CHIRP MARITIME

Annual Digest

Reports and Insight Articles

2021

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CHIRP MARITIME

Are you interested in becoming a *CHIRP* Maritime Ambassador?

CHIRP and the Nautical Institute have an established ambassadors scheme to raise awareness of our incident reporting scheme and encourage the submission of incident, accident, and near-miss reports.

As an ambassador, you will join an international network of seafarers who share your passion for safety, giving you a broader knowledge of current safety issues.

By working together to promote learning and just culture across the maritime sector, you will be part of a team that is helping to improve maritime safety.

If this sounds like you, please get in touch with us to discuss this opportunity at **mail@chirp.co.uk**

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Annual Digest of Reports and Insight Articles 2021

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Impact Statements

"It is noticeable, and even more so since the success of the CHIRP Maritime COVID papers, that the CHIRP Maritime programme is gaining recognition and attracting interest from the most senior governmental and non-governmental organisations."
Core sponsor

"We really appreciate your hard work and superb 'delivery'."
InterManager

"Our charitable activities are international, so we were impressed by the now global outreach of the programme and its effect in significantly influencing for the good, safety at sea"
Lloyd's Register Foundation.

"Thank you for your email, the issue has been relayed to all our vessels and re-enforced during my visits for audits etc. It has created much discussion in the fleet... Keep up the good work!"
Company DPA

"Last week we completed the modification on the last of ... vessels under our ship management as per modification previously shared with CHIRP. Thank you for your relevant input to this case."
Deputy DPA

Reporters' comments:

"With regards to the report, it covers all the issues and I appreciate the confidential manner in which it has been written."

"Thanks for taking my report on board and taking action on this serious issue... this WILL save lives of seafarers who work on this type of vessel."

"By the way, I really appreciate CHIRP's work, and study the reports carefully, I always learn something and share with crews."

"Thanks so much for all the hard work that you and your team in CHIRP do to spread the safety message and help us all to learn from the experiences of others."

"Good day. I want to thank you for responding in my report, it is a very big help to me... Thank you very much and God Bless."

Maritime Director's Foreword

Welcome to the seventh edition of our Annual Digest and my first as *CHIRP*'s Director Maritime, very ably assisted by Captain Dave Watkins who also joined *CHIRP* last year. I want to take this opportunity to thank my predecessor Captain Jeff Parfitt for his successful stewardship of *CHIRP*'s maritime programme and wish him the very best of luck in his new role at The Nautical Institute.

I also want to acknowledge the generosity of our sponsors, without whom this publication would not be possible. Their financial assistance once again ensures that we can spread our safety messaging to an international audience – our last edition was despatched to individual seafarers and maritime institutions in over 50 different countries! Don't forget that we also provide a quarterly newsletter in 6 languages – Chinese, English, Filipino, Indonesian, Portuguese and Spanish – to reach as many seafarers in their first or chosen language as possible.

The number of reports received continues to increase year-on-year. Many of these are the result of an industry under pressure

Our reports tell us that, sadly, the work of *CHIRP* has never been more important. The number of reports received continues to increase year-on-year. Many of these are the result of an industry under pressure due to the lingering effects of Covid, tighter profit margins, lengthy assignments with little shore leave and long working weeks. In this edition of the Annual Digest we have addressed some of the consequences, including mental health, crew welfare and social integration, and fatigue.

Because you have told us how important our incident reporting programme is to you we are currently upgrading our website and social media channels to make it easier to communicate with us and receive our safety messages, and we will also shortly be releasing a *CHIRP* app to make reporting your concerns to us even simpler.

I hope that you enjoy reading this edition and find it interesting, insightful and most of all useful. Let us know what you think of it, and whether it helped you stay safe. We rely on your incident and near-miss reports and encourage you to submit your concerns so that we can keep you and your fellow seafarers safe.

Yours in safety

Adam Parnell
CHIRP Maritime Director

Introduction

Welcome to our seventh annual digest of *CHIRP* Maritime reports, covering all the cases we published during 2021 as well as several in-depth articles specially commissioned to highlight important safety topics.

We have again been fortunate in finding generous sponsors who have made it possible to produce this Annual Digest. They are listed at the end of the Digest, and we are extremely grateful for their support and their ongoing commitment to safety.

2021 has been another very difficult year for seafarers with the ongoing Covid-19 pandemic causing major disruptions, particularly regarding crew changes. Many of our colleagues are still trapped at sea long after they should have been repatriated, while others are stuck at home and do not know when they will be able to work again. The professional way our colleagues have continued to move the world's trade goods, often in terrible conditions, has been an inspiration. Perhaps one day the world will acknowledge the great debt it owes to the men and women at sea.

Despite all the hardships, seafarers have still managed to submit reports to *CHIRP* Maritime and the results are here for all to see. Not only are we still receiving reports, but we believe the standard of those reports is higher than ever and we wish to publicly thank all our reporters for their excellent feedback.

Last year we did our best to support seafarers by publishing guidance on dealing with the pandemic, and this year we have commissioned experts to highlight another aspect which has largely been ignored in the past – the stress which arises after a serious accident. Crews are often interviewed or interrogated immediately after they witness traumatic events, with no thought for their mental wellbeing or the psychological effects of a major accident. We hope our Insight article will lead to a debate on the topic, and more sensitive treatment of the people involved in major maritime accidents in future. Last year we wrote that "we hope the people who investigate such cases will bear in mind the almost intolerable pressures on our seafarers". This year, we offer scientific evidence which demonstrates why they should.

Early in 2021 we witnessed several staff changes. Adam Parnell replaced Jeff Parfitt as Director, Maritime, and Dave Watkins replaced Howard Nightingale as his deputy. Ranjith Cheerath also retired as our Maritime Advisor in Singapore. Fortunately, the transitions were seamless and

both Adam and Dave have fitted in very well. Readers will notice that their influence is already apparent in the way we analyse reports from the human element perspective, and the questions we pose at the end of every report, but we welcome your feedback on the way we present our information. Ian Shields has moved onto the Maritime Advisory Board (MAB) so we continue to benefit from his wise counsel, and Stephanie Dykes is back from maternity leave to keep us all in order.

As ever, we are guided by the MAB volunteers, who are an outstanding source of maritime expertise with over 700 years of combined shipping experience. They provide expert analysis and contribute many of the Insight articles which appear in this digest. All our work is overseen by our trustees, while our ambassadors continue to promote our work around the globe. Indeed, the work of our ambassadors is vital in spreading the news about *CHIRP* Maritime to as many countries as possible. There is more about their role in an interesting article later in this Digest, so please contact us if you would like to join the scheme.

Our Maritime FEEDBACK magazine is now published in English, Chinese, Filipino, Indonesian, Spanish, and Portuguese, and we are most grateful to all the sponsors and translators who help make this happen. Please let us know if there are other languages you would like to receive or, even better, if you would like to sponsor a version in another language. There are still a few of the major seafaring nations which we do not reach in their native language, so we would be delighted to hear from you if you can help.

The generosity of all our sponsors is acknowledged in our publications, and we could not function without them, but our reporters (both individuals and companies) remain anonymous for obvious reasons. It is a pleasure for me to acknowledge them once again all and thank them for their support, without which we would not exist. The usefulness of their reports is demonstrated by the increasing number of examples where *CHIRP* Maritime is quoted in other publications, and by our growing number of readers around the world.

We have divided the Digest into themed sections to assist readers to find the topics which most interest them, but inevitably many reports could be allocated to several different sections. I am not sure whether this means incidents are becoming more complex, or whether our analysis is becoming more sophisticated, but we urge you to study all the sections because they all contain reports which will be of interest both to seafarers and people in shore positions. One message which does come through, unfortunately, is that not all companies are able to demonstrate a robust safety culture, so there is still a great deal of work to do to reach our goal of ensuring that every seafarer returns home safely at the end of every tour of duty.

Within most sections you will again find Insight articles that illuminate topics covered in that section or provide additional information. They are written by experts and are well worth reading.

All our videos, publications and databases are easy to access through our website, so we hope you will look at them when time permits. For more detailed and focused research, we recommend the searchable database on the website. There is a useful guide in the banner on our home page which explains how to use our site if you are in any doubt.

We hope that you find this edition both interesting and informative. Please let us know. our comments are important, and we read them all to ensure *CHIRP* Maritime continues to provide the information you need to make our industry safer.

Until next time, take care and may all your voyages lead you safely home.

Editor: Captain Alan Loynd
FNI FITA MCIArb BA(Hons)

Please note all reports received by CHIRP are accepted in good faith. Whilst every effort is made to ensure the accuracy of any editorials, analyses and comments that are published in this digest, please remember that CHIRP does not possess any executive authority.

