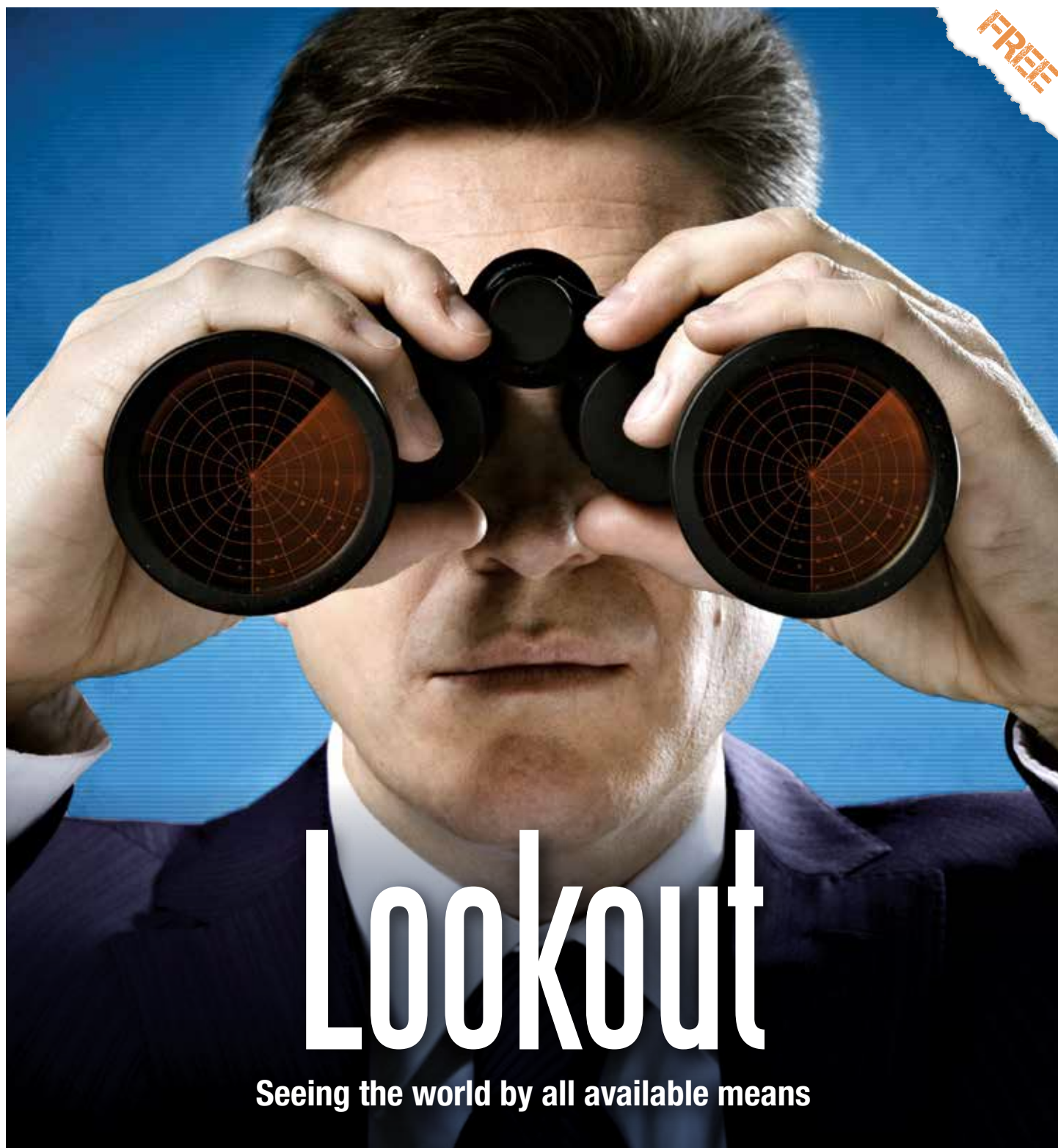


NAVIGATOR

THE

Inspiring professionalism in marine navigators

FREE



Lookout

Seeing the world by all available means



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All available means

One of the prime functions of a navigator is to keep a good lookout. Unfortunately this isn't always the case, and when a lookout is not maintained, bad things can happen. A few years ago, a senior accident investigator wrote in *Seaways* that: "In 43% of all the collision cases involving merchant vessels that were investigated by the MAIB over a ten-year period, the watchkeeper was either completely unaware of the other vessel until the time of the collision or only became aware of the other vessel when it was too late to take effective avoiding action." This is almost entirely due to poor watchkeeping, where lookouts are either not present or ineffective, and the OOW is asleep, fatigued, absent, distracted or disengaged.

