

SIGNALS

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SHIPPING: AN AUTONOMOUS FUTURE?

Exploring the possibilities, challenges and risks



2020 VISION: FUTURE OF FUELS

Shipowners have some very difficult decisions ahead

BAKING BAD: IMPORTANCE OF FOOD SAFETY MANAGEMENT

A timely reminder of the importance of food safety

CONNECTING THE RIGHT CREW

Crew Connectivity 2018
Survey Result

NORTH 
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TECHNOLOGY & THE HUMAN ELEMENT

Technology and technical themes feature strongly in this edition of Signals. Not surprising given that these are central to modern day ship operations.



Colin Gillespie, Deputy Director (Loss Prevention)



Articles on autonomous shipping, cyber security for ECDIS, the 2020 sulphur fuel cap, the importance of internet to crew and general average stemming from engine damage all have a technology focus. But through each article runs a very strong human element thread.

This column has previously touched on autonomous vessels (Signals 110) and in this edition we take a more in-depth look at the situation. The technologies being developed such as decision support systems should benefit seafarers by assisting them in their work. There is also the role of the remote operator to consider, which during the first few generations of autonomous vessels is likely to be filled by seafarers making the move ashore. So there are likely to be lots of opportunities to develop new skills and to work in new ways both afloat and ashore.

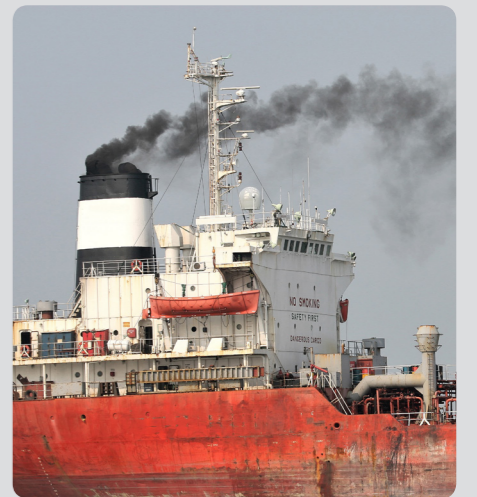
ECDIS cyber security focusses on what crew can do to ensure that the equipment is less likely to be infected by malware. Cyber security is an area which cannot be ignored and in which we all have a role to

play. This is emphasised by the news from the Crew Connectivity Survey carried out by technology consultants Futureautics. One of the headline figures from that report was that 47% of those surveyed have sailed on a vessel that was subject to cyber-attack. Knowing how to keep yourself and your vessel cyber secure is increasingly important.

Things are not all technically focussed, you can also find out how to protect your eyesight by using sunglasses and to avoid food poisoning.

2020 VISION

In the run up to the 2020 global sulphur fuel cap, shipowners have some very difficult commercial and operational decisions to make as a result of the regulations. The club is launching an initiative called 2020 Vision to assist members and crews in dealing with the challenges presented by the changes. The first 2020 Vision article appears on page 4 and our summer edition will have a 2020 Vision focus.



2020 Vision looking at the global sulphur fuel cap

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2020 VISION



The reduction of the IMO global fuel sulphur cap to 0.5% will come into force on 1 January 2020. Shipowners have some very difficult and important decisions to make on how to comply with these stringent requirements.

The requirement to reduce the maximum sulphur content of fuel down to 0.5% from its current limit of 3.5% in 2020 is not a surprise to the industry. It was added to MARPOL Annex VI back in 2008 but at that time an option existed to defer this change to 2025.

However, in 2016 IMO rejected this option to defer. 2020 was set in stone and it has been made clear that there will be no postponement, grace period or transition period.

Speaking broadly, there are five options available to a shipowner that allow compliance with the 2020 MARPOL Annex VI global sulphur cap (see below):

It has already become apparent that the majority of shipping companies intend to burn distillate fuels in their vessels' engines and boilers. In time, it is likely that a proportion will turn to hybrids, blends or any newly developed compliant residual fuels, depending on bunker prices and availability. A smaller proportion has opted to install scrubbers and continue burning high sulphur residual fuels.