The professional way our colleagues have continued to move the world's trade goods, often in terrible conditions, has been an inspiration. Perhaps one day the world will acknowledge the great debt it owes to the men and women at sea

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Section one

Human Factors

There is no doubt that human factors play a part in everything we do, and these days it is not enough to simply point out that the majority of accidents are a result of human error. This tells us nothing.

Instead, we must ask probing questions to determine the underlying causes which resulted in the appearance of unexpected and dangerous human factors. Was there a breakdown in communications, or a gap in training, or was fatigue an issue? The model we use to analyse these and other factors has been included in previous editions of the Annual Digest, and it can be used at all levels from on board safety meetings to management analysis, and even by national and international organisations when they study marine accidents and incidents.

Without determining the underlying factors, it is impossible to suggest remedies, which is why we now include a human factors analysis in every report we publish. We also pose questions for our readers to consider, to encourage people to think about whether they are at risk of a similar incident.

In this section we have collected a series of reports where human factors are particularly prominent, but you will find other examples throughout this Annual Digest and in all our other publications.

We begin with a report about a new-joining crew who were not given an adequate handover, and subsequently discovered many serious defects aboard their vessel. The way they responded and tackled the problems was exemplary, but they should not have been placed in such a difficult situation. This is followed by two reports about fatigue – one where the problem may have been company-wide, and another which involved an overworked Chief Officer and the stress he suffered as a result. Both are alarming and should never have been allowed to develop.

We conclude this section with an Insight article from the Maritime and Coastguard Agency in the United Kingdom, where they discuss human factors and their impact on crew safety and wellbeing. This is an important document which deserves careful study.

Article 1

Handover follow-up

Initial Report

A time-constrained handover took place on board a tanker at anchor the evening prior to a planned canal transit. The off-signing crew of 21, who had been on board for 11 months, were relieved by a complement of 14; the remainder scheduled to join at the next port. Over the following weeks the on-signing Master and Chief Officer identified almost 60 serious defects and material deficiencies, none of which had been handed over by the off-signing crew.

During further correspondence *CHIRP* sighted documentary evidence of almost 60 defects, many of which had serious vessel safety implications, including:

- incorrect ECDIS safety settings for ocean, coastal and port approaches.
- the port and starboard anchor shackle marks were missing.
- the rescue boat had not been launched during the past three months. The rescue boat should be launched every month or, at a minimum, every three months.
- there were no entries for maintenance or usage in the Compressed Air Breathing Apparatus (CABA) compressor logbook.
- oil droplets and fatty deposits were observed on the galley exhaust fan vent grille (which exhausted onto the accommodation deck) and on the deck below the vent.
- there were no formal training records for the testing of brake-holding capacity and brake-rendering capacity of mooring winches and windlass.
- there was no formal numbering system for the firefighting equipment.
- 75% of personal oxygen analyser sensors were unserviceable.
- all the chemical Draeger tubes had expired.
- almost all the Chief Officer's files located in the cargo control room were incomplete.
- there were no gas reading records for the cargo tanks which has been recently inerted.
- several of the indicating sensors for the cargo valves did not show the correct value.

CHIRP Comment

The management company should ensure that handovers occur in a suitable port with adequate time for an effective exchange of information so that the incoming Master is fully apprised of the vessel's material condition. Handovers normally follow a procedure set out within the SMS including, but not limited to:

- a report on the officers and crew, including their experience, highlighting their time on board, relief schedules and any health matters.
- inspection of trading certificates including those where a survey is due.
- any conditions of class or memos.
- bridge equipment and navigational documentation, passage plans, chart correction status, and navigational warnings.
- the current cargo status including stability information.
- critical items of equipment that are due for maintenance or inspection / survey must be highlighted.
- status of bunkers, fresh water and victualing supplies.
- Master's PMS job status, cash, and password control.
- a full tour of the ship with the outgoing Master including the engine room. (It is important to have a physical inspection of the ship to witness first-hand the ship's overall condition, especially potential pollution risks).

It is crucial that the incoming Master understands the navigational, mechanical, structural, safety and pollution risks associated with the ship before signing the official logbook to accept responsibility for the vessel's safety. In this case the Master spent two weeks identifying these defects and is commended by *CHIRP* for the diligent and proactive way they rectified the material defects and crew-training deficiencies identified.

To ensure consistency *CHIRP* strongly recommends that every vessel's SMS sets out a comprehensive procedure based on formal risk assessment. The timing and location of handovers must be carefully planned by the shore management team and adequate time scheduled for them to take place. On-signing crews should be well rested prior to the handover so that they are fully able to digest the information presented. Whole-crew changes are not recommended: it is best practice to stagger crews to maintain continuity of knowledge. Changing the Master and Chief Officer together is unwise and potentially unsafe.

11 months is the legal limit for a tour of duty under the MLC. There is no evidence to suggest that the tanker had been subject to any third-party remote audits, and it is worrying that some of the deficiencies identified during this period by the Master and Chief Officer go back even further; this indicates a poor shore safety management culture.

The number of faults reported indicates that the off-signing crew did not do all that was expected of them, which is probably the result of crew fatigue after so long at sea. This could reasonably have been foreseen by a more proactive shore management team.

Human Factors relating to this report

Fatigue: (Cognitive) – don't focus on trivial problems and neglect the more important ones.

Fatigue: (Behavioural) – Don't ignore normal checks and procedures; beware an increase in mistakes and carelessness.

Culture – Applies to individuals and the whole organisation.

MAB wished to highlight the positive points arising from this case, especially the exemplary attitude of the incoming Master. Rather than look backwards at issues not tackled by the previous crew, they chose to accept that they were now in command and worked hard to rectify the deficiencies found.

Article 2

Fatigue in the international towage sector

Initial report

"Our work levels continue to be high regardless of the awful impact of COVID and this is further increased by a lack of manning. Some vessels are non-operational due to a variety of reasons causing additional workload on the operational tugs and the crews that man them."

The reporter stated that the fatigue management plan operated by the company was not working and fatigue issues were very common. The reporter felt that the company's ISM system appeared to be related to meeting KPI's and that the fundamental principles of safety management were being ignored.

Further correspondence with the reporter revealed significant information which, according to the reporter, indicates an unacceptable level of work stress caused by the current working rosters and workload.

In line with most tug companies the job consists of:

- mobilisation (when they start up).
- on site (upon arrival at berth or vessel).
- start job, (either the first communications with Pilot/Master or when towing gear is applied).
- end Job (when the tug is released by the Pilot/Master),
- demob (when the vessel is moored, and the engines shut down).

Recording of hours of work and rest – The crew record their hours of work and rest in a paper format, not electronically. These are time-consuming and cannot be monitored centrally, hampering identification of potential non-conformities.

Rostering for jobs – Inaccurate rostering often leads to tugs being deployed unnecessarily, resulting in interrupted sleep.

Tug maintenance – Tug maintenance can often be delayed or deferred due to work commitments and it is rare to operate with a full complement of tugs due to lack of manning and unplanned maintenance because of breakdowns. Any reduction in tug numbers increases workload across the remaining tugs.

In summary, the nature of towage operations is based on demand and means there is often no opportunity for planned rest. This can be further degraded when tugs are taken out of service for planned or unplanned maintenance. Violations of the minimum daily hours of rest (10 hours in any 24) occur on a regular basis.

Library image courtesy of Shutterstock

CHIRP Comment

To mitigate the risk of fatigue tug operators should ensure that the Fatigue Management Plan has an efficient and centralised recording system to record non-conformities and to ensure that compensatory rest is given. This must conform to the STCW 2010 requirements for work and rest hours.

Sufficient tugs should be operated to allow for planned maintenance as well as extra redundancy based on historic breakdown rates. The rostering of tugs and their crews should be reviewed to improve efficiency, and take into account the time needed for victualling and vessel cleaning. A safety representative should be nominated for each group of tugs and safety drills properly structured into the rota.

CHIRP recognises that one of the principal issues faced by the crews is their well-being. Crew representatives who report to management must be listened to and their requests and suggestions supported where appropriate.

Fatigue is a common problem in the shipping industry and is a causal factor in several marine casualties and incidents. However, data on fatigue issues are very widely under-reported. Research by the World Maritime University found that there is a culture of adjustment among seafarers across the maritime industry where hours of work/rest are manipulated for compliance purposes.

Maritime Advisory Board members felt very strongly that the issues raised were very safety-related and wanted to highlight the dangers of fatigue, and stress, on decision making and teamwork which increases the likelihood of an accident if not properly managed.

Human factors relating to this report

Culture – Does everyone really care about safety?

Local Practices – Don't cut corners. Don't let local norms become the new standard. Follow procedures – they are there for a reason. Involve the workforce in developing procedures and practices – they will know if something won't work.

Pressure – Ensure adequate resources – people, time, tools. Foster a culture where crew feel able to report pressure overload.