All navigators know Rule 5 of the Colregs by heart. It states that: "Every vessel shall at all times maintain a proper lookout by sight and hearing as well as by all available means appropriate in the

prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision." The skill of the navigator is to understand how to use *all* available means, be aware of their strengths and weaknesses and know when to call for assistance.

In this issue of *The Navigator* we highlight the absolute importance of keeping a good lookout while maintaining focus and alertness. We have all been taken in by optical illusions and know that 'tired eyes' can miss critical things. In The Nautical Institute's book, *Human Performance and Limitations for Mariners*, Captain Rajiv Singh states that approximately 80% of the information received by the brain is through our eyes and if there is ambiguity between the senses, the information collected by the eyes takes precedence. In the article on page four, he looks at how the human eye works, and how that affects our

effectiveness as lookouts. The article also examines the phenomena of night vision and offers scanning techniques for keeping a more effective lookout.

In the article on page six, Captain Trevor Bailey reflects on his experiences as Master, Mate, trainer and mentor to identify some best practices for encouraging and supporting good watchkeeping on board. He explains how to use not just the eyes, but radar, AIS, and radio traffic and how to anticipate situations without falling into the trap of relying on assumptions. He talks about the magic of a navigator's intuition.

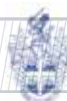
As always, the best way of identifying best practice is to discuss the issues with your bridge team and other professionals. Find techniques that will keep you alert and focused. Always call for support when the amount of available information is beyond your capacity, for example in heavy traffic, limited visibility or when challenged by the multitude of other shipboard distractions.

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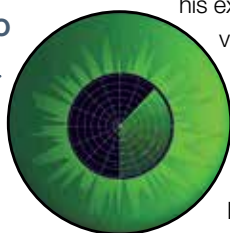
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If you would like to get in touch with us, please contact the editor, Emma Ward at navigator@nautinst.org, or look out for the LinkedIn discussion. We look forward to hearing from you.

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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

I have worked onboard for thirty two years, with fifteen as a Captain of tanker ships. Most of the time I sailed along the Peruvian coast. The sea there is quiet most of the time, above all in summer. Five years ago, a friend of mine told me about The Nautical Institute and recommended it. Since then I keep my knowledge up-to-date with *The Navigator*, reading about several important merchant marine topics.

Now, I am retired and in charge of the education and training of three hundred seafarers in my company. When I receive my copies of *The Navigator*, I send them onboard ships so other officers can also enrich their knowledge and professionalism. I appreciate the efforts you make for merchant mariners.

Angel Carbajal Diaz
Naviera Transoceánica S.A,
Callao, Peru

I started my professional career as a deck cadet with Fleet Management Ltd. I am currently sailing in the capacity of Third Officer, holding a Second Mate certificate of competence. I love living the life of a seafarer, seeing the world, seeing new places, meeting new people. I'm a regular reader of *The Navigator*. It has great articles to read which help us learn and understand about ships and the shipping industry. Thank you, and have a great day!

Soshiyant Singh
Third Officer

Hello all! I am sailing as an ice navigator onboard the *MV Nordic Olympic*. As I write, I can see the ice of Pond Inlet, Nunavut, Canada in the background. I have been a member of The Nautical Institute for ten years and enjoy reading



Looking back: This reader of an earlier issue of *The Navigator* highlights the two most important things needed to keep a good lookout!

The Navigator. Especially when there are discussions on ice navigation topics! Good luck and fair winds to all.

Captain Paul Ruzycski, AFNI
Ice Navigator, MV Nordic Olympic

Reading and feeding your brain with this insightful magazine will help keep your learning on track. As a rating, it inspires me to perform my job confidently and competently. I am an Ordinary Seaman and aspirant Navigational Officer.

Jacques Eleazer Bete
Ordinary Seaman, WW ships

Thanks to Jestoni Balibat for his letter in the last issue which we mistakenly attributed to Richard Abrigo.

Ask A Captain

Is there something you've always wanted to know about being a Master? Looking for mentoring, or practical advice – or just to know what it feels like to be in command? For our next issue, Captain Ivo Jutrovic has agreed to answer your questions – so send them in to us via Facebook, or to navigator@nautinst.org, and we'll pass them on. We can't guarantee to answer everything, but all questions welcome! We look forward to hearing from you.

