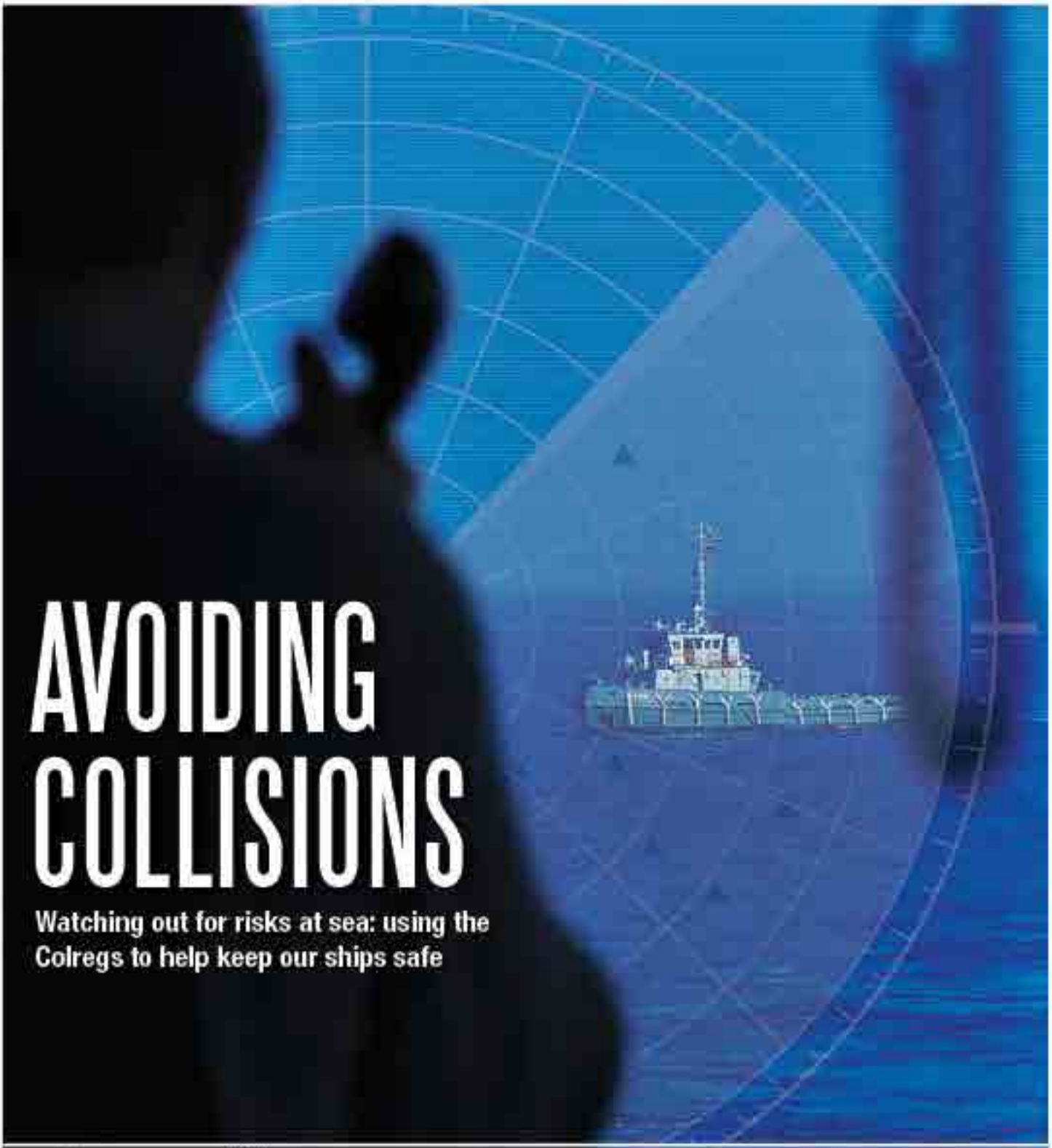
February 2013 Issue no. 02

THE NAVIGATOR

Inspiring professionalism in marine navigators



AVOIDING COLLISIONS

Watching out for risks at sea: using the Colregs to help keep our ships safe

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

NAV BRIEF

David Patraiko FNI
Director of Projects, The Nautical Institute

The art of avoiding collisions

Two facts spring to mind. Firstly, some reports claim that as many as 60% of collisions happen when either one or both ships don't even see each other until it is too late to avoid colliding (often in fine weather). Secondly, it is fair to say that a collision at sea can ruin your whole day! Our industry expects our shipboard Navigators to avoid all collisions, 100% of the time throughout their entire careers – often making such critical manoeuvres alone without the support of other officers checking their decisions. This is a big ask.