Article 3

Chief Officer's mental health issues

Initial Report

The reporter informed *CHIRP* of serious mental health issues due to fatigue and high levels of stress concerning a chief officer who was working on an LPG vessel.

The vessel was trading on a coastal voyage route with very short distances between ports. The contract time for the chief officer was 3 months but the chief officer had worked an additional 4 months while awaiting a relief. A deck officer had been repatriated on medical and disciplinary grounds, leaving the chief officer with only two other deck officers.

The reporter stated that cargo operations were extremely demanding due to the short port times and fast loading and unloading operations. The port rotations, and the grades and quantities of cargo, were never known until the last moment which made planning uncertain and stressful. Crew numbers were insufficient (the chief officer frequently had to take the helm due to the lack of crew), there was a lack of personal protective equipment and consumable stores on board, and mooring winch failures that could not be fixed by the ship's staff.

These issues had been raised in the monthly safety meetings but had not been addressed by the management company. On board discipline was being affected by the management's lack of concern about issues being raised by the ship.

The chief officer eventually had to leave the ship due to poor mental health and see a doctor for an unlimited time.

The company was asked to replace the third deck officer, increase the number of crew and develop a long-term recruitment strategy for all ranks. The charterers had also been requested to plan further ahead so that proper work/rest hours could be achieved. Shore management was asked to monitor crew discipline and appraisals, and to respond appropriately to issues raised during monthly safety committee meetings.

The reporter stated that he left his job 2 years previously due to similar health issues and suggested that extra care should be taken regarding seafarers having a mental health breakdown as there is no compensation for health or job loss.

CHIRP Comment

At what point do fatigue and stress lead to ill health? (*See the article in the CHIRP Annual Digest 2020 on seafarers' wellbeing during the Covid-19 pandemic*) Was pressure a factor in this case, or were the crew just busy or dangerously overloaded?

Tankers are subject to SIRE inspections, given the manning levels, it is likely that there would have been a focus on the chief officer's hours of work and rest, particularly given the fast turnarounds and short voyage lengths. Breaches of work and rest hours would easily be identified providing they had been correctly recorded. SIRE evaluation reports should include a comment on fatigue and mental health in the context of crewing levels.

Demanding work which is sustained over a long period without any respite will lead to high stress and a possible breakdown in the ability to perform that work. This is especially so if the person has a high personal standard for the work and high attention to detail. If this cannot be achieved, then a mental breakdown is possible.

In this case, the situation was made worse by the lack of management support and exacerbated by the resulting breakdown of crew discipline, which further increased the mental workload for the chief officer. Regrettably, a proactive preventative intervention was not undertaken prior to the chief officer being landed on grounds of ill health.

CHIRP is willing to engage with shipping organisations to promote seafarers' mental health issues more widely so that they are understood and supported throughout the industry, and proposes that consideration should be given to making provisions for seafarers mental health in the ISM Code. This would provide some focus on this area of wellbeing and codify minimum standards regarding seafaring mental health (see *A Standard for Seafarers' Mental Health Awareness and Wellbeing Training,* published in 2020 by Witherby Publishing group). The Maritime Labour Convention 2006 (MLC) is the minimum standard, not the target!

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Human Factors relating to this report

Pressure: Does your charterer understand the workload you are operating under? Has anyone from shore management explained to the charterers the extent of the pressure being placed on the crew? Does your management company provide more crew when the workload increases beyond the existing crew's capacity?

Teamwork: Why did the master with overriding authority not demand that the company support the officers and crew given the issues identified in the report? This matter should have been identified much earlier if there was an active teamwork spirit on board.

Fatigue: Was anyone taking any action to help the chief officer, or was nobody able to recognise the signs of failing

mental health? The high workload on board, combined with other operational and behaviour issues affecting the crew, caused an officer to suffer severe fatigue and eventually a mental breakdown.

Does your company or vessel have a Fatigue Management Plan that spells out the management and crew responsibilities to reduce the risk of fatigue?

Capability: Does your shipping company have the necessary competence to manage the mental health issues of its seafarers? Until ship managers understand the factors associated with mental health and receive the necessary training for themselves and their crews, then cases such as this one will continue to occur.

Culture: Given what has been reported, do you feel that there is a poor culture of safety in your ship/shore management teams? Is this something that you have experienced and voiced concerns about but have not been listened to?

Article 4

Insight: **MCA on human factors**

Understanding the relationship between safety and wellbeing in the maritime industry

In the shipping industry there is increased interest in safety culture. Safety culture makes business sense; it reduces accidents (lowering costs) and increases worker motivation, retention, and productivity. Certain sectors, such as passenger ships, may have additional interest due to the threat of reputation damage, whilst some cargo sectors has extremely dangerous or polluting cargo.

Nonetheless, time and again, we see organisational culture as a contributory factor. The Health and Safety Executive (HSE) identifies culture as the context within which people judge the appropriateness of their behaviour. You can imagine how a culture which does not value safety as highly as it should encourages unsafe behaviours: slips and lapses are covered up, work-rest hours are fabricated or near misses are not reported. On the other hand, better safety outcomes can be seen in organisational cultures in which individuals feel collectively responsible for maintaining safety, are empowered to speak up when something isn't right and unsafe acts are not tolerated.

Safety aside, which organisation would you rather work in?

In an industry which is struggling to recruit and retain high quality workers this is something we ought to be asking ourselves.

Research conducted recently has found that due to the pandemic, record numbers have been reconsidering their career, and that a good work/life balance and flexible working are generally more attractive to new recruits than competitive pay and bonuses. Whilst we do not have the data for the seafaring population, this research points to the idea that how your workplace treats you is important and affects your loyalty to an organisation or industry.

Many elements of organisational culture not only improve safety, but mean a fair place to work, where people are valued and feel empowered. In turn this leads to increased staff loyalty, improved engagement, and higher retention rates. Key to improving a safety culture is developing an understanding of how seafarer fatigue, stress and mental health interact with behaviours at work. Having senior managers that understand these factors and work to mitigate the negative effects vastly improves the workplace for individuals.

Research has indicated that in the maritime industry, intentions to leave and job satisfaction are both strongly and consistently correlated with safety perceptions, job demands and team cohesion. Where there was a perception that management prioritise production over safety, worker well-being is reduced. However, this seems to be counterbalanced by positive perception of other job factors, such as safety measures, team cohesion and ship management. The positive effects of safety perception on wellbeing mirror previous research and show how important it is to take safety culture and wellbeing as two sides of the same coin.

'Safety climate' describes how people feel about safety and measuring this offers an insight into an organisation's safety culture. Safety culture is one of the strongest indicators of organisational health and safety performance so, not only can a positive safety climate have a favourable effect on accident rates, it can also have an impact on productivity, reliability, competitiveness and employee morale. HSE's Safety Climate Tool has been carefully designed by scientists to assess the attitudes of individuals within an organisation towards health and safety issues. This latest iteration comes as a result of collaboration between the Maritime & Coastguard Agency, HSE and stakeholder engagement, and takes into consideration the unique structures of shipping companies. The Safety Climate Tool measures an element of safety culture - the 'way things are done'- in an organisation when it comes to health and safety, using a simple, online questionnaire.

Investment in improving organization culture is extremely important and has many benefits for businesses. The most influential source of a good safety culture is the seriousness with which senior management approaches it via training, staff investment and the implementation of work processes that accommodate the time that safe practices take. Workforce mistakes increase not just because of the absence of this investment, but also because of the meaning people attach to the absence of the investment by their senior management. Investment in people, in training and development, as well as in supporting their wellbeing, similarly sends strong messages to seafarers.

Research has found that levels of 'safety task performance' in the maritime industry are generally higher than 'safety participation and innovation', indicating a strong emphasis on compliance compared to more active engagement and development. The Maritime Skills Commission Report 2020 found that it is not uncommon for shipping operators to meet only the minimum safety standards and, in line with this thinking, to have officers who only meet the IMO's STCW standards – which sets a global minimum standard of education and capability. There is a tendency for employability to be judged purely on employment costs and whether they meet this minimum STCW standard. But as technologies in shipping develop, this is likely to change. As industry moves towards increased use of highly hazardous propulsion technologies are used, safety cultures across all shipping will need to move to transition to the very best seen within shipping today. Advancing automation technologies and

increasing remote operational decision making, support and monitoring is likely to result in a need for smaller crews with higher skill levels in the future.

The MCA Human Element Team are working on a variety of projects which aim to encourage companies to develop organizational cultures that value safety and always aim to go beyond compliance, as well as valuing workers for the benefit of business as well as the individual. Projects include the development of a tool for shipping companies to assess the wellbeing of their workers. The wellbeing tool will take the form of an anonymous survey which seafarers and other personnel will complete. The results will give management insights into areas where wellbeing could be improved, such as communication; environmental factors, fatigue; social factors, company culture and more. The survey can be repeated as changes are made to ensure that wellbeing initiatives have the desired impacts. Meanwhile, seafarers will be provided with tailored information and advice based on their responses. The focus for the MCA's Human Element Advisory Group is safety culture, and discussions from these meetings fed into the development of an ambitious safety culture strategy in September.