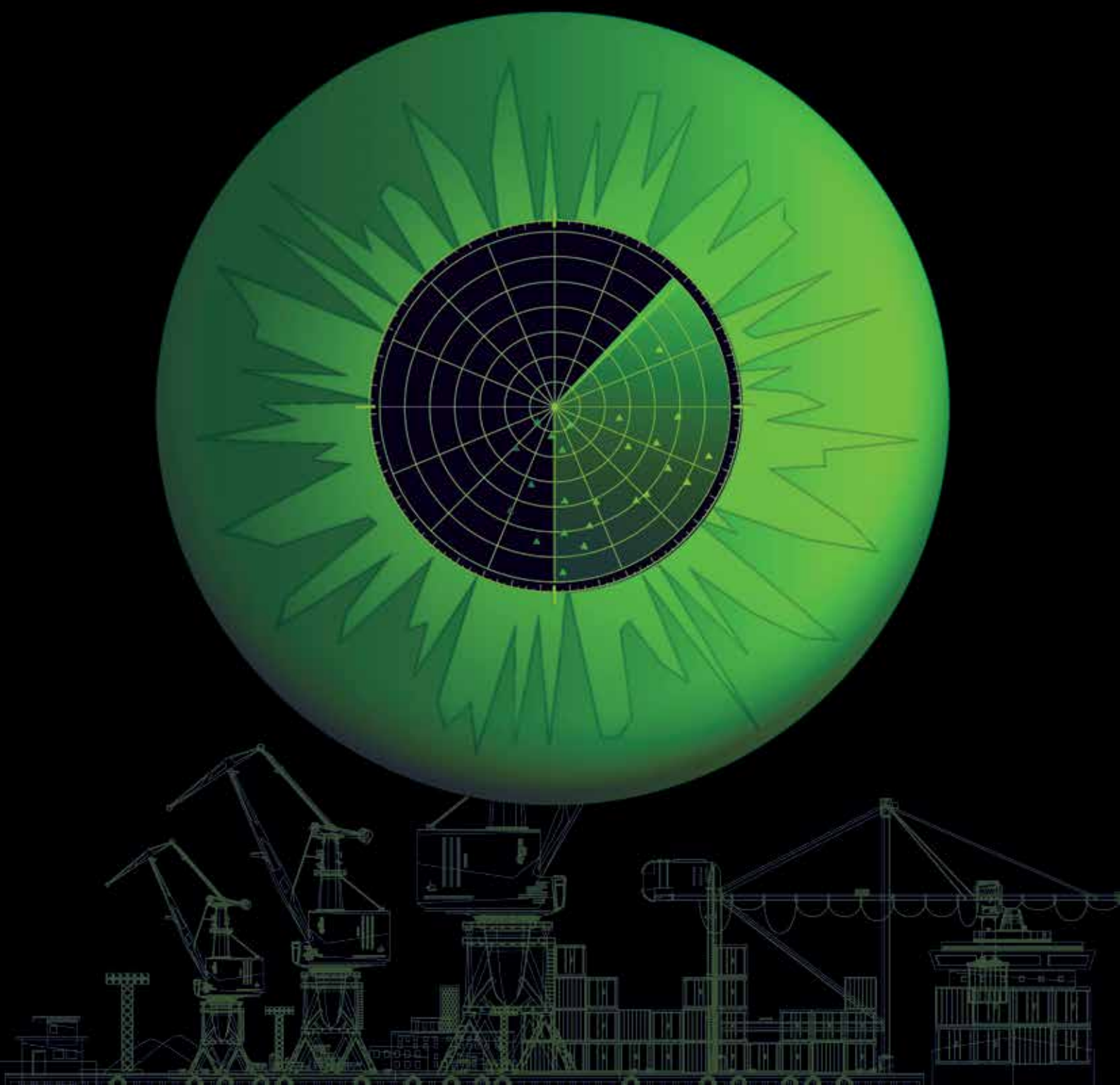
The Navigator team

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THE HUMAN EYE

Windows to the World

Captain Rajiv Singh MNI takes a closer look into the one of the watchkeeper's most important tools – the human eye



Seafarers are often told that the most important piece of equipment on the bridge is their own eyes. Like any piece of technology, you can only get the best use out of your eyes if you know something about how they work – and how to deal with their strengths and weaknesses. The sense we most rely on is sight. Approximately 80% of the information received by the brain is through our eyes and if there is ambiguity between the senses, the information collected by the eyes takes precedence.

Our eyes are spherical in shape with a window-like structure that admits light into the eye while protecting it from outside elements. The retina at the back receives admitted light and converts it into electrical signals that are carried to the brain via the optic nerve.