Professionalism in the task of avoiding collisions is essential. It is critical to stay alert and focused at all times; and it is crucial to know how to keep a proper lookout by all appropriate means (Rule 5) and to determine if risk of collision exists (Rule 7). These 'means' consist of many traditional techniques, not least of which is the use of sight and hearing, but also many modern tools, such as ARPA and AIS.

SHIPBOARD NAVIGATORS ARE EXPECTED TO AVOID ALL COLLISIONS, 100% OF THE TIME

Ships often sail close to navigational hazards and in congested waters. These waters are due to grow ever more congested as seaborne trade increase, and water space diminishes. The former resulting from a recovering economy and environmental / political pleasure to shift goods by sea rather than road; the latter due to competition from issues such as offshore energy installations, aquaculture and environmental restrictions.

In this second edition of The Navigator we will explore some of the common causes of collisions and the lessons we can learn from them. We will examine how traditional techniques, such as visual bearings, can be used alongside modern techniques, such as target association – and how both are needed to make the best decisions. Many of these techniques can be taught in classrooms and practiced in simulators, however they must be refined at sea, by practice and by sharing skills and ideas for collision avoidance with fellow officers.

Don't let your day be ruined. Stay alert, use all your senses, take pride in your professionalism – and share this edition of *The Navigator* with others, it's free for anyone wishing to learn.

INSIDE THIS ISSUE

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Published by The Nautical Institute.

Printed in the UK by Newnorth Print Ltd, Kempston, Bedford, UK.

ALL AT SEA

Emma Ward

If you would like to send us your response, comments or ideas about anything in this issue, or the next, please contact the editor at navigator@nautinst.org

Following a successful first edition of *The Navigator*, in which we examined the role and responsibilities of the navigating officer, this second issue moves on to discuss the content, application and crucial nature of the collision avoidance regulations. Again, we turned to our LinkedIn community to find out their views.

"In over 20 years of being a watch-keeper/Master, I didn't come across a situation whereby the Rules didn't get me out of trouble… so long as everyone else was following them too."

Captain Neil Gardiner, MNI

"The Colregs provide a critical basis for understanding a navigating situation and deciding on possible action, both for one's own ship and powered targets. I would emphasise good practical understanding of the 'Rules of the Road' and good decision-making skills."

Suleiman Bakari

"The Navigator has to be aware of the manoeuvring ability of his or her vessel, and means of lookout available. Size should not really be the deciding factor for rules."

Captain Nishant Dhir, MNI

"I prefer people to just stay off the radio and follow the rules. In most cases, the use of the radio is counterproductive and distracting."

Kerry Thomas

"In our company we say you need an idiot on both ships before you have a collision. We train and encourage compliance with Colregs but also cover defensive driving and being ready for non-compliance from surrounding ships."

Jörgen Strandberg

"No matter how well-versed students are in the Colregs theory they can still find it hard to apply these rules to 'real life' situations."

Marlous Mes

"Mentoring the juniors to ensure correct following of the rules is an essential part of the senior officer's responsibility."

Robert Parker MNI

"Putting yourself in the position of the other vessel can in many instances, avoid risk of collision or even a close quarters situation arising in the first place."

Captain Stanley Richard-dit-Leschery, AFNI

The next issue will focus on

PASSAGE PLANNING

We look forward to hearing from you!

LinkedIn

Join the debate on LinkedIn http://www.linkedin.com/groups/Nautical-Institute-1107227 or follow us on Twitter https://twitter.com/TheNavigatorNI. A PDF of this publication can be downloaded at www.nautinst.org/thenavigator

How to be a good collision avoider

Dr Steve Price looks at best practice in collision avoidance and shares some valuable tricks of the trade.

Collision avoidance can be said to be a bit like riding a bicycle. After a (frequently) wobbly start, once people get the hang of it, the ability never leaves them. However, knowledge, understanding and the correct application of the Rules do take a little time to accomplish. The Rules are not intended to be an intellectual challenge. They are a logical protocol designed to keep vessels apart and to provide a complete and sufficient framework, within which to defend yourself, your vessel and the lives of others.