Some shipowners are opting for LNG but retaining the ability to burn distillates by installing dual fuel (DF) engines. We expect the emerging fuels market will be very niche.

There are pros and cons with each, mostly concerning fuel availability, onboard fuel management, capital expenditure and operational expenditure and maintenance requirements. It is not a simple choice and the decision on what method of compliance is best depends on a number of factors, such as vessel type, trading area and indeed its expected remaining life.

The proportion of time spent within emission control areas (ECAs) should also be considered as well as the impact of changing over fuels when entering or leaving these areas. The 0.1% sulphur cap currently in operation within the ECAs will remain in force and it is possible that new ECAs may emerge in coming years.

The challenges are not all just technical. Charterparties, where the obligation to provide bunkers is on the charterer will require close attention.

This is a far more pressing matter for vessels already in long-term charterparties that span the enforcement date of 1 January 2020.

In the next issue of Signals, we will take an in-depth look at the 2020 global sulphur cap, focusing on what it means for shipowners and the impact on charterparties. In the meantime, if you have any charterparty related questions please contact our FD&D team.

By Alvin Forster
Loss Prevention Executive

FIND OUT MORE

Look out for our 2020 Insights area coming soon. www.nepia.com/2020-vision

Five options available to a shipowner that allow compliance with the 2020 MARPOL Annex VI global sulphur cap

DISTILLATES Distillate fuels such as MGO/MDO (DMA/DMB)

HYBRIDS BLENDS Specially designed hybrids
Light residual/heavy distillate blends
Desulphurised or sweet heavy residual fuels

EGCS Exhaust gas cleaning system
More commonly referred to as a "scrubber"

LNG Liquefied natural gas
Composed mostly of methane
Vessels installed with gas engines or dual fuel (DF) engines

EMERGING FUELS Methanol
LPG
Stored energy - hydrogen fuel cells and batteries



ECDIS CYBER SECURITY

The risk of cyber-attacks is ever present across all industries and sectors. The IMO has recognised the threat of cyber-attacks in the marine industry and will require ship operators to consider cyber risk management as a part of their safety management system. This will include a cyber security assessment which should be done no later than the first annual inspection of the company's Document of Compliance after 1 January 2021. In this article we look specifically at some vulnerabilities associated with ECDIS systems.

BRIDGE SYSTEMS AND ECDIS

Amongst the many systems that must be considered within this assessment is the bridge navigation equipment. Equipment such as ECDIS that receives frequent updates to its chart catalogue and its software make it high risk. It may also be possible for anyone on the bridge to plug their own device into the ECDIS via a USB port.

HOW IS ECDIS VULNERABLE?

Ship operators will need to initially identify any vulnerability to their vessel's cyber security. In the case of ECDIS this can include:

- ▲ Interfaces with shore side systems. This type of interface is often used to conduct software updates remotely.
- ▲ The ECDIS can also be interconnected with other navigation systems, such as GNSS and ARPA. This can make the system vulnerable to a virus spread between platforms.
- ▲ Control of removable media such as USB drives and CD which are commonly used on ECDIS to install updates to the ENC's, the permit files and software. Any removable media sources must be checked to ensure they are free from malware.

Any breach of ECDIS security could result in ECDIS sensor data being manipulated with

unreliable information displayed to the officer of the watch. It could even mean a total loss of the ECDIS and any equipment on its associated network.

ASSESSMENT AND DETECTION

The team conducting the assessment should identify the likelihood and impact of a potential breach, and put in place measures in the ship's management system to ensure these threats do not become a reality.

The measures put in place should mean that any threats are detected before they become an issue. For example, if an update to the ECDIS means using removable media, such as a USB drive, then checks on the content should be run prior to using the drive. Access to the ECDIS to conduct updates should be limited to as few people as possible as a way of protecting equipment.

WHEN YOU'VE FOUND A THREAT!

The procedures put in place to protect the vessel should include responses to a detected threat. The IMO Guidelines on cyber security advise that a team should be established, and a recovery plan put in place, to take the correct steps to restore systems such as ECDIS to a safe working condition.