To get in touch with the MCA's human element team, contact human.element@mcga.gov.uk

More information:

Printed and PDF copies of 'Wellbeing at Sea: A Guide for Organisations' (ISBN 9780115536076) and 'Wellbeing at Sea: A Pocket Guide for Seafarers' (ISBN 9780115537875) are available from tsoshop.co.uk

A Standard for Seafarers' Mental Health Awareness and Wellbeing Training (eBook) is available from https://www.witherbyseamanship.com/a-standard-for-seafarers-mental-health-and-wellbeing-training-ebook.html

Further information on the Safety Climate Tool is available on the HSE website – https://books.hse.gov.uk/Safety-Climate-Tool/

Section two

Deck safety

According to available statistics, the majority of injuries at sea result from slips, trips and falls. Naturally, many such accidents could be prevented if the people involved had been slightly more aware of the potential dangers. There is wisdom in the old expression "one hand for the ship and the other for yourself". The first report in this section is an excellent example of how to do a job overside improperly, and it is a miracle that the crew member involved did not have a serious accident.

Unfortunately, in the next report we consider a tragic case where two crew members died from smoke inhalation. The reporter claims that attempts were made to cover up the true course of events, and we await the result of the official investigation with interest.

This is followed by a report about an unmooring operation after a ship-to-ship transfer, which almost turned into a disaster when the weather deteriorated unexpectedly. Then we consider a case of cargo damage due to water ingress into a cargo hold. There are many valuable lessons in both these reports.

Finally, we have yet another report about a defect in the on-load cable release of a lifeboat. It sometimes seems that lifeboats, which are intended to save lives, have become positively dangerous and we urge you all to pay particular attention to their proper maintenance.

Article 5

Unsafe practice while working over side

Outline: A report which outlines another example of mariners putting themselves at risk by following unsafe practices.

What the reporter told us

A cruise ship was moored on the pier opposite my ship. I noticed a stage which was rigged on the port shoulder being relocated laterally whilst a crew member was standing on it. Although the person on the stage was wearing some PPE, (safety harness, safety shoes, gloves, and an inflatable lifejacket), I consider it quite an unsafe act. The crew member working on the stage should have vacated it to a safe position on deck before attempting to reposition the stage. (See photos below).

Figure 1 of 3 – Unsafe repositioning of a stage

Figure 2 of 3 – Unsafe repositioning of a stage

Figure 3 of 3 – Unsafe repositioning of a stage.

Further Dialogue

The photographs submitted had been taken through the cabin window of an adjacent vessel and were the only ones available hence the lack of clarity. At the time the stage was initially rigged, an officer had been in attendance apparently checking and briefing the crew members doing the job. The officer had been holding some paperwork which the reporter had assumed were the appropriate permits, checklists, and Job Safety Analysis. However, the reporter felt that there was a lack of supervision by the individual left in charge of the job after the officer had departed.

CHIRP comment

Although there are many assumptions being made, there is also a disconcerting sequence of photographs which illustrate poor safety awareness by the crew engaged in the task with an apparent lack of supervision, instruction, and training. Good practice would be to have a Jacob's ladder rigged for access to the stage from the deck above and a lifebuoy and line ready for immediate deployment close by. Furthermore, good practice would never allow a stage to be relocated laterally with a person remaining on the stage as this entails untying the gantline securing one end of the stage and supporting the weight by hand grip alone whilst the gantline is moved and resecured. Finally, there appears to be a tarpaulin rigged beneath the stage (to catch any drips?) which would imply an awareness of environmental protection, which makes the obvious lack of safety awareness even more baffling.

Why do seafarers do something like this? Is it a genuine lack of knowledge and awareness of the potential dangers and consequences of their actions? If so, then it would appear our standards of training have fallen to an unacceptable level. Or is it a deliberate act of blasé bravado? Such acts are irresponsible and set a dangerous example for other ratings who learn and take their guidance from those around them. Whatever the reason, such actions are not acceptable - near misses such as these demonstrate the need to have better situational awareness, a greater understanding of personal safety, and to be able to speak up when asked to do something in an unsafe manner.

Article 6

Accommodation fire – two fatalities

Outline: Even tragic accidents have learning potential providing the root causes are identified during the subsequent investigation.

CHIRP Maritime has a Memorandum of Understanding (MOU) with the International Seafarers Welfare Assistance Network (ISWAN) whereby *CHIRP* will refer any specific welfare reports to ISWAN, whilst ISWAN will refer any safety-specific reports to *CHIRP*. The following report was a referral by ISWAN.

What ISWAN told us

We were contacted by the reporter requesting assistance. Apparently, there was a fire on board his ship and two crew members died of smoke inhalation. The reporter had contacted the authorities on account of (alleged) errors in the account of the incident by the captain and the company. It was also stated that some of the records and logs of the incident had been falsified.

CHIRP contacted the reporter to clarify some details of his report and to learn anything further.

The reporter alleged that:

- A planned fire drill, the day before the fire broke out, did not take place but a remedial entry was made in the on-board logs stating that it was completed satisfactorily.
- On the day of the fire, the fire alarm was cancelled shortly after it was activated but no tannoy announcement was made and the alarm was not re-activated.
- A second remedial entry was made in the ship's logs showing that, on the day of the fire, 3 minutes after the initial alarm the crew muster was completed, and two persons were known to be missing. According to the reporter that was not the case – the muster was not completed properly, and initially only one person was unaccounted for. It was only when the terminal fire brigade recovered a body that was not the person thought to be missing that the crew realised a second person was unaccounted for.
- After the fire, when giving a written statement, the reporter was pressured to change his statement (which he refused to do). At subsequent meetings on board the reporter was verbally abused and harassed about refusing to change the statement.
- Although it was known that the source of the fire was electrical in nature, the vessel managers suggested and promulgated a cause of the fire, implying it was in some way the responsibility of the victims before the shore investigators had arrived on board the vessel to inspect the scene. The inspection by the shore authorities did not support the company's view and pointed to an alternative seat of the fire.
- Two days after the fire and the day after the shore authorities attended the vessel the reporter was landed ashore for medical tests. On discharge from the medical facility the reporter was refused access to the ship, personal belongings were landed by the agent and subsequently the reporter was repatriated by the vessel managers.
- The reporter has lost employment, credibility, and livelihood.

Further dialogue

CHIRP was able to confirm independently that the named vessel had been alongside a loading terminal on the date reported and had suffered an accommodation fire which had tragically resulted in the death of two crew members. Furthermore, the flag state administration were contacted and confirmed that "as for all reported 'very serious' casualties, a safety investigation into this occurrence is being undertaken, in accordance with the IMO Casualty Investigation Code", but due to the ongoing investigation no further comment was possible.

CHIRP comment

As stated earlier even tragic accidents serve a purpose so that lessons learned can be shared and thereby prevent similar tragedies happening, but only if a full and thorough investigation is carried out, the immediate and underlying causes are identified, and the subsequent report is published and placed in the public domain.

Mandatory drills are the minimum required but more frequent training can only lead to better and more proficient teams better able to deal with an actual emergency.

Muster lists and station bills are there for a reason and are based on a tried and tested formula adapted to meet the specific requirements of a vessel and the crew numbers available on board. Deviation from training can lead to poor choices being made and while musters may appear to be time consuming, a correct muster is essential.

Lessons cannot be learned, root causes of incidents cannot be found, and systems to prevent any reoccurrence cannot be put into place if records are falsified, and if there is such a poor safety culture running throughout the whole of a company from top to bottom. The reporter is thanked for his courage in promulgating the various issues discussed above which are generic simply because the incident is under flag state investigation and thus *CHIRP* must not interfere in this process. However, from the information above it is clear there are many human element aspects to consider, Alerting, Communication, Pressure, Local Practices, Distractions, Complacency, and Teamwork are all factors to address.

CHIRP Maritime looks forward to the publication of the full and complete accident investigation report by the flag state.

Article 7

Ship to Ship mooring incident

Outline: Specialist operations require extra diligence.

What the reporter told us

A ship to ship transfer was taking place between a 106,000DWT tanker (discharging) and a 40,000DWT tanker (loading), the transfer was completed at 10:36 and hose disconnected at 10:42. At 11:00, the person in overall advisory control (POAC) informed both vessels to prepare to commence the unmooring operation due to rapidly deteriorating weather conditions. The departure checklist was completed at 11:12, by which time the weather conditions reached winds of NE 25kts gusting 30 kts with a swell of 3m which exceeded the agreed weather criteria for STS operations.

The agreed unmooring plan called for the larger vessel's fore and aft wires to be cast-off first. This was to be followed by the simultaneous release of all the smaller tanker's head and stern lines.