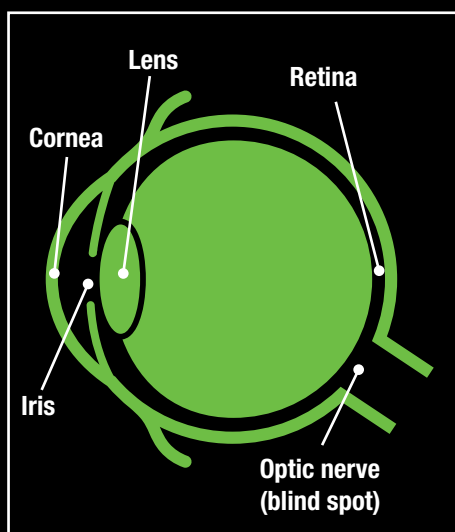
Behind the cornea is the iris. This is the coloured part of the eye that controls the amount of light admitted into the eye, via the lens, by changing its shape and thereby adjusting the size of the pupil or aperture. The lens is flexible and changes its shape to ensure correct focus of objects seen on the retina.

The surface of retina is covered by light sensitive cells known as rods and cones. Cones sit behind the lens in the macula or fovea region of the retina and are responsible for colour vision and work in bright lights. The fovea region is the most sensitive area of the retina. Rods work well in dim light, are concentrated in the outer area of the retina and help with peripheral and night vision. Contained within the rods is rhodopsin (visual purple), a compound that helps the retina adapt to night vision. It typically takes about 30 to 45 minutes to reach its full concentration and can be broken down when struck by a bright light or glare. Beyond the fovea region is the junction of the optic nerve, which forms the blind spot.

Limitations of the eye

Night vision

Since it takes about 30 to 45 minutes for rhodopsin to reach its full density, at least 30 minutes should be allowed to ensure good night vision. Bright lights should be avoided before and during night-time watches. Fully dimmable lights should be the norm on a vessel's bridge; some experts suggest red light for bridge lighting and torches. The instrument panel and displays should be switched over to night mode and their brightness adjusted to ensure optimal night vision – just bright



enough to read the instruments clearly. One method which can help regain night vision when faced with unavoidable glare or bright lights is to close one eye.

During the day, excessive exposure to sunlight and glare should be avoided, as it increases the recovery time of rhodopsin to hours or even days. In fact, prolonged exposure to glare or the sun without proper eye protection can permanently damage the eyes. Wear good quality sunglasses (100% UV protection) to avoid glare and to protect the eyes against long-term permanent damage.

If you are on lookout duty, looking at an object directly is unhelpful because there are no rods in the centre of the retina. Motion is needed to attract our attention (especially at night) so lookouts must keep moving their eyes. This helps detect apparently stationary objects and avoids the image falling into an area with minimal rods or the blind spot.

Empty field myopia

When the environment is relatively unchanging and the eye has nothing to focus on, the lens takes up a position of rest. This can happen during very dark nights, in open seas and in hazy weather conditions. The focal distance under these circumstances is between 80cm and a few metres and the lookout may well be staring out and seeing nothing. This phenomenon is similar to when a digital camera covers its lens after a few minutes of inactivity.

Narrow field of vision

Though our eyes can usually accept light from an arc of nearly 200°, the field of vision to focus on a target is narrow – only 10 to 15°. We can perceive movement at the periphery, but cannot identify it. This can become tunnel vision.

Judging distance and blending into the background

A target that contrasts against the background, is apparently moving and is not in a glare is easier to see than a target in poor contrast, is apparently stationary and sits in glaring light. The absence of a background, context or reference point also makes it difficult for lookouts to judge distance. At night, lookouts must judge distance by size and brightness alone and this can be dangerous.

Perception and over-estimation of visual ability

The mind can play tricks on lookouts so that what they think they are seeing is different from reality. A faint white light with an occasionally sighted red light, fine on the starboard bow, could be perceived as a large vessel crossing at distance from starboard to port. In reality, it may be a small fishing vessel coming very close to the lookout's own vessel.

Scanning the horizon

Considering all these vision limitations, there is no point in simply staring out into the open ocean or skimming the eyes across the ocean. Instead, lookouts should focus frequently on a distant object and then scan the horizon in blocks of about 15°. Observe each block for at least one second to detect objects. The distant object could be celestial, terrestrial or on the vessel itself – for example, the back scatter of the foremast light. Given that the movement of the eyeballs alone is ineffective, it is best to move the head continually to scan the periphery and create a complete picture at all times.

At night, vision is improved by looking slightly to one side of the object in focus. In addition to these visual scanning techniques, it is important to acquire the best situational awareness possible.

Want to know more?