HELP IS AT HAND

All activity on the ECDIS should be logged and accurate records maintained. This now includes the steps taken to avoid cyber threats to the ECDIS. To assist with this, the United Kingdom Hydrographic Office (UKHO) has updated its publication NP133C ENC and ECDIS Maintenance Record to include a section on cyber risk management.

The cyber risk checklist contained in the publication allows the crew to conduct a risk assessment when updating their ECDIS, as well as keeping an accurate record of the steps they have taken in line with their company's cyber security procedures.

The checklist outlines the steps that the crew should take when updating their ECDIS:



IDENTIFY THREATS
What is the source of the threat?



PROTECT
What can happen as a result of the threat?



DETECT
How will you find a potential threat?



RESPOND
What steps will be taken to prevent the threat?



RECOVER
How to respond in the event of a cyber security breach?

The ADMIRALTY ENC and ECDIS Maintenance Record (NP133C) is designed to help mariners demonstrate compliance with IMO regulations during Port State Control inspections, with easy-to-use checklists and templates to record ECDIS annual performance checks and software maintenance.

By John Southam
Loss Prevention Executive

FIND OUT MORE

Protecting ECDIS is just one small piece of the cyber security jigsaw puzzle. For more information on cyber security for shipping please visit the Cyber Security Insights area of our website. www.nepia.com/insights/cyber-security



By Alvin Forster
Loss Prevention Executive

Image credit: Rolls-Royce Plc

SHIPPING: AN AUTONOMOUS FUTURE?

Unmanned and autonomous vessels are quickly becoming a reality. We briefly summarise the current state of play, consider possibilities for the future and outline some of the emerging risks this technology presents.

- 1 Autonomous does not mean unmanned
- 2 The technology has gathered significant momentum in recent years and it is likely this will continue
- 3 Significant challenges must be overcome before ocean-going unmanned and fully autonomous vessels can become a viable option for shipowners
- 4 The rise of autonomous systems does not mean the end of the seafarer
- 5 There are no International regulations currently in place
- 6 The lack of legislation has an impact on the provision of insurance. North is continuing to monitor, with Loss Prevention taking an active role in various working groups

Unmanned and autonomous vessels – referred to by the IMO as Maritime Autonomous Surface Ships (MASS) – are quickly becoming a reality. Developments in technology combined with a drive from manufacturers and operators, supported by some classification societies have seen significant advances in a relatively short space of time.

The currently held view by many in the industry is that ocean-going vessels will not operate autonomously or in an unmanned configuration any time soon. But it is expected that vessels will use the technology, such as sensors and artificial intelligence, to support onboard navigating officers.

In this article we briefly summarise the current state of play, consider possibilities for the future and outline some of the emerging risks this technology presents.

AUTONOMOUS DOES NOT MEAN UNMANNED

The terms 'remote-controlled', 'unmanned', 'automated' and 'autonomous' have all been used when describing the new technology. But they all mean very different things. It is possible – and in fact quite likely – that in the future vessels could be remote-controlled but still retain some onboard manning. Or perhaps they will be traditionally manned, where autonomous systems are used as a decision support tool.

LEVEL OF AUTONOMY

Vessels and their intended operation will be subject to categorisation. Lloyd's Register has introduced a system of autonomy levels, which is based on the intended level of onboard manning, human oversight and intervention and the level of autonomous decision making of onboard systems.

AUTONOMY LEVEL (AL)	DESCRIPTION
AL0	Manual control No autonomous function. All decision-making and actions performed by a human, located either on board or remotely.
AL1	Onboard decision support All actions taken by human operator, but decision support tool can present options or otherwise influence the actions chosen. Data is provided by systems on board.
AL2	Onboard and off-ship decision support All actions taken by human operator, but decision support tool can present options or otherwise influence the actions chosen. Data may be provided by systems on or off the vessel.
AL3	Active human in the loop – monitors and authorises Decisions and actions are performed autonomously with human supervision and authorisation.
AL4	Human in the loop – monitors and intervenes Decisions and actions are performed autonomously with human supervision. High impact decisions give human operators the opportunity to intervene and override.
AL5	Monitored fully autonomous Rarely supervised operation where decisions are entirely made and actioned by the system.
AL6	Fully autonomous Unsupervised operation where decisions are entirely made and actioned by the system during the mission.