At 1125 the smaller tanker's two (2) aft spring lines parted. At this time, the larger ship requested the smaller tanker to run off its three (3) headlines and two (2) forward back springs as his crew (large tanker) were unable to release them.

At 1130 the unmooring operation was completed. Subsequently, the mooring ropes released into the water were returned to the smaller tanker by a service vessel.

Additional Information: The deterioration in the weather had been forecast but not until later in the day. There were no tugs available at the site of the STS transfer.

CHIRP comment

Ship to Ship (STS) transfers are specialist operations fraught with potential hazards with parting mooring lines being high on the list of possible dangers.

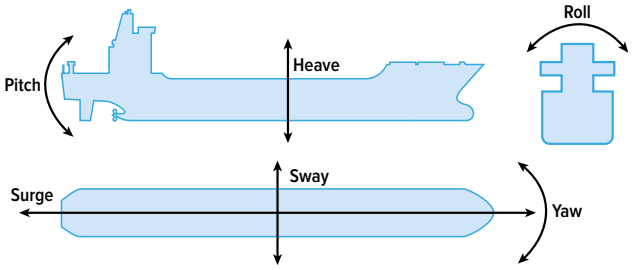


Figure 3 (image courtesy of Witherbys Publishing)

- two dissimilar vessels will each have their respective pitch, roll, heave, surge, yaw, and sway movement periods, potentially in opposition to each other at any given moment. This can put tremendous snatch loading on the mooring lines.
- this differing movement makes balancing the load on the mooring lines more difficult than conventional mooring operations.
- for this reason, ship to ship transfers should be carried out only under favourable weather conditions with constant monitoring required to ensure that the agreed weather parameters are not exceeded - especially the sea and swell conditions.
- weather forecasts are more important to a vessel engaged in an STS operation than they are at sea, due to the proximity of obstructions and hazards.
- the authority to cease STS operations rests with both ships involved, either one can stop the operation on the grounds of safety.
- STS operations will normally have their own mooring requirements but if not, or if there is any dispute, then the OCIMF Mooring Guide (MEG4) should be considered the definitive mooring guide.
- all crew members of vessels involved in STS operations should be fully conversant with all aspects of the agreed standard operating procedures including any special arrangements for quick release of mooring lines if this becomes necessary. Regular emergency preparedness exercises for unmooring should be practised.
- it is important that all mooring lines in each of the three (3) groups, breast lines, spring lines, and head / stern lines are of the same size, construction, breaking strength and length to ensure equal tension on all lines. Dissimilar characteristics within a group can lead to rapid parting of mooring lines.

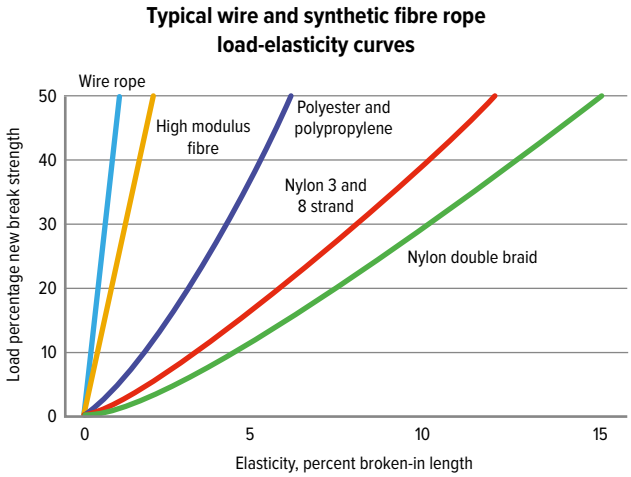


Figure 4 (image courtesy of Witherbys Publishing)

Article 8

Cargo damage due to water ingress into cargo hold No. 5

Initial Report

A cargo vessel went to anchor and commenced pumping out ballast water from No1C Water Ballast Tank (WBT) to adjust its trim before a canal transit the following day. Shortly before pumping was completed, the bilge alarm for cargo hold No. 5 WBT activated. The Chief Officer instructed an ordinary seaman to take soundings of the hold bilge, which revealed 0.5m of water in the bilge.

The vessel successfully transited the canal and berthed alongside at 1700. Cargo operations were to commence at 1900. No cargo movements were planned in hold No. 5 at this port.

At 1800 the Chief Officer instructed the duty engine room watchkeeper to transfer ballast water from No. 1 WBT to No. 5 WBT which was situated below cargo hold No. 5.

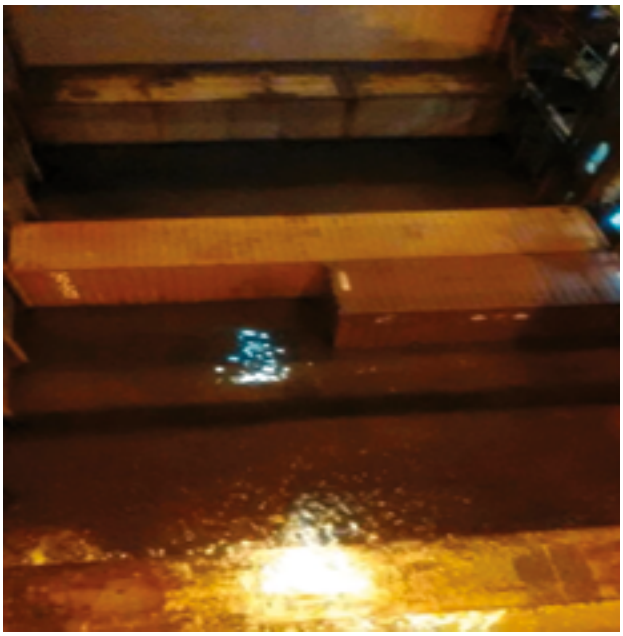
Shortly after starting, the hold bilge alarm sounded so the transfer of ballast water was stopped. No crew member was directed to investigate why the alarm had sounded; instead, the alarm was accepted, and the water transfer system reconfigured to pump out the hold. Ballast water transfer subsequently restarted but approximately 15 minutes later the No. 5 hold bilge's "Low insulation" alarm sounded. The ballast operation stopped once again while the ship's electrician was despatched to investigate. On arrival they found that the hold was flooded to a height of 1.70 m.

The incident was reported to the Master and portable emergency pumps deployed.

The next day the Chief Officer, Bosun and an AB entered Hold No. 5 to confirm that the water had been drained. When cargo operations resumed, 26 flood-damaged containers from Hold 5 had to be transferred ashore. During the inspection various hand tools (screwdrivers, hammer, and pieces of an old gasket) were discovered in the hold.

An investigation confirmed that the bilge and ballast system valves were in good condition, and the structural integrity of the cargo hold was intact. It concluded that water had entered the hold from a manhole that had not

been properly secured following work within the double bottom tank. It was noted that the inadequate reaction by the crew when the bilge alarm was activated was a contributing factor to the incident.



CHIRP Comment

This report raises several serious points:

All alarms, particularly bilge alarms, must be treated with concern and investigated immediately. The initial hold bilge sounding of 54cm in Hold No. 5 was significant and should have been compared against daily hold bilge soundings to determine the possibility of water ingress into a compartment. An inspection of the hold by the Chief Officer should have been a priority action.

Activation of alarms indicates a deviation from the norm: it is imperative to STOP and ask 'WHY?' In this case there were enough clues to alert the crew to that fact that something was wrong. Carrying on with a ballast transfer without investigating only exacerbated the problem and resulted in 26 damaged containers.

The presence of tools indicates either poor engineering practices or a task not completed correctly. Reasons for both could include fatigue, the presence of distractions, time or resource pressure. They could of course also point to a poor safety culture, complacency, or poor supervision. All of these are common Human Factors that lead to incidents such as this one.

Human Factors relating to this report

Alerting – Do you always speak up when you should? If not, why?

Communications – The alarms indicated a deviation from the norm. Do not assume that all is well; check.

Teamwork – Encourage challenges to 'group think': has anyone checked the hold bilges? The tools left from the previous work indicated that the job was incomplete. A proper post-work inspection was not carried out.

Article 9

Lifeboat on-load cable release unit defect

Initial report

During an annual lifeboat safety inspection it was discovered that the on-load cable release could not easily be moved, and the release lever required extreme force to operate. The forward hook cable release also did not operate properly.

A replacement cable release arrangement was procured locally, and repeated tests were conducted to confirm that it was once again fully operational.

The post-event investigation noted that the company's shipboard safety operations manual required the lifeboats to be inspected on a weekly and monthly basis. According to the vessel's logs, the monthly lifeboat inspection had taken place three weeks previously and had included an abandon ship drill during which both lifeboats were unhooked and manoeuvred in the water. However, the poor condition of the lifeboat release system was not documented, and nothing was reported back to the company.