Here then, are a few 'tricks of the trade':

- **In collision avoidance, time is of the essence. Don't waste it;**
- **Never assume that any other vessel will comply with the Rules;**
- **Nowhere do the Rules state that a vessel should stand into danger.**

References:

- Standard Marine Communications Phrases IMO 2001
- MGN 315 (M) Keeping a Safe Navigational Watch on Merchant Vessels
- Bridge Procedures Guide ICS 2007
- Nautical Institute Publications

Mindset

It is helpful to think of the Colregs as 'ship separation rules'. This mindset helps encourage early and positive actions. It is better to make an early adjustment to course or speed than to spend too much time using VHF, radar features or ECDIS/AIS to make an assessment. Know how much sea room you have. Don't 'stand on' from long range if you don't have to. Conversely, don't leave it too late. If standing on and the lack of response from the give way vessel is making you unhappy, do something. The Rules provide all the freedom you need.

Anticipation is the key to success. Potential collision avoidance issues can even be anticipated during passage planning and the watch-keeping plan adjusted to suit. The chart and sailing directions can reveal a lot about what to expect. Know your vessel's needs in terms of visibility, sea room, response timings and draft. This gives you the ranges at which various rules are triggered and defines safe speed.

The lookout

The OOW should wear a pair of binoculars around his/her neck. This serves as a badge of office; reminds him/her what (s) he's there for and tells everybody else who's on watch. If possible, the OOW should be encouraged to move around the bridge.

Lookouts should be taught scan and reporting routines and treated as esteemed colleagues. They should be rigorously trained to search for 'tiny targets' in the 'killing zone'; from well abaft the beam to well abaft the beam out to three miles. (The CPA of a 'stopped' target, e.g. a liferaft or person in the water, is abeam). The visual all-round lookout is invaluable to watch out for small craft in distress and objects/ persons in the water that may not be apparent by radar. Lookouts should be encouraged to look at the radar and engage in social professional conversation. All personnel onboard should be encouraged to visit the bridge to train as lookouts.

Work the radar target picture from long range to short by regularly changing scale. If two radars are available, have one set on short range, say three miles, and encourage the lookout to work from it. ARPA is only helpful if you diligently capture all incoming targets. If you feel 'overloaded', consider reducing speed.

Keep it simple. I find that radar in 'Relative Motion, North up' gives an instantly recognisable comparison with the chart (especially useful when using parallel index lines for safety clearance). Count targets outwards from the heading marker as you find them through the windows. You can't wear out a radar set by using it. Have your escape routes in mind at all times, including the 'crash stop' and the 'round turn to starboard'. Ensure that you have engines ready to manoeuvre in high traffic situations, e.g. TSS, and consider increasing watertight integrity. Don't forget to tell the engine room what is going on.

Relative bearing change can be spotted easily by using a bridge window frame as a reference. This will tell you whether a vessel is drawing left, right or on a steady bearing. No corrections need be applied to magnetic compass bearings in collision avoidance. Regularly check visually astern. Always check before altering course. Be aware of your radar blind arcs. In multi-target situations, prioritise, then tackle them sequentially. If necessary, be prepared to reduce speed and call for assistance on the bridge. A radar CPA of under half a mile is a full collision risk.

The bridge environment

Control light levels diligently. At night, enforce a full blackout and ensure you can find everything in the dark. By day, control glare. Wear a good pair of sunglasses if necessary. Open doors and windows in restricted visibility so you can hear the outside world. If it's chilly, wear another layer.

Correct maritime vocabulary should be used on the bridge to avoid ambiguity. This can be especially helpful if people are of different nationalities. Wheel and engine orders must be followed up.

Night orders should be written to give the Master enough time to reach the bridge if needed. Verbal night reports should follow a formal pattern. Written aide-memoires can be helpful. Junior watch-keepers need to be monitored and supported appropriately.

Have a Colregs poster/cards on the bridge. There is no shame in having ready references for people who may be fatigued or distracted. They also help in training lookouts and cadets.

As a bridge team, don't be afraid to 'customise' the bridge to suit the way you work. Use checklists, state boards and memory aids. Appoint junior officers as 'Assistant Bridge Watch-keeping Safety Managers' and build successes into your Safety Management System.