IS THE TECHNOLOGY AVAILABLE?

Autonomous-related technologies have gathered significant momentum in recent years and it is likely this will continue.

Naturally, much will depend on the success of the early pioneering projects, such as the YARA BIRKELAND, the first commercial cargo vessel of this type. It is expected to enter service in 2019 for manned remote operation. After testing, the target is for unmanned remote operation during 2020. Rolls-Royce are driving a number of projects and currently predict a remote control unmanned vessel operating in coastal waters by 2025, a remote control unmanned ocean-going vessel by 2030 and an autonomous ocean-going vessel by 2035.

Much of the focus has been on the collision avoidance abilities of an unmanned or autonomous vessel. There are also well documented concerns on an unmanned vessel's ability to berth, the role of the pilot and the security of shore control stations (both physical and cyber), but these are not insurmountable and technological solutions are inevitable.

Sensing technology, such as radar, camera, thermal imaging and lasers, is available now. But other challenges must be overcome before ocean-going unmanned and fully autonomous vessels can become a viable option for shipowners. Such challenges include:

- Decision-making ability: It is likely that autonomous decision making will be a combination of rule-based actions and artificial intelligence (AI). At present AI systems are not capable of the complex decision-making required to control all functions and operations necessary for the safe completion of a voyage.
- Reliable satellite data links: The data exchange between ship and shore for remote controlled and autonomous vessels is expected to be massive. The current bandwidth capabilities are not sufficient to cope with large scale operations, but providers are working to meet these expected demands.
- Power generation and propulsion: Very low maintenance equipment and systems will be needed for unmanned vessels and this precludes diesel engines. Battery technology may be the future but it is not yet sufficient to meet the power demands of a commercial ocean-going cargo vessel.

THE SEAFARERS' ROLE

The rise of autonomous systems and remote-controlled abilities does not mean the death knell of the seafarer.

Although the technology may soon be available, unmanned vessels will not present a viable business case for many vessel types and trades. For some shipowners, the savings in onboard manning costs will not offset the investment needed to build such a vessel.

Also, the importance of the human's role in safe vessel operation must not be underestimated. Despite the much vaunted statistic that the vast majority of incidents are caused by human error, the fact that human intervention has actually prevented or mitigated events is often forgotten. Besides, the human element is not eliminated on an unmanned or autonomous vessel – it is merely shifted somewhere else.

The skills of the seafarer will need to develop in order to work with the new technology. Technical staff, such as marine engineers and electro-technical officers, will need to understand, maintain and interact with new systems. Also, as the use of remotely operated and autonomous vessels becomes more prevalent, there is the risk of the traditional skills of navigation and collision avoidance becoming diluted. It is vital that the industry acts to identify the new skills needed and be pro-active in bridging the gaps. This could well lead to changes in STCW and/or the creation of new international legislation on training and competency for remote operators.

There is also the role of the remote operator to consider, which during the first few

generations of autonomous vessels is likely to be filled by mariners making the move ashore. But it is possible that in the long term, remote operators might have no actual sea-going experience.

REGULATION

Currently, there are no IMO regulations in place that specifically address unmanned and autonomous vessels. Scoping exercises on the development of regulations, guidance and codes of practice is currently being undertaken by the IMO and on a national basis by interested countries, with Denmark recently releasing their recommendations. Even when created, significant challenges will be faced in enforcing them. As such, it is likely in the short-term that remote and autonomous vessels operations will be restricted to domestic trading only.

Work is underway by a number of academics and experts in maritime law to identify gaps and ambiguities in interpretation of international legislation.