CHIRP Comment

The company's safety manual provided specific and comprehensive instructions for inspection and testing. If these had been properly implemented, then the defect should have been identified in an earlier inspection.

It is vital that the responsible officer assigned to conduct lifesaving appliance inspections and tests has received the necessary training. A senior officer, usually the Chief Engineer or someone familiar with the equipment, must mentor the officer to ensure that maintenance is carried out in accordance with the manufacturer's instructions. It is equally incumbent on the company under the ISM Code to ensure that training is sufficient. Procedures issued by manufacturers should be scrutinised for feasibility. For example, the manufacturer of lifeboats and the davits in which they are housed will often be different. Are these procedures sufficiently coordinated to prevent obstructions to maintenance? If not, the company responsible for compliance with the ISM Code has a duty of care to ensure corrective action.

Since their introduction, on-load and off-load release systems for lifeboats have caused death and serious injury to crew when the operating systems have not been properly checked, maintained, and tested. The system should be regarded as a single point of failure unless fall preventer devices (FPD) are fitted.

Undertaking maintenance on the lifeboat hooks - the hanging-off strop is rigged along with the fall prevention device (FPD). Once the weight of the boat is taken by the

hanging-off strops the hooks can be released. The FPD can remain attached to their shackles.

FPDs were regarded by regulators as an interim measure whilst hook designs were improved. However, they provide a separate and alternative load-path and are easy to rig and unrig. They can be cut in an emergency and provide much needed security for crews who over the years may have understandably lost confidence in the on-load off-load lifeboat release equipment.

MAB comments

Because of previous incidents, when it comes to lifeboat inspections, companies are understandably risk-averse. The situation is not helped by the substantial number of port authorities which do not allow boats to be launched within harbour limits. These factors can lead to a culture of falsifying records to appear to be compliant.

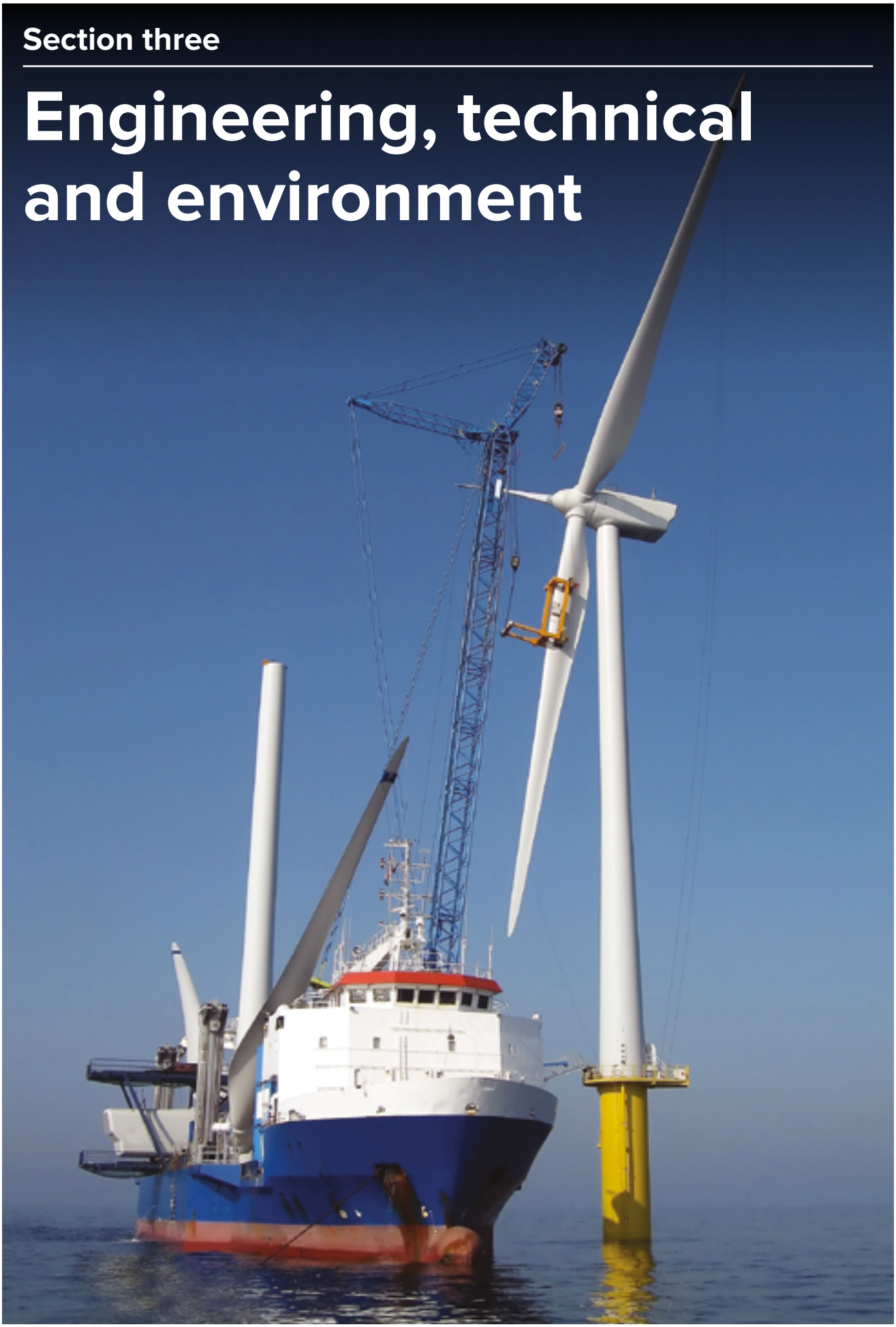
Human factors relating to this report

Capability – Take active steps to identify capability gaps, and address them.

Culture – Your team's safety culture relies on everyone adhering to it.

Section three

Engineering, technical and environment



The reports in this section will naturally be of interest to technical personnel, but the lessons we can learn are applicable to everyone, so we urge all our readers to study them carefully.

Among the lessons which appear more than once are the need to carry critical spare parts (and preferably not parts which have already been used), the need to follow company and manufacturers' instructions and avoid short cuts, the importance of clear company instructions and procedures, and the critical importance of conducting proper risk assessments.

There is also vital advice on the importance of a thorough and accurate master/pilot exchange, and the wisdom of always having a 'Plan B' if your initial course of action has to be abandoned. Leadership and transparency are mentioned, and the need to see the bigger picture rather than always concentrating on a specific, narrow task.

Modern engines, and their sometimes alarming idiosyncrasies, are discussed, as is the importance of ensuring that service letters from manufacturers are obtained and circulated.

Finally, there is a timely reminded about the dangers of complacency.

We conclude with an Insight article from our friends at ISWAN, describing their research into the importance of social integration at sea. They point out that a happy environment not only improves mental health and wellbeing but can also lead to fewer accidents. They will shortly publish a major report on this topic, which we hope to include in the next Annual Digest. In the meantime, this article should be read by anyone who cares about the wellbeing of our seagoing colleagues.

Article 10

Engine failed to start on sailing

Outline: A report highlighting a main engine failure and demonstrating the reason that pre-departure checks are carried out.

What the reporter told us

The main engine failed to start on departure from the berth. The ship's electrician had somehow disabled the main engine after repairing the bow thruster which had failed on arrival.

Further dialogue

The vessel involved was a large (294m LOA) container vessel which was moored in a restricted basin. There was another vessel moored 26m ahead, the end of the basin was 50m astern, and another vessel was secured on the opposite side of the basin 100m away. According to the captain and the bridge logbook entry, the main engine had been tested 30 minutes before the pilot came on board. Based on that information the pilot proceeded to utilise two harbour tugs to pull the vessel off the berth and into the middle of the basin before calling for the first engine movement – whereupon the engine failed to start.

Deciding it was too dangerous to attempt to put the ship back alongside with tugs alone, the decision was made to tow the ship out to a safe anchorage. Five minutes into this operation the main engine became operational. The ship proceeded outwards under her own power with tugs in attendance as a precaution.

Once the main engine had started the pilot asked the captain how it was possible for the engine to have been tested as stated but then fail to start. The captain's reply of "engine too powerful," which confused the pilot, was not elaborated upon.

CHIRP comment

After discussion, our Maritime Advisory Board members noted the following points.