This article is taken from The Nautical Institute's book *Human Performance and Limitation for Mariners*, which aims to help seafarers understand their own limitations and abilities and build competency and confidence. Find it at www.nautinst.org/shop.

CHIRP Maritime has produced a fascinating – and free! – video on the working of the human eye and how to keep a better lookout. *Vision and Decision* can be found on YouTube at <https://tinyurl.com/VisionDecision>.

A man wearing a plaid shirt is looking through binoculars. The sun is shining brightly in the background, creating a lens flare effect. The image is the background for the article.

Lessons for a good lookout

Captain Trevor Bailey FN reflects on his own experiences at sea and considers what makes a good lookout

Keeping a proper lookout in accordance with the requirements of Rule 5 of the Colregs is a major weapon in the seafarer's arsenal of risk management techniques. The principal task in keeping a proper lookout is to determine if risk of collision exists and this can be achieved through a variety of methods.

The primary and most effective lookout is the 'mark-one eyeball', provided that visibility is good. This can, and should, be supplemented by electronic means. Radar and AIS are the obvious ones here, but always remember that they are aids to navigation and therefore have their limitations and restrictions.

Over time, it is almost certain that the competent navigator will develop an intuitive sense of whether or not an approaching vessel presents a risk of collision. On many occasions, I can recall being on the bridge and, once I could determine the aspect of another vessel, I would have a reasonable sense of whether or not there was a likelihood of the risk of collision developing. Having said that, I would, of course, always take the necessary steps to verify that feeling to ensure that my vessel complied with the requirements of the Steering and Sailing rules laid down in the Colregs.

I recently sailed, very briefly, on a vessel with an unstabilised radar, an inoperative electronic bearing line (EBL) and no compass repeater with which to take a bearing. This made it almost impossible to determine if a risk of collision existed or not and there was a need to exercise seamanlike caution at all times when in close proximity to other traffic. Thank goodness for the intuitive sense mentioned above!

Obviously, the ideal situation here would have been to consult a compass repeater or even a hand-bearing compass but, in the absence of such aids, there was still the opportunity to monitor any approaching vessels' relative bearing and aspect in relation to window pillars or other marks. That gave us a good idea about the level of risk that needed to be assessed.

Bridge expectations

As Master, what do I expect of my bridge team in terms of keeping a proper lookout? For a start, I think it is important to remember that this is a shared responsibility between all members of the bridge team. In the same way that my presence on the bridge does not relieve the OOW of their responsibilities, the presence of a lookout on

the bridge does not relieve the OOW of their duty to ensure that this task is achieved safely and effectively. The OOW should never rely on the lookout alone to report the sighting of another vessel. If the OOW sees a ship or any other object that has not yet been reported by the lookout, I would expect them to share that information with their fellow bridge team member.

This is also an important factor to consider when ships operate with the OOW as sole watchkeeper when in open waters, although it should be established safe practice that the lookout is within easy hailing distance of the bridge. As a sole watchkeeper, you cannot expect to carry out any other duties while you are on watch other than being an effective combined lookout and OOW. Catching up on paperwork or essential maintenance is not acceptable under these circumstances.

THE PRIMARY AND MOST EFFECTIVE LOOKOUT IS THE 'MARK-ONE EYEBALL', PROVIDED THAT VISIBILITY IS GOOD

The need for an all-round lookout should not be overlooked. I am sure that on many modern vessels with totally enclosed wheelhouses and integrated consoles in the centre, there will be a tendency to stay close to the radar/ECDIS displays and not move out to the bridge wings from time to time to check astern on both sides, assuming that there is adequate capability to do so. Remember, the radar may have blind sectors, particularly astern, and you need to be aware of these limitations to the equipment.

I remember an embarrassing occasion as a junior officer when I had not gone out to the bridge wings during my evening watch in heavy weather. The ship had sailed from Durban SBM in the early afternoon in full daylight and no-one had thought to switch on the navigation lights. There was no pre-departure checklist in those days! It was my custom and practice to spend time on the bridge wings to check all round and to check that the nav lights were switched on but, on this occasion, I had not done so. To be told by the Captain when he came to write his night orders that the lights were not on was a educational experience... and one which I have never forgotten! Nor have

I failed to impress the need for such checks on my fellow officers as time has gone on.

Eyes and ears

We must also consider the need for an aural lookout. In restricted visibility, the requirement for sound signals is clearly laid out in the Colregs... but if no-one is listening, do such signals serve any purpose? It is to be hoped that the restricted visibility is relatively rare, but we must always be prepared. On vessels with totally enclosed wheelhouses, there is a requirement to fit sound-detecting equipment, but how often is this tested? When you next encounter restricted visibility, can you be confident that you can keep a good aural lookout? It is probably very difficult to effectively test this equipment, but you should nonetheless make sure that this is done as a matter of routine.