Running the watch

Watch handovers must follow a formal checklist to avoid missing important details. There is a 'danger period' between 20 and 30 minutes after handover. At night, the relieving OOW should reach the bridge 15 minutes before handover and the relieved OOW remain available for at least 15 minutes afterwards.

Have a work pattern by breaking the hour into, say, 15-minute periods, into which you work your position fixing, plotting and observation routines. (Don't forget to sign 'Night orders' at the beginning of the watch and the Ship's Log at the end.)

Be willing to use lights, shapes and sound signals. (There are no excuses if you don't.) Check your lights are actually working: stern lights can get forgotten.

The final word

Viewing the Colregs as a social and professional contract between mariners builds, supports and defends the social capital of seafaring. Above all, courtesy and 'putting yourself in the other guy's position' have a large part to play in collision avoidance.

Averting risk by 'all available means'

Captain Trevor Bailey asks what exactly is meant by 'all available means' when it comes to collision avoidance.

"*Every vessel shall use **all available means** appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist*."

Colregs, Rule 7

We determine risk all the time: when walking down a crowded street, we tend to be instinctively aware if we are going to walk into somebody or if they are going to do the same to us. As professional navigators, we should be able to apply this same inherent sense to our watch-keeping and lookout practices; with experience there will often (though not always!) tend to be an instinctive awareness of the potential of risk of collision with another vessel.

Yet instinct is far from the only way of determining the risk of collision. So, how should you interpret *"all available means"*? What do you have at your disposal to determine risk of collision?

The primary tool should be the 'mark one' eyeball, assisted by the compass repeater. On some vessels this may be placed on the centreline of the wheelhouse, although this is not universal by any means.

A regular and careful check of the compass bearing of any approaching vessel will give the navigator an early and effective indication of the potential risk of collision. Bear in mind there must be an **appreciable change** in the bearing before you can be confident that risk of collision does not exist.

Look out for the lookout

Of course, with reference to visual checks on the approach of other vessels (or your approach to them if you are the overtaking vessel), as OOW you should also make use of the lookout. The job title is a bit of a giveaway, plus he or she is required by Rule 5 of the Colregs! The lookout is there to assist and it is essential that you establish a good rapport and demonstrate your trust in them.

Acknowledge reports courteously. Don't dismiss them with, "Of course I've seen that vessel!" They are only doing their job. If the lookout feels ignored or not trusted, they may choose not to report… and maybe you haven't seen that vessel after all.

Changing course

If you do need to take avoiding action to avoid risk of collision, you have a number of tools available. Use them wisely. If you choose only to alter course, it is good practice to engage hand steering, using the lookout as helmsman. Do not take that role yourself; you will be limited in your ability to multi-task by steering and monitoring the compass bearing.

You may decide to use the autopilot, but do so with care. It may be tempting to make a series of small alterations on the autopilot to avoid large rudder angles, but that series of small changes will not be readily apparent to the other vessel. An appropriate significant alteration of course in hand steering can be achieved without resort to large rudder angles.

Targeted plotting

Recognise your own temptation to 'plot everything'. A radar plot looking like chickenpox is unprofessional and suggests that you do not have a good appreciation of your surroundings. Your radar will be able to display trails of all targets and these should give a further indication of the likelihood of the risk of collision. You can then decide which targets need plotting.

Once plotted, use the radar controls such as vector length or relative versus true vectors to gain a better appreciation of the situation.

Safe distance

Be aware of what the equipment is telling you and how to interpret that information. Know your own vessel and its limitations. In open waters, I would caution against passing any vessel at less than one mile ahead or abeam and not less than half a mile astern. Remember Rule 8 (d):

"Action taken to avoid collision with another vessel shall be such as to result in passing at a safe distance. The effectiveness of the action shall be carefully checked until the other vessel is finally past and clear."

You cannot second guess what the OOW on the other ship is thinking and he or she may not consider that smaller margins are acceptable. They might start calling you up on the VHF and then who knows what might happen?

The VHF is NOT there to avoid collision: the concept of the 'VHF-assisted' collision is not just a myth. It is a proven reality, as many accident reports clearly demonstrate. The communications between 'ship on my starboard side' and your own ship must be avoided at all costs.