The lack of clarity on legislation has an obvious impact on the provision of insurance for an unmanned or autonomous vessel. This is currently under consideration by the International Group of P&I Clubs. North is continuing to monitor the development of this technology, with Loss Prevention taking an active role in various working groups.

FIND OUT MORE

Contact Alvin Forster on +44 191 232 5221 should you wish to discuss any of the issues raised in this article.

GENERAL AVERAGE: THE IMPORTANCE OF DUE DILIGENCE



A recent UK court judgment has found cargo insurers not liable for general average contributions as the owner failed to exercise due diligence, leading to the breakdown of a vessel's main engine.

The 2005 built crude oil tanker CAPE BONNY was on passage between Argentina and China in 2011 when the No.1 main bearing failed catastrophically. The breakdown occurred when the vessel was trying to avoid a tropical storm and towage assistance was required. The shipowner declared general average and contributions were sought from the parties to the common maritime adventure, which naturally included cargo interests. Cargo's contribution was assessed at about US\$ 2.5 million.

GENERAL AVERAGE

General average is governed by the York-Antwerp Rules and is commonly incorporated by reference into charterparties and bills of lading. However, parties to the maritime adventure are not liable to contribute if they can successfully prove a breach of contract.

There will be a breach of contract if the vessel was unseaworthy before and at the beginning of the voyage and the Owner had failed to exercise due diligence to make her seaworthy. The cargo interests must prove unseaworthiness and the Owner must prove due diligence.

CAUSE OF DAMAGE

The engine manufacturer's representative was unable to conclusively determine the root cause of the bearing failure. The Owner and cargo interests therefore had to demonstrate what they believed to be the cause.

The shipowner alleged that the damage to the bearing was caused by welding slag within the lubricating oil pipework that had been dislodged during the bad weather experienced on the voyage. This was rejected by the court as it was not supported by metallurgical analysis and it was judged that any slag from the building process would have detached long before 2011, some six years after the vessel was built.

The court agreed with the cargo interests' allegation that the cause was the presence of metal particles in the lubricating oil, most probably from spark erosion or chain drive gear damage, which had not been removed because the automatic blowdown filters were defective.

The court therefore held the ship was unseaworthy before and at the beginning of the voyage.

EXERCISING DUE DILIGENCE

Arguments over due diligence centred on the proper response to notable increases in crankshaft deflections in way of No.1 unit taken one month prior to the incident.

This could have been an indication of bearing wear but it did not prompt the crew to investigate further. The Owner was unable to show that anyone had considered the significance of the increases but argued that it was generally reasonable not to investigate further as the deflection was still within allowable limits.

The cargo interests argued that it was the rapid increase that was important, not that the deflection was still within limits and that if the increase had been investigated, it is likely that the bearing wear would have been found and steps taken to repair the bearings.

The court concluded that "a prudent engineer or superintendent would have decided, in the light of the May 2011 deflection readings, that bearing clearance measurements should be taken. The failure to do so was a failure to exercise due diligence to make the vessel seaworthy."

The effect of that finding was the owner could not recover general average contributions from cargo interests.

This decision serves as a useful reminder to shipowners and operators of the importance of exercising due diligence to make a vessel seaworthy and – just as importantly – being able to provide evidence of exercising this due diligence.

It also shows shipboard engineers and shore-based superintendents that their actions and inactions can have far-reaching economic consequences.

By Alvin Forster
(Loss Prevention Executive)
and Peter Scott
(Senior Executive - Claims)

FIND OUT MORE

Read the full judgement: search for [2017] EWHC 3036 (comm).

REMEMBER:
THE ACTIONS & INACTIONS OF
SHIPBOARD ENGINEERS AND
SHORE-BASED SUPERINTENDENTS
CAN HAVE FAR-REACHING
ECONOMIC CONSEQUENCES

BAKING BAD: IMPORTANCE OF FOOD SAFETY MANAGEMENT



By Holly Hughes
Claims Executive

The recent outbreak of listeriosis in South Africa, which has reportedly killed almost 200 people, serves as a timely reminder of the importance of food safety.