Additionally, 'lookout by hearing' may be achieved by monitoring VHF traffic, particularly in coastal waters and harbour approaches. By doing so, you can add to your mental picture... your situational awareness. 'That tanker in front of me, is it slowing down to pick up the pilot? I am the overtaking vessel, so I must keep clear.'

I cannot stress heavily enough that I would NOT expect the OOW or lookout to use the VHF for collision avoidance. That is not what it is there for but it has become an all-too common occurrence... 'Ship on my starboard bow, what are your intentions?' The Colregs are quite clear on the conduct of vessels in sight of one another. The use of VHF communication between vessels frequently leads to confusion and, in some cases, collision. VHF radio has a range greater than you can see with the naked eye. How do you know that the vessel that answers this unnecessary question is indeed that ship on your starboard bow?

Furthermore, look at Rule 7(c) in determining the need for, and the value of, a proper lookout. It has long been a mantra of mine to quote Rule 7(c): 'Assumptions shall not be made on the basis of scanty information, especially scanty radar information.'

Final words of wisdom...

To sum up, try and gain as much information as to whether or not risk of collision exists from as many sources as possible. Then, and only then, take appropriate action if required.

If in doubt, never hesitate to call the Master. After all, as I was told as a young Cadet, a collision at sea can ruin your whole day!

WATCHOUT

In this series, we take a look at maritime accident reports and the lessons that can be learned

Collision in clear sight

What happened?

A bulk carrier and a fast utility vessel collided, in daylight and in good visibility.

At the time of the collision, the responsibility of lookout on the fast utility vessel was delegated to an unqualified deck hand. The deck hand noticed the bulk carrier on the AIS, but did not understand what he was seeing, and expected the chief officer to take action if there was any risk. The chief officer was unaware of the vessel.

On the bulk carrier, the officer of the watch saw the fast utility vessel approaching, but judged it to be on a track that would cross clear of own ship. He failed to use any of the available electronic navigational aids, such as radar or AIS, to back up this decision.

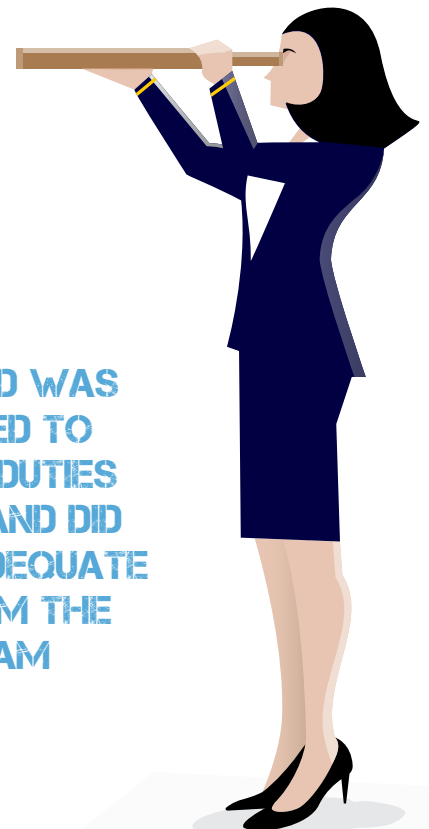
Neither vessel took any action to change course or avoid the other ship, causing a collision that resulted in minor damage to both ships.

Why did it happen?

- > The deckhand was not qualified to perform his duties as lookout and did not receive adequate support from the bridge team
- > The OOW on the bulk carrier did not realise how close the other vessel was to his own, and so did not take any corrective action
- > Despite the bulk carrier being equipped with multiple electronic navigational aids, neither the OOW, nor his colleagues used any of them to determine the risk of collision

What changes have been made?

- > The bulk carrier's company has circulated the collision report to its other vessels to remind everyone of the importance of a properly experienced and supported lookout
- > Additionally, all navigational officers will receive enhanced training in lookout and collision risk procedures



**THE DECKHAND WAS
NOT QUALIFIED TO
PERFORM HIS DUTIES
AS LOOKOUT AND DID
NOT RECEIVE ADEQUATE
SUPPORT FROM THE
BRIDGE TEAM**

Keeping the right attitude

In this issue, we talk to shipmates **Niel Borja (left)** and **Louie Anthony (right)**, who are currently serving on the oil/chemical vessel, *M/T Ginga Jaguar*. Third Officer Niel discovered *The Navigator* as a cadet - and found it so helpful that he introduced it to his shipmates, including his First Officer and Assistant Chief Officer, Louie. Here, they discuss their lives at sea and their thoughts on how to be an effective lookout.