In a recent passage through the Dover Strait, north-east bound on a laden VLCC in the Deep Water route, my own ship, *Nonsuch*, was called by an overtaking vessel, *Overtaking Express*, on the VHF. The conversation went something like this:

***Nonsuch*, this is *Overtaking Express* on your stbd quarter. What are your intentions? I am overtaking you.**

***Overtaking Express*, this is *Nonsuch*. I intend to comply with the Colregs and maintain my course and speed.**

***Nonsuch*, this is *Overtaking Express*. I will come past you on your stbd side.**

***Overtaking Express*, this is *Nonsuch*. I shall be maintaining my course to the stbd side of the channel and I suggest that you pass on my port side.**

[In dejected voice] *Nonsuch*, this is *Overtaking Express*. That will mean I have to adjust my speed and slow down to come across your stern.

He did adjust his speed, altered course around our stern and then overtook on the port side.

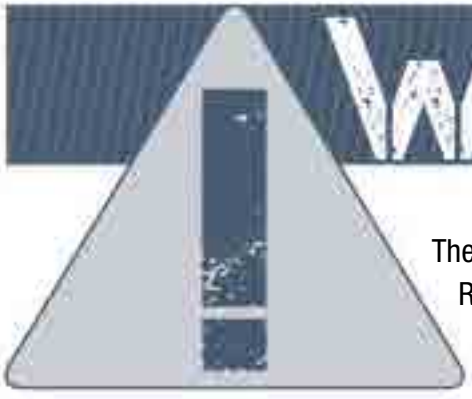
Like VHF, AIS is NOT to be used in isolation for assessment of the risk of collision, even though it does provide CPA and TCPA. It was developed to provide additional and improved situational awareness. It may be helpful to provide an indication of another vessel's intentions, particularly in busy and complex traffic areas.

Through integration, more information is available to the OOW than was previously the case and, for vessels already fitted with ECDIS and/or ECS, it is quite likely that radar and AIS data can be overlaid on to the chart display. If so, the OOW may be able to interrogate these targets directly in the ECDIS / ECS but should not rely on this information alone to determine the risk of collision.

Technical detail

As OOW you must not be constrained in your choice to use the engines to control your speed, if it is appropriate. An early alteration, if there is sufficient sea room, may well be the most effective course of action to avoid the risk of collision but, in more confined areas, it may be desirable to adjust the ship's speed. Be aware of restrictions on changes in the operation of engines, particularly slow speed engines, but it may be that the notice to engineers regarding changes is partly for their convenience rather than strictly mechanical. The telegraph is there to be used.

Radar and ARPA are excellent tools to assist with determining risk of collision but it is essential that you are aware of the limitations of the equipment. After all, it relies on highly sophisticated computer hardware and software to make the calculations and observations for you. The fact that it is "Type Approved" implies that it has been tested to ensure compliance with the Performance Standards specified by IMO and the IEC. However, that approval was carried out under test conditions and the navigator must check the equipment is working effectively at regular intervals.



The navigating officer is crucial to 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.

Collision course:

How watch-keeping errors caused a cargo ship to collide with a bulk carrier

Key facts

- The Master of the general cargo vessel considered it safe to leave the bridge to go to bed without leaving written instructions.
- The lookouts on both vessels had been allowed to leave their posts, thus removing a significant warning system while the vessels were in a busy shipping lane.
- Despite ARPA being fully functional onboard the general cargo ship, it was not used to acquire or plot any of the radar targets. The AIS was not monitored, nor was the bridge alarm activated.
- The watch-keeping officers onboard the bulk carrier did not make effective use of their radar, AIS or other navigational equipment, despite identifying possible targets.
- The bulk carrier had started to overtake the other ship when the latter suddenly changed course.
- It is likely that the cargo ship's chief officer did not see the bulk carrier until the two vessels collided.
- Evasive action started by the chief officer of the bulk carrier did not prevent the collision.

Just before 0500, a general cargo ship collided with a bulk carrier in a busy shipping lane. The accident caused damage to both vessels and the leak of 60 tonnes of marine gas oil. Neither ship had a lookout on the bridge at the time of the collision, and the watch-keeping officers did not detect the other ship until it was too late. Radar and other bridge equipment were not used effectively enough by either ship to prevent the collision.

What happened?