A ship's engine may run on fuel oil, but the crew runs on food. Like the engine's fuel supply, the crew's food must be safe and be of the right quality. The recent outbreak of listeriosis in South Africa, which has reportedly killed almost 200 people, serves as a timely reminder that prevention is better than cure when dealing with food safety.

Poor food safety management through improper storage, preparation and handling can result in food poisoning. As well as the problems this causes to the individual crew member, a severe outbreak on board could affect the safe operation a vessel.

Ships' crews must be made aware of the steps that can be taken to reduce the risk of falling to foodborne illnesses.

COMMON ILLNESSES

Most cases of food poisoning on vessels are caused by bacteria. Even where there are good standards of hygiene and food safety practices on board, the crew are also at risk of eating contaminated food whilst ashore. Some of the more common illnesses are outlined below.

Listeriosis

Caught from eating food containing the listeria bacteria, it is most often caused by eating contaminated ready-to-eat meat products and unpasteurised dairy products. Symptoms are flu-like and include high temperature, vomiting and diarrhoea. A healthy person typically does not need medical treatment and symptoms will usually go away within a few weeks.

Salmonella

Salmonella bacteria live in the gut of many farm animals, therefore salmonella is caught from eating contaminated eggs, poultry and other animal products. Symptoms include nausea, vomiting, abdominal pain, fever, headache and diarrhoea.

E-Coli

A bacterial infection caused mainly by the E. coli O157 strain, found in the gut and faeces of many animals, particularly cattle and sheep. Most often associated with fresh fruit and vegetables, undercooked meat and unpasteurised dairy products. Symptoms include nausea, vomiting, abdominal pain, fever, headache and diarrhoea.



Cholera

Outbreaks of cholera usually occur where there is poor sanitation. It is mostly caused by contaminated water and food including rice, vegetables and seafood. Symptoms include vomiting, diarrhoea and abdominal pain which can result in severe dehydration.

Norovirus

Usually associated with cruise ships or densely populated buildings, Norovirus is a common stomach bug which usually clears within a few days. Typically spread by close contact with an infected person, touching contaminated surfaces or eating food that has been prepared by an infected food handler. Symptoms include nausea, extreme vomiting, watery diarrhoea and abdominal pain.

PRACTICAL STEPS TO SAFER FOOD

Simple steps will help ensure food and water on board is safe and remains safe. This is particularly important for those preparing and handling food on a daily basis. The World Health Organization (WHO) has issued valuable advice on food safety and identified 'five keys to safer food'. These can form the basis of a vessel's food safety management system.

1. "Keep clean": wash your hands before handling food, during food preparation and after going to the toilet.
2. "Separate raw and cooked": store raw and cooked foods separately and use separate equipment, cutting boards and utensils.
3. "Cook thoroughly": especially meat, poultry, eggs and seafood. When reheating food do so thoroughly.
4. "Keep food at safe temperatures": avoid leaving foods at room temperature, quite simply, keep hot food hot and cold food cold!

FIND OUT MORE

The WHO's poster 'Five keys to safer food' can be found here
www.who.int/foodsafety/publications/consumer/en/5keys_en.pdf?ua=1

CONNECTING THE RIGHT CREW

By Alvin Forster
Loss Prevention Executive
Image credit: Futureonautics

Futureonautics have published the findings of their Crew Connectivity 2018 Survey. It is full of facts and figures and we look at some of the key headlines.

Seafarers have never been so connected and the vast majority enjoy internet access. But is having so much connectivity to the 'outside world' the answer to all problems? Or is the industry still not doing enough?

Technology consultants Futureonautics, in partnership with Intelsat and KVH, have published the findings of their Crew Connectivity 2018 Survey which provides many interesting insights into this subject. 6,000 seafarers responded and the report looks at how much access to communications crew enjoy and their use of technology.

This follows their previous research published in 2015. One of the headline figures was that 73% of those surveyed "said that the level of onboard internet access influenced their decision on which company to work for". Three years later that figure has risen to 75%, emphasising the importance of connectivity to a seafarer.

