond with alarms, creating a highly confusing situation for bridge staff, especially when different equipment needs quite different ways of acknowledging the alarm.

To reduce such problems the IMO recommended that from 2014, all new bridges should comply with the standards for Bridge Alert Management as defined within IMO Resolution MSC.302(87). These are aimed at enabling the bridge team on any specific ship to manage all alerts on the bridge in a consistent manner.

The concept includes an optional Central Alert Management Human Machine Interface (CAM-HMI). This is effectively a single-display system that integrates the alerts from all navigation-related systems to help the bridge team rapidly understand any abnormal situation.

In 2018, more detailed technical standards for Bridge Alert Management Systems were agreed as an international technical standard. In future, this will give even greater consistency on how alerts are displayed, acknowledged and analysed.

Unfortunately, older bridges will continue to have the possibility of their users becoming confused when having to handle complex navigation-related alarm situations. In such rare circumstances, key bridge staff must concentrate on deciding and implementing the best emergency course and speed that will reduce all risks, not least by increasing their own awareness of the raw visual scene – that is, what their own eyes tell them.

TAKE 10

Maximise your chances of avoiding an accident at sea with these top ten tips, designed to make you think and help keep you safe at sea

1

Reporting the risks

Insurance and accident investigation reports indicate that navigational accidents still do happen, despite our best efforts to eliminate all the risks

2

Learning curve

It's important to learn from your own mistakes, but don't forget to learn from other people too. Study accident reports and other sources of industry information to increase your knowledge and understanding

3

Examples galore

Good sources of accident and incident reports include P&I Clubs, National Accident Investigation agencies, Chirp Maritime and, of course, The Nautical Institute's own Mariners' Alerting and Reporting Scheme (MARS)

<https://www.nautinst.org/resource-library/mars.html>

4

To err is human...

Aim to have multiple ways of catching a mistake. Take advantage of extra personnel (call the Master), alarm functions (depth, CPA...). Above all, stay alert!

5

Plan ahead

Most risks, including traffic, weather and distractions, can be anticipated. Plan ahead, predict risk and mitigate against it. Systems can fail, so always have a plan B

6

Look out!

Poor lookout remains one of the most common causes of accidents. Always keep a good lookout by 'all available means' – and don't forget to look out of the window!

7

Anchoring advice

Far too many collisions and groundings occur when vessels are in anchorage. Stay alert when anchoring and anticipate changes in weather and currents

8

Avoid distraction

There are numerous ways that a navigator can become distracted while on duty, such as other tasks, alarms, traffic... If you feel stretched, call the Master

9

Fatigue can be fatal

The risk of fatigue and tiredness while on duty are both real and common; the effects can be equivalent to those caused by drinking. Monitor yourself and others continuously for the tell-tale signs

10

No 'I' in TEAM

Always work together as a bridge team to learn from others, anticipate risk and help others learn and understand how to keep themselves and their colleagues safe

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Find more in your own language at www.nautinst.org/NavInspire

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WIN AN IPAD

Just post a picture of you with your *Navigator* on Twitter, including the hashtag #NAVsnap, or send us a message on Facebook with your photo attached (www.facebook.com/thenauticalinstitute) and tell us the name of your ship or your college, if you have one. Let us know if you're a member of The Nautical Institute, too (everyone gets entered in the draw, whether you are a member or not!) Or send us the information in an email!

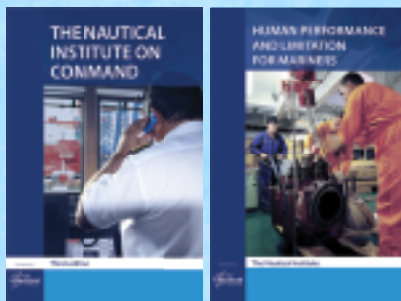
AND THE WINNER THIS ISSUE IS...

Our Navsnap winner for this issue is Sarker Mohiuddin Hasnat Rank, ad: Second Officer with Pacific International Lines. He sends us this photo from *MV Kota Lihat* in Napier, New Zealand



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