What do you like most about a career at sea?

N – I have always believed that there is more to life than the land and have been fascinated about how ships work. This led me to the Maritime Academy of Asia and the Pacific in the Philippines and then on to my career at sea. At sea, I enjoy seeing sunrises, sunsets and celestial bodies. I never would have thought that such things could give direction to my life (pun intended).

L – I like being able to travel and explore other countries, culture, people, food, etc. The sea has allowed me to see different places and people – something that I will treasure forever. It's a life-changing experience, as you learn so many new things from other people, their perspectives and the country they live in. From that point, you can analyse things and make adjustments to become a better person and seafarer.

What is the most important lesson you have learned during your career to date?

N – Not everything always goes your way. You must remain flexible and versatile. Remember that every situation requires a better version of you. Never be defeated. Just get back up and try again.

L – Have a positive attitude. Being a seafarer is not an easy job; we may be conquering the seven seas, but we are far away from our loved ones. Onboard ship, you cannot choose your companions and you'll encounter all types of different



people. You must maintain a harmonious atmosphere and that all starts with the right attitude.

What is the most important skill for maintaining a lookout?

N – You must not be hampered with any other thoughts or concerns (such as paperwork) and must maintain situational awareness whatever happens. Create a scenario regarding what needs to be done, prioritising the safety of all involved.

L – The most important skill for a lookout to master is to not fall asleep during the watch! Seriously though, I think the most important skill is to be attentive and observant at all times. You should make sure all your senses are alert, especially your eyes and ears, as the lives of your crew mates depends on how vigilant you are.

What do you find most challenging about keeping a lookout?

N – Making sure you are not bombarded with other thoughts that could distract you. You must be ready to execute things promptly and in the right way. Colregs can help to back up your decisions, but

readiness of self is something you can only find within you.

L – The most challenging time to keep a lookout is when the ship is navigating busy ports like Singapore and China. For me, Chinese ports are top of my list when it comes to places that need a particularly strict lookout. The traffic there is so heavy and it's like going through the eye of a needle at times!

How did you first come across *The Navigator*? Has it changed anything about how you work onboard?

N – I first encountered the magazine in my final year as a maritime cadet. I have kept myself informed of it ever since and have enjoyed sharing it with my fellow crew members. *The Navigator* has vastly changed the way I study and work onboard. It is never dull. It has different themes every issue with articles and advice from renowned mariners who have already conquered the great seas all over the world. Learning is a continuous process and *The Navigator* is a great instrument to sustain the cycle.

L – I first came across *The Navigator* when I was still a second mate. I found a magazine that was left in my cabin – the issue about Bridge Resource Management. I have since downloaded the app to help keep me on track with new issues. Reading *The Navigator* has helped change my perspective and improve my knowledge. It is like having a compressed source of information that tackles the basic issues and topics to improve safety onboard. I believe *The Navigator* is a good foundation for those who are starting their careers at sea.



WAYPOINT

Dr Andy Norris FRIN FNI

Eyes and ears

Dr Andy Norris, an active Fellow of The Nautical Institute and the Royal Institute of Navigation, explores why our eyes and ears are still the best lookout tools we have

Sight and hearing dominate the stated requirements for lookout in Rule 5 of the Colregs. Of course, the Rule also goes on to state “as well as by all available means appropriate in the prevailing circumstances...”. Although some may believe that the dominance of sight and hearing only reflects the ‘pre-electronic’ history of maritime navigation, it is consistent with the latest concepts of best navigational practice – even when that navigation is fully autonomous.

This is because the optical and acoustic scenes (what you – or the sensors – can ‘see’ or ‘hear’) give fully up-to-date information, totally independent from that given by other important navigational aids, including charted data, radar, GNSS, AIS, speed logs, etc. In addition, most aids to navigation (AtoNs) are designed to be readily visible, and are often artificially lit at night. Some aids also generate specific sound signals.

For the human navigator, it is especially important that data collected by sight and hearing is constantly analysed by the human brain. In some circumstances, the information you get from sight and hearing is enhanced by information from what you feel – vibration, movement and acceleration.

Seeing the light

The optical scene is so important because virtually all objects naturally reflect light. Because the wavelength of light is very short (several tens of thousands of wavelengths in just one millimetre) it enables extremely good discrimination even when using very small sensors, such as human eyes, to detect an object, and identify what it is and whether and how it is moving.