The single hold general cargo ship was equipped with fully functioning navigational equipment and carried eight personnel. At the time of the accident, her chief officer was Officer of the Watch. Her Master had retired for the night some time before the incident, leaving no written night orders, as the ship was in a Vessel Traffic Services (VTS) area and the officers on duty all held certificates of competency. Visibility was good. The port radar was not in use and the chief officer had adjusted the starboard radar to provide a range of about nine miles ahead. Despite there being several targets on the screen, none was acquired on ARPA to assess the risk of collision. The AIS also went unmonitored. Shortly before the incident, the cargo ship's lookout left the bridge to undertake routine safety rounds. This left the post empty when the collision took place.

Onboard the bulk carrier, the chief officer was also Officer of the Watch, accompanied by an Able Seaman acting as lookout and a cadet being trained in navigation. Coincidentally, the bulk carrier's lookout was also not at his post when the two vessels collided, as he had been allowed to leave to use the toilet.

The bulk carrier had started to overtake the other ship when the latter suddenly changed course. The chief officer attempted late evasive action, but failed to prevent the ships colliding. However, he did stop the two vessels colliding at the cargo ship's accommodation area, which could have led to far more serious potential consequences.

Radar and bridge equipment were not being used to their full potential on either vessel. Mirroring events in the cargo ship, the bulk carrier's ARPA was not used to assess the risk of a crash and the AIS display was not checked, in direct contravention of the Colregs (Rule 5), which state:

Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate.

Aftermath

After the collision, the Masters of both vessels hurried to their respective bridges. Both engines were stopped and communication was established between the two ships. No injuries were sustained on either vessel. Initially, it was not thought that much damage had occurred, and after investigation, the bulk carrier was allowed to continue its journey. Further investigation revealed extensive damage to the cargo ship's starboard side shell plating, and it was estimated that around 60 tonnes of marine gas oil had escaped into the sea.

What changes have been made?

The Marine Accident Investigation Branch (MAIB) has published a flyer outlining the lessons learned from the collision and highlighting the importance of effective bridge teams and proper navigational lookouts. Both shipowning companies carried out an internal investigation and have revised their safety and training protocols.

WHO'S NAVIGATING?

Discovering the world

In this series, *The Navigator* speaks to current navigational personnel about their motivations, careers to date and thoughts for the future. Under the spotlight this issue is merchant navy cadet and Second Officer, **Samantha Mason**, who is currently enjoying a year travelling round the world.

What interested you in a seafaring career?
Before discovering the merchant navy cadet scheme I was a scuba dive instructor and have always loved the sea. At first, I was drawn to a life at sea by my admiration for officers I saw on a ship; then when I discovered the opportunities available to me through training, and the future possibilities regarding pay and the 'time on, time off' ratio, it seemed a perfect fit.

What career path has led to your current position?
After my initial training with Trinity House, they offered me my first job as Second Officer. Although it was not deep sea, I feel the experience I gained on single watch keeping, involving coastal sailing, plenty of collision avoidance and constantly changing passage planning, was greatly beneficial to my growth as a new officer.

Where do you see your career going from here?
I am excited about the opportunities in the maritime world. I would like to experience different ship types and, over time, follow the natural progression and climb the ranks to Chief and Master. If I ever feel the need to leave the sea, I would consider studying maritime law. Having goals is important, but so is flexibility to adjust to opportunities when they arise. I intend to go with the flow, work hard and see where my career takes me.

Is there anything that could be done to further improve collision avoidance?
I think that, with various nationalities sailing ships worldwide, it is important that every officer is strictly reading from the same rules and regulations so there is absolutely no confusion on what action should be taken. This may be what is currently intended on paper, but is actually something that seems to differ in understanding when onboard ship.

All officer training should be aligned to one high level of performance by an 'international' school, following one curriculum and way of examination. This would ensure every person at sea has had the same level of training and formal assessment. It would also eliminate short cuts, cheating and breeding of bad habits in individual training establishments.

What are the greatest rewards for your life at sea?
Time off allows me to do what I want in my personal life; for example, my current job has allowed me to travel the world for a year. The job itself is impressive and living on a ship is an experience few are privileged enough to enjoy. Of course, the stunning views and chance to see new places is the cherry on top.