- the Master / Pilot exchange must reflect the actual situation with regards to equipment status and operability rather than what should be or what we hope it to be.
- the meaning of testing the main engine should be clarified. A lot of engines are tested ahead and astern on fuel. However, some engines are only tested on air whilst alongside because of the excess thrust when fired on fuel with the potential to damage moorings. Perhaps this is what the Captain meant with the phrase "engine too powerful".
- port arrival and departure passage plans should always have a plan "B" in case the first choice becomes unavailable. In this case plan "B" worked perfectly with the already secured tugs easily capable of towing the ship from the confined basin to a safe anchorage.
- a lot of modern engines have a reset mode that stops them starting. On the first physical start of the engine, it can be 20-30 seconds before the propellor starts to turn. This would be a matter of system familiarity by the engineers and electrician and good communications between the engine control room and the bridge.
- furthermore, regarding system familiarity, check lists are great aids to highlight any link or commonality between remotely located machinery (main engines / bow thruster etc.).
- finally, problems can occur, even after the most rigorous checks and physical tests, in which case early and good communications are the answer to minimise the problem's effects. It is also necessary to overcome any cultural reluctance for the control room to volunteer that there is a problem.

Article 11

Engine issues in bad weather

Outline: This report was a referral from ISWAN (International Seafarers Welfare Assistance Network).

What the reporter told us

A seafarer asked us to report to you some issues related to their engine which he thinks compromises the vessel's navigation safety. According to him, they are unable to navigate at full speed because of the engine issues and the situation may be especially hazardous when there are large waves and strong winds.

The vessel involved was a ten-year-old 'Supramax' geared bulk carrier of 57,000DWT, several days into an ocean passage.

Further dialogue

The ship had sailed five days previously but on the day after sailing the engine problems started. Two days after sailing the ship was stopped for 10 hours to change an exhaust valve and piston. The parts fitted were not new but rather 'used but good'. After the engine maintenance, the vessel resumed passage but only an hour later had to reduce speed due to exhaust valve and temperature issues, the vessel then had a speed of 3-5 knots. The weather at the time was wind force 6-7 with a wave height of more than 4m.

The captain and chief engineer were of one nationality with all other ranks being of a different one.

The following day the reporter emailed CHIRP Maritime that the engine was better, and the plan was to increase speed after further checks on the fuel injectors.

Although *CHIRP* Maritime attempted to contact the reporter again, there was no further engagement, although we did follow the vessel's progress to its port of destination on a vessel tracking site.

CHIRP comment

The MAB members felt this report covered two separate issues – first leadership and transparency of communications, and second machinery maintenance and critical spares.

While there is a lack of technical information about the vessel's machinery, its fuel quality or what deviation from operational norms dictated repairs at sea, the following observations on good seamanship and engineering practice remain applicable. It was also brought to the MAB's attention that the very act of contacting ISWAN and *CHIRP* took courage on the part of the reporter and reflects the serious concerns there must have been on board the ship.

With regards to leadership and transparency of communications, in the current world of multinational crews, this aspect of the human element is more critical than ever. While resting principally with captains and chief engineers, all senior personnel including bosuns have a responsibility to keep the crew informed.

CHIRP Maritime feels that it is incumbent in the training of all senior officers that they ensure effective communications are established concerning operational safety throughout the vessel. It is a well-established fact that good communication loops are instrumental in good safety performance.

Communication issues extend ashore to management offices, which also have a responsibility to keep the crew on board informed. This report reflects badly on the vessel managers, since a good company system would have given assurances to the crew that internal issues and concerns onboard can be raised with the office.

Regarding maintenance issues and critical spares carried on board, the fact that major maintenance and repairs, undertaken at sea, utilised items that had been used before suggests that the vessel carried insufficient critical spares, which in turn brings into question the shore management's attitude towards vessel maintenance.

Ships should not stop mid-voyage due to engine issues. Routine and preventive maintenance should be scheduled and carried out between voyages.

CHIRP Maritime also feels that sufficient critical spares must be carried to mitigate the likely impact of unplanned maintenance as well as routine maintenance. Reliance on spares that have been used before is very unwise unless they have been sent ashore for reconditioning; they should not be part of the complement of critical spares. Company internal audits should seek to establish realistic inventory levels of critical spares.

Article 12

Flooding cofferdam during speed log maintenance

Outline: The crew attempted to carry out repairs to the speed log unit, which was in the forward cofferdam, while the vessel was underway.

What the reporter told us

The repair team consisted of the chief engineer who was to supervise the job, the 3rd engineer, and the electrician, none of whom had carried out this type of repair before. The repair team planned to follow the manufacturer's troubleshooting instructions.

Upon request, the manufacturers of the speed log had sent instructions to the company's electrical department, who forwarded them to the ship. Neither the company's technical department nor the HSQE-marine departments had been notified of this planned non-routine repair job.

The master reported that the job had been discussed at the morning work planning meeting although no specific risk assessment was carried out for this work.

Enclosed space entry procedures were followed, and the necessary entry permits issued. Furthermore, a team was standing by outside the cofferdam to assist the team in carrying out the work.

In addition to the risks associated with entry into a confined space, the additional risks associated with this specific task are flooding, operational delays, and personal injury.

Additional information

The repair team attempted to inspect the sensor and repair the malfunctioning speed log following the manufacturers troubleshooting instructions.

The work involved removing and inspecting the sensor of the speed log which was in the forward cofferdam. No details are available concerning the size of the cofferdam.

As per the maker's manual, a series of steps were required to be followed to carry out this job safely and effectively.

The crew fitted a chain stopper following the maker's instructions to both the sea valve and the sensor to hold the sensor in the sea valve until the valve was confirmed closed. Once closed, the stopper could be removed.

The crew found that they could not close the handle of the sea valve fully and assumed that the sensor was obstructing the valve. The crew decided to remove the chain stopper and pull the sensor out from the sea valve with the valve not fully closed, resulting in seawater entering the cofferdam from the sea valve, potentially flooding the compartment.

The crew attempted to insert the sensor back into the housing, but it was not possible due to the ingress of seawater. With the sensor removed, the sea valve was closed, and the crew postponed the work. The cofferdam was sealed, and control measures were implemented to monitor the compartment for any further flooding.

Eight days later, when the vessel reached its destination and was at anchor, divers attended the vessel to seal the sea chest. This time the job was carried out with a service engineer from the manufacturers, assisted by the crew who located the sensor back into position and restored the speed log's function.

An in-house investigation was carried out which concluded that the incident had occurred due to failure to comply with and implement the company's basic safety procedures and failure to follow the equipment manufacturer's instructions.

Direct Causes

- Improper implementation of the company's instructions and procedures.
- Failure to follow the maker's safety instructions for the specific job.

Basic Causes

- failure of basic communication within the company offices
- inadequate instructions from the company and improper planning of the job. Neither the HSQE-marine nor the technical department's responsible person were informed about this non-routine and high-risk job.
- a proper risk assessment was not conducted for the non-routine job.

Lessons Learned (Reporter's conclusions)

No instructions should be given to vessels in the fleet for non-routine works unless they have been agreed by the technical and HSQE-marine department personnel and a risk assessment has been carried out in cooperation with the vessel.

Every work activity needs adequate & proper planning, detailed hazard identification and a comprehensive risk assessment to determine the necessary control measures to mitigate the likelihood and consequence of an undesired event taking place.

CHIRP comment

It was the unanimous opinion of the MAB that opening a hull penetration below the waterline while underway and mid-ocean is not a good policy. The following points were also noted.

- the team on board were too close and engrossed in the small details to step back and see the dangers of the bigger picture.
- some on board risk assessments for non-routine or exceptional tasks are too focused on ticking the boxes and completing the form rather than taking the time to identify and make in-depth assessments of individual potential hazards.
- the technical and HSQE – marine departments had not been informed by the electrical department, who were aware of this non-routine job because they had forwarded the instructions received from the speed log manufacturers to the ship. All technical and HSQE-marine departments in the office must communicate with each other to understand the risks.
- while there were failures on board the ship, there were also failures of management with the shore technical and HSQE-marine teams being unaware of the planned operation. The office should ask itself what went wrong at their end and promulgate their findings to the fleet.

Article 13

Steering gear malfunction

Initial Report

As a container ship was conducting outbound pilotage, the bridge team noticed a delay in response of the steering gear. At the same time, they noticed an alarm indicating "EMERGENCY – XX, SERVO LOOP". The steering gear was in manual mode operated by Follow-Up (FU) No. 1 and No. 2 system control units.

The steering gear was immediately switched to FU No. 2 mode and the Master immediately initiated the emergency response procedures. The crew were instructed to stand by in the steering gear room for emergency steering if this was necessary. In the event this not required, and the vessel completed its outbound pilotage without further incident.

The vessel continued her passage to the next port of call. No malfunctions occurred when the system was operating in auto mode in open sea, however, when in hand mode the crew noted that the fault intermittently re-occurred but on each occasion resolved when the system was changed from FU No. 1 to FU No. 2.

While on passage, some remote troubleshooting was carried out by the system's manufacturer but was not successful, so a qualified technician attended the vessel at the next port of call. The cause was found and rectified.

In the meantime, a risk assessment carried out and the necessary risk control measures had been identified and implemented with the aim of always ensuring safe navigation.