In this new report, KD Adamson of Futureonautics found that connectivity is improving, and more seafarers can access it. Interestingly, this is against the backdrop of recent high profile cyberattacks that targeted prominent shipping companies. In fact, the report states that 47% of those surveyed have sailed on a vessel targeted by a cyber-attack. Time will tell if a reaction to these attacks is to reduce crew access or if it will be managed by proper training in cyber awareness and increasing levels of resilience.

The report repeats previous concerns on one of the negative side-effects of increased connectivity. 53% of respondents felt social interaction has reduced on board, with most crew accessing the internet in their cabins. We must be mindful of the dangers of isolation and the report tells of an operator who is combating this by reviving the idea of the onboard 'Internet Cafe'.

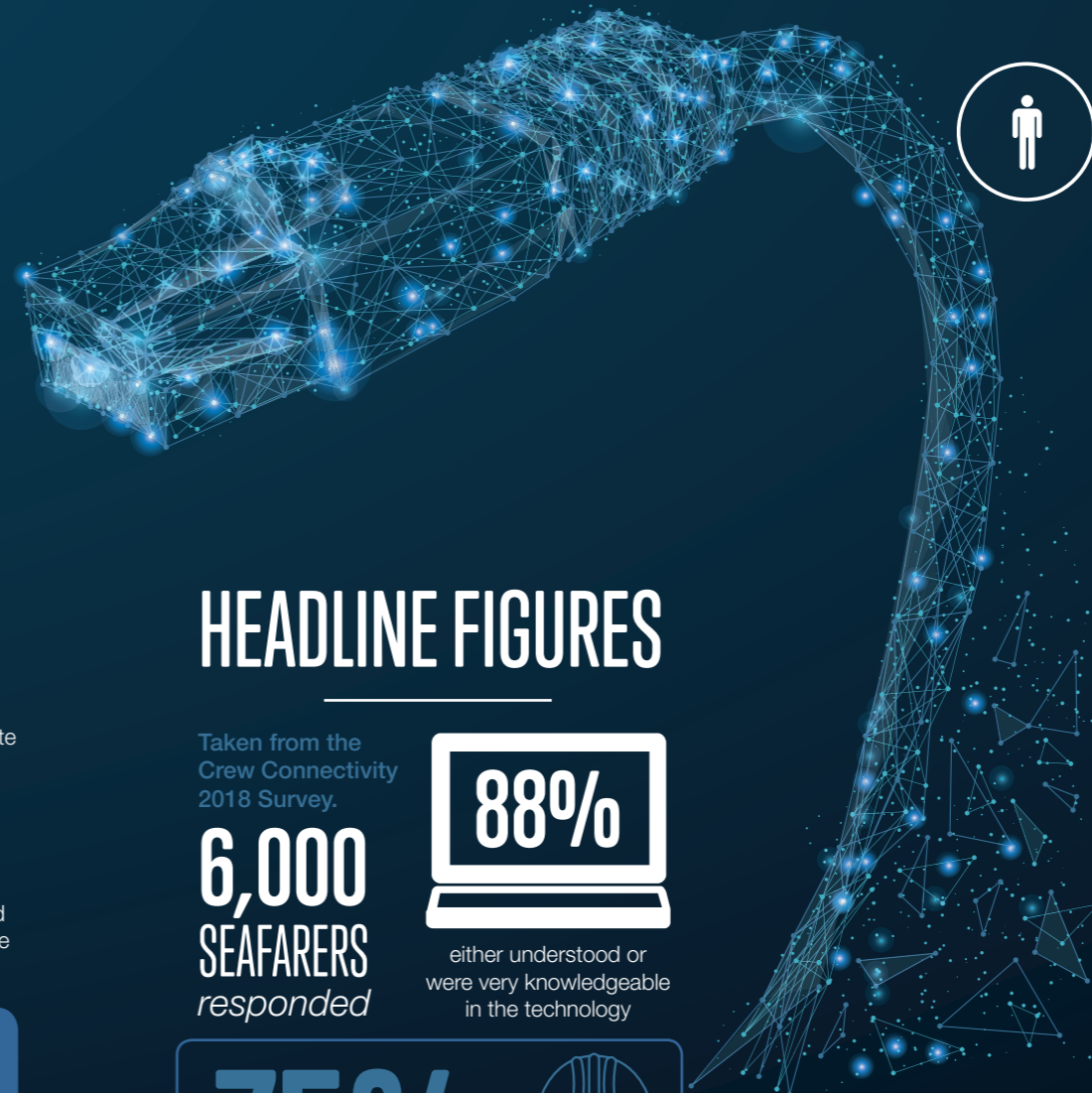
But is all this enough? Crew have repeated their requests for free wifi in port, cheaper mobile roaming charges and cheaper satellite phone usage.