Tell us a bit about your time travelling? Has it changed how you feel about life onboard ship?
I am currently travelling round the world for a year. I began in Argentina, explored Brazil, Bolivia and Peru, then travelled round New Zealand. I experienced my first cyclone in Fiji, and now I'm about to visit Australia. Yet to come is Thailand, Cambodia, Loas and Vietnam, then Nepal and India. I'm living the dream. Although I'm travelling on a budget, I'm determined not to let amazing experiences pass me by.

If anything, travelling has made me appreciate my job even more, because it allows me to live the way I wish and do all the things I want. I love being at sea. I miss being on the water, navigating on the bridge, being part of a team and general ship life. Every ship brings a brand new adventure and I am looking forward to beginning the next one, once my travels are complete.

Name: Samantha Mason
Current position: Second Officer
Training: Merchant Navy Cadet Scheme, Trinity House

What do you think are the greatest challenges for future navigators?
At sea, the greatest challenge for anyone is the long periods away from home and loved ones. More specific to the job as a navigator is gaining and maintaining full understanding of the ever-evolving onboard technological equipment, while keeping the traditional navigation methods alive through regular practice.

Royal Institute of Navigation
Science Technology Practice

WAYPOINT

Dr Andy Norris FNI FRIN

Matching radar with reality

Dr Andy Norris, a Fellow of *the Nautical Institute* and Vice President of the *Royal Institute of Navigation*, examines the part radar plays in the marine navigation mix.

Radar is an essential tool for marine navigation and collision avoidance. It can integrate well on the bridge. It complements other systems, such as ECDIS and AIS, and supports essential traditional skills, such as looking out the window. Yet while radar can offer very helpful decision support, it is the professional navigator who remains the ultimate integrator and decision maker.

Experienced navigators hold radar in high esteem, and quite rightly. It greatly supports safe navigation, not least in making decisions concerning collision avoidance. Radar has strengths that generally complement the weaknesses of other systems, including visual navigation. However, it has its own limitations, which need to be fully understood to prevent overconfidence in its use.

The strengths and weaknesses of radar

Strengths

- Radar is generally much less affected in conditions giving rise to poor visibility, such as darkness or mist.
- Radar allows target bearings and ranges to be assessed quickly and easily. A particular strength of radar is its generally excellent target tracking capability, now complemented by AIS.
- As a rule, targets generally continue to be visible on radar at ranges in excess of the distance at which optical visibility is lost.
- Radar can be easily calibrated. Checks include comparing the range of targets on two radar, as well as monitoring the radar's AIS. Recalibration can be easily carried out by a service engineer.

Weaknesses

- Any electronic system can suddenly fail completely, including radar. Bridge procedures for sudden failure must be understood and closely adhered to. Safe navigation is still possible even if other radar systems are not immediately available, although it may require a reduction in speed and the posting of an additional lookout.
- Partial system failures can also make radar useless, such as an antenna rotation gear malfunction or a display blackout. Fortunately, such gross malfunctions become evident pretty quickly. Other radar problems can cause a reduction in performance or, even worse, a display that looks right – but isn't.
- Heavy rain can reduce radar's target visibility, especially on X-band systems. Sea and rain clutter controls are essential.

Reality check

As with any navigational tool, radar's efficacy relies for the most part on the professionalism and expertise of the human being operating it. Taking optical bearings is essential to maintain positional integrity. Top advice is always to keep a check that the radar picture is tying up with reality. For instance, does the display correctly align conspicuous targets with their visually-observed bearings, especially taking into consideration the azimuth stabilisation in use? Misalignment may indicate a problem with the radar or with the reference equipment feeding it, such as the gyrocompass.

In both sea and ground stabilised modes, are the target vectors and trails consistent with the outside world and what the lookout and other navigational crew are seeing out of the window? If not, check the reading on the equipment feeding the radar, such as the GNSS or SDME for consistency, or suspect the radar itself.

RADAR OFFERS USEFUL SUPPORT, BUT IT IS THE PROFESSIONAL NAVIGATOR WHO IS THE ULTIMATE DECISION MAKER

Compare manual settings with available automatic settings and vice versa. Some radars operate extremely well on automatic settings but this is by no means guaranteed. The most modern of automatic controls can often outperform a human – until they malfunction.