In comparison, the wavelength of an S-band radar is about 10cm – around

200,000 times longer than that of light. It is therefore much less effective in discriminating objects. Of course, the optical scene becomes severely degraded in common conditions such as darkness, mist or fog, hence our interest in non-optical sensors.

In poor optical conditions, sound is the only ‘natural’ way of detecting targets at sea. Nowadays, such signals are typically picked up by external microphones and relayed to the bridge staff via loudspeakers. In fact, it is quite easy to

design systems that automatically calculate the bearing of sound sources, but at present they are not commonly used on commercial vessels. However, future use on autonomous systems will change this situation, even on manned vessels.

Night vision

The optical scene remains highly valuable at night. In reasonable conditions it is easy to detect, by eye or electronically, light emanating from vessels and other objects, which is why we have a continued interest in navigational lights. Of course, objects that do not emanate artificial light cannot be optically detected in complete darkness, except by using searchlight-type techniques. Unfortunately, if used irresponsibly, searchlights can dangerously affect the visual detection capabilities of other vessels, effectively becoming an optical jammer.

As well as being jammable, optical information can also be spoofed. A common example is the use of camouflage on military vessels. Short-range sound jamming and spoofing are also possible. Importantly, both optical and sound spoofing/jamming are extremely difficult to implement over an extended area, in contrast to radar, GNSS, AIS and radio, further emphasising the value of optics and acoustics.

Modern technology could considerably enhance the detection of both the optical and the acoustic scenes on both manned and autonomous systems. In the fulness of time, Rule 5 may need to evolve to emphasise ‘optics and acoustics’ rather than ‘sight and hearing’ – but, today, we must continue to use our eyes and ears to enable safe navigation.

**WE MUST CONTINUE
TO USE OUR EYES AND
EARS TO ENABLE SAFE
NAVIGATION**



TAKE 10

This issue of *The Navigator* explores the importance of keeping a good lookout by all available means – and how you can make the most of all of them!

1

Look out!

One of the most important functions of a Navigator is to keep a lookout. It is specifically required by the Colregs in Rule 5, but is also a requirement in all safety management systems and a very good practice for any seafarer onboard.

2

The eyes have it

Approximately 80% of the information received by the brain comes through our eyes. If there is ambiguity between the senses, the information collected by the eyes takes precedence.

3

Night life

Avoid bright lights before and during night-time watches since it takes about 30 to 45 minutes to ensure good night vision. Motion is needed to attract our attention (especially at night) so lookouts must keep moving their eyes.

4

It makes sense

A good lookout also makes use of all senses, hearing, feeling, and even smell. For example, vibration can often be an indication of shallow water and the clicking of a repeater can indicate rate of turn.

5

By all available means

Rule 5 requires you to use sight and hearing but also radar, AIS, and VTS. All bridge team members should be encouraged and competent to use all available means to maintain a lookout.

6

On the mark

The ideal way to assess risk of collision is to consult a compass repeater or even a hand-bearing compass. In the absence of such aids, you can still monitor the relative bearing and aspect of any approaching vessels in relation to window pillars or other marks.

7

Sole responsibility

As a sole watchkeeper, you cannot expect to carry out any other duties while you are on watch other than being an effective combined lookout and OOW. Catching up on paperwork or essential maintenance is not acceptable under these circumstances.

8

Look around

Keeping a good look out demands a 360° view. This means that all members of the bridge team must move around to ensure they routinely view all angles, including behind you. Even a radar can have blind spots.

9

Distractions

On the bridge it is easy to become distracted and lose track of time. If you feel that you are becoming distracted by traffic or demanding navigation, don't hesitate to call the Master or increase the bridge team. Never lose the capacity to keep a good lookout.

10

Complacency

Many vessels collide in good visibility where either one or both vessels don't see each other until it's too late to avoid collision. If two vessels are approaching each other at 20 knots, it only takes 15 minutes to cover 10 miles!

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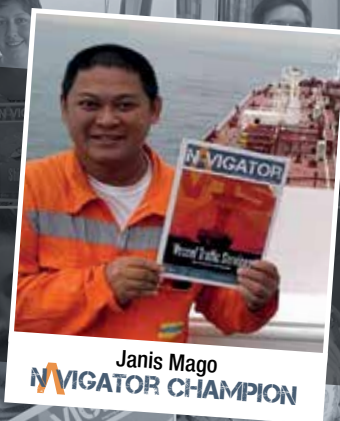


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AND THE WINNER THIS ISSUE IS...

Janis Mago is a safety officer on the ice class tanker *Montego*.
I always read *The Navigator* to improve safety performance and share current safety issues on board.



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