The Crew Connectivity 2018 Survey Report is full of facts and figures and some of the headlines are shown here. This reinforces the message to shipowners wanting to attract and retain the 'Right Crew' that good onboard internet access offers an advantage in a competitive workforce market.

FIND OUT MORE

For more information on North's 'Right Crew' series of Loss Prevention briefings visit www.nepia.com

To access the Crew Connectivity 2018 Survey visit www.crewconnectivity.com



HEADLINE FIGURES

Taken from the Crew Connectivity 2018 Survey.

6,000 SEAFARERS responded



either understood or were very knowledgeable in the technology



CONNECTIVITY IMPROVING
61% have access on board either all of the time or most of the time. Only 2% have no access at any time on board



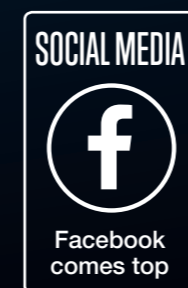
47%

have sailed on a vessel that was targeted by a cyber-attack

ONLY 15% have received cyber awareness training.



Cabin fever – most common location for accessing internet is own cabin and 53% feel increased connectivity has led to reduced social interaction on board



CREW SPEND
101 US\$ PER MONTH ON BOARD
80 US\$ PER MONTH ASHORE



Wearables on the up – 8% wear fitness trackers & 13% wear smart watches and they are a planned future purchase for many more

PASSWORD

Only 33% had sailed on vessels where there was a policy of changing passwords regularly

PROPER PROTECTION TO PREVENT DAZZLE DANGER



The importance of wearing sunglasses

On sunny days, sunglasses are important when working on the bridge or the open deck. Seafarers can be dazzled and potentially suffer damage to their eyes when bright light is reflected off the calm sea, ice caps or even items on the vessel.

It is important that seafarers protect their eyes under such conditions. This isn't a trivial matter and the issue was brought to light in the recent amendments to the UK Code of Safe Working Practices for Merchant Seafarers (COSWP). A new section in the Code provides guidance on the purchase and wearing of sunglasses for seafarers working in certain conditions.

THE RIGHT PROTECTION

Not all sunglasses afford the right protection. When providing sunglasses to seafarers, consider the following recommendations that have been recently included in COSWP:

- ⚠ Lens tints should be neutral. Brown or grey are best as they cause the least colour distortion.
- ⚠ Lens tints should be no darker than 80% absorption.
- ⚠ Graduated lens tint may be useful, where the darkest of the lens is at the top and lighter towards the bottom of the lens.
- ⚠ Select frames that are well fitting and large enough to allow enough protection from the sun. Avoid wearing sunglasses on top of prescription glasses – it is much safer to obtain prescription sunglasses.
- ⚠ Choose sunglasses that meet a recognised standard and offer a safe level of ultraviolet protection.
- ⚠ Avoid the use of sunglasses with polarised lenses, particularly when viewing instrument panels as they don't always provide a clear view. However, these lenses can help when navigating in shallow waters as they can reduce glare from surrounding water.

The Code reminds seafarers that glasses with photochromic lenses (e.g. lenses that react and darken when exposed to UV light) must not be worn during darkness as they can significantly impair night vision.

Those working on the bridge can be further protected from the sun by installing sun screens on the wheelhouse windows.

By Holly Hughes
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