Point of reference

Finally, errors with the navigation sensors that are feeding the radar often lead to inconsistencies on the display. On modern ships, there is likely to be a Consistent Common Reference Point (CCRP) to which all positional inputs are automatically referenced. If there are concerns about consistency, this point may have been incorrectly set. The most important thing to remember is to never be afraid to flag up potential fundamental set-up issues to the first mate or Master, particularly if you do not have the right expertise, training or experience to attempt to rectify them yourself.

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TAKE 10

This issue of *The Navigator* has looked at the Colregs and the whole area of avoiding collisions at sea with them. Here are ten points that everyone can take away to help keep this crucial topic at the forefront of the mind.

1
Keep an eye out
In over 50% of collision cases, either one or both vessels didn't see the other before it was too late – often in good visibility!

2
The eyes have it
Despite the availability of modern electronic tools, visual sightings and experience are superb for avoiding collisions – and don't forget to look astern.

3
Experience is key
Knowing the rules of the road is essential. However, applying them correctly and consistently requires much experience. Always try to learn from each experience; work with others to share your knowledge and discuss incidents (yours or others) as a team at safety briefings.

4
Nobody's perfect
Humans (including navigators) are not 100% infallible. When available, take advantage of additional support. Use lookouts as appropriate and call the Master whenever in doubt.

5
Professional lookouts
Lookouts are professional mariners and can save the ship from disaster. Treat them with professional respect, encourage them to look at the radar and confirm all reports.

6
Other people's shoes
Courtesy and putting yourself in the position of the other vessel can, in many instances, avoid the risk of collision ever arising in the first place.

7
Be defensive
Never assume that a 'give way' vessel will see you, act in accordance with the Colregs, or share your understanding of 'safe distance'. And never assume that a 'stand on' vessel will see you, maintain their course and speed or share your understanding of 'safe distance'.

8
All available means!
The Colregs require you to use 'all available means' to determine the risk of collision. This includes your own senses, a wide range of electronic instruments, and shore support when available. Use them all, and use your imagination.

9
Stay out of the fast lane
Reducing speed is an essential tactic for reducing the risk of collision, both in a specific incident and generally in congested waters. Ensure you are familiar with how your vessel reacts to reducing speed and encourage others to be aware of its effectiveness.

10
Plan ahead
Risk of collision can often be anticipated during passage planning. Alter the plan to reduce such risks and/or ensure that enough crew are available during risky areas, and that the ship is making safe speed.

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RADAR and AIS – Dr Andy Norris FNI FRIN

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Published: **2008** Price: **£30** Ref: **0307**

ECDIS and Positioning – Dr Andy Norris FNI FRIN

Written especially for mariners, this book will help improve your understanding and approach to the use of electronic charts, and provide guidance on how to develop the mindset needed to use ECDIS safely and effectively.

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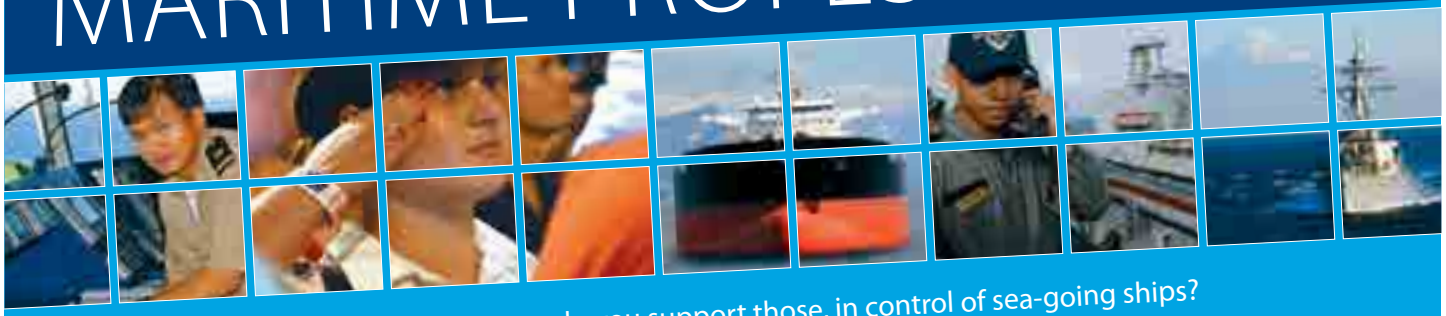

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