The investigation concluded that the incident was caused by equipment that had become defective through wear and tear. The initial response by the crew minimised the immediate risks to navigational safety, and the prompt action by the company's technical managers quickly resolved the engineering issues identified. In particular it noted that:

- the steering gear system inspections and tests were carried out in accordance with the company's procedures and instructions and the vessel's PMS. There was no malfunction noticed during these tests.
- the malfunction was investigated by a service engineer who identified the cause as the potentiometers of the autopilot system. However, spare potentiometers were not available at the port.
- the malfunction was further investigated by the maker's service engineer who reconfirmed that the issue was due to an inoperative potentiometer of the auto pilot system control units resulting in a lost signal and alarm. The potentiometers were replaced, and the proper operation restored.
- there was no requirement in the maker's system manual for replacement of the malfunctioning potentiometers. During the vessel's special surveys, the system was inspected by qualified technicians and no issue had been raised in respect to the condition of the potentiometers. However, during the investigation it was identified that the maker had issued a technical letter the previous year, which recommend periodical replacement of the potentiometers every five years.
- the subject technical letter was never received in the company.
- there was no document to indicate that the potentiometer had been replaced since the ship's construction in 2007.

- there was no history of any previous malfunction of the system on the vessel nor on any other vessels in the fleet using the same system.

Library Image courtesy of Shutterstock

All vessels of the fleet equipped with the same system were directed to replace the potentiometer(s) as soon as practicable and their PMS updated to schedule potentiometer replacement every 5 years. All vessels equipped with the same steering control system were directed to post warning notices describing the steps to be followed in the event of a Servo Loop and FB Fail alarm. The company also contacted equipment manufacturers to investigate how their technical letters are circulated, to ensure proper communication in the future.

CHIRP Comment

Steering gear system malfunctions during navigation in restricted waters could result in serious consequences for the ship.

The vessel's officers and crew should be fully familiar with the system including its emergency operation to ensure a safe and effective response to control the ship's heading.

Effective communication with the equipment manufacturers to ensure that vessels' PMS systems are updated with the latest technical information is essential and should be applied to other items of critical equipment.

CHIRP commends both the ship's staff and the company for their thorough investigation and analysis. Steering gear problems demand a high degree of analysis and in some cases can be beyond the crew's ability to rectify.

Items of safety critical equipment must be scrutinised for updates to service letters. This should be handled by the company's technical (maintenance) teams. Updated service letters should be included in the Planned Maintenance System (PMS) so that ship's staff can easily find them. Just as importantly, staff who are on leave or working on a different type of ship within the same company must also be alerted to these updated service letters.

The replacement of the potentiometers after a certain period is an easy task and one which can be planned for in advance. Risks associated with items of safety equipment which suffer high use need to be assessed for replacement based on their performance. Take early action and do not let equipment fail in service.

When a company takes over a ship with equipment with which they are not familiar, checks must be made with the manufacturers for their latest technical and service letters. Most manufacturers will have this information on their websites. Class can also be consulted. The original equipment maker should be asked, as part of a service contract, to provide regular updates.

CHIRP believes that the maritime industry can learn from the aviation industry's control, management and procurement of air safety-critical equipment. The *CHIRP* Maritime Advisory Board (MAB) suggests that it can, and the *CHIRP* Maritime team has initiated dialogue with their Aviation colleagues on this issue.

CHIRP feels that procuring safety-critical electronic components will become more complex over time, because commercial off the shelf (COTS) electronic equipment is almost invariably neither type-approved nor marine hardened, and moreover has hardware or software obsolescence built in. Therefore, it should be assumed that all safety-critical and/or high use equipment has a limited life expectancy and should be periodically renewed or replaced based on a formal and documented risk assessment.

It is crucial that emergency steering exercises are conducted where failure in any part of the system can be controlled.

The Master and the officers in this case acted professionally in determining causation and set about rectifying the situation and changing reporting procedures for this equipment.

Human factors relating to this report

Knowledge – Officers of the watch should actively find out how the machinery and control systems that they operate work and develop a sound understanding of their failure and reversionary modes.

Situational Awareness – Actively seek input from others. What have I missed?

Complacency – Never assume all is ok. Always be alert. If it can go wrong, at some point it probably will.

Article 14

Personal injury – burn to body and face

Brief account of incident

The vessel was alongside the berth. At 15:50 engineers started the removing the cover of the main engine fuel oil filter filter. Hot fuel sprayed onto the body and face of one of the engineers who was transferred to the ship's hospital for immediate medical attention, while urgent transportation to hospital ashore was arranged. The engineer was hospitalized locally for a week and then repatriated. According to the final medical report issued two weeks later, the engineer was recovering well but his condition would need to be re-evaluated in a month's time.

Incident investigation

The investigation noted that an on-board risk assessment had been issued but it had not been forwarded to the company for review and endorsement. It did not address all of the potential hazards. A toolbox meeting was held before the work was started, and both the supervisor and the injured junior engineer had undertaken the same task previously.

A review of the work/rest hours revealed that the injured crew member was well rested and his working hours were

with in company and MLC requirements. A Permit to Work had been issued and all involved crew members were wearing the correct PPE.

It appears the incident occurred due to inadequate implementation of the Company's basic safety procedures.

The filters were not isolated properly from the compressed air pipe and the isolation valves were not labelled as closed as required by the relevant work permit.

The filters were not checked for being under pressure and draining of the filter was not carried out prior to opening the cover.

The maker's safety instructions were not followed.

A Typical modern Fuel Oil Back flush filter

Lessons learned

Every non-routine work activity needs adequate and proper planning, detailed hazards identification and comprehensive risk controls to be carried out safely and effectively.

A toolbox meeting should always take place at the work site prior to every job, covering hazards involved and the necessary preventive measures, work permits, risk assessments should be considered/ discussed during the meeting.

Proper supervision is an important safety factor during on board activities. The supervisor has a duty to ensure that safety instructions and good seamanship practices are always implemented and to prevent potential unsafe acts or omissions that may lead to injury or damage.

Maintenance activities on equipment or machinery under pressure involve several hazards and risks that could lead to severe injury if they are not properly addressed.

A thorough and effective risk assessment must always be diligently carried out, whilst the company's work permit system procedures must be strictly followed.

Personnel involved must be effectively briefed in detail to ensure that they are fully aware of the hazards involved and risk control measures which should be implemented prior, during and after the work activity.

The recommendations and guidance of the makers of the systems must always be followed at every stage of the work activity.

CHIRP Comments

This lost work case injury was avoidable if proper procedures had been in place before the work started. The key hazards are pressurised hot oil and internal pollution. All attention should have gone into ensuring that these hazards were eliminated before undertaking the work.

In this instance, the pressure in the system was not relieved before lifting the filter covers.

The two engineers had the necessary experience to carry out this work and had done so before. There would appear to be an element of complacency and possible lack of teamwork before the job commenced. Further, given the time of the day that the work commenced, there could have been some time pressure.

The ISM Code demands that the safety management objectives of the company should assess all identified risks to its ships, personnel and the environment and establish appropriate safeguards.

The risk assessment used was inadequate and, as the investigation points out, did not identify the risks. Furthermore, it was not submitted to the company for review. If a permit to work system was used for working on a hot oil pressurised system and it was followed properly it would have identified the hazards and they could have been eliminated. Approximately half of the manufacturer's instructions were not followed. Why?

CHIRP feels that the permit to work (PtW) system was not fit for purpose and should be revised. If a PtW is too complex it is difficult to follow, and short cuts may be taken. If it is not used, then it points to serious failings in the company's safety culture.

CHIRP notes that the corrective and preventative actions proposed by the company were very detailed so it would be very easy to assume that there was complacency and time pressure which could be part of the problem. However, the root cause could be something more fundamental relating to the company's overall safety culture. The crew never set out to injure themselves, but it happened anyway!

Human factors relating to this report

Culture – Does your company, vessel or team have a 'Just' culture? If not, records could be falsified to indicate compliance because seafarers are afraid of the repercussions of reporting inadequate procedures or practices.

Local practices – Do not allow 'local' practices replace standard or 'best' practice.

Pressure – Do not let pressure lead to your taking short cuts.

Capability – Are crew members adequately trained and briefed to undertake safety critical tasks? Are toolbox meetings held and properly conducted?

Alerting – Report inadequate procedures or inspections so that they can be improved. Be assertive – it can save lives.

Article 15

Insight: **Social integration (ISWAN)**

The saying 'a happy ship is a safe ship' is a favourite amongst seafarers. But what makes for a happy environment on board? According to a 2016 Mental

Health Foundation report (Mental Health Foundation (May 2016). Relationships in the 21st Century. London: Mental Health Foundation), people who are more socially connected to family, friends or their community are happier than those who are less connected. Colleagues who have had the opportunity to build strong working relationships with one another through social interaction experience increased motivation, stronger team moral, better trust, improved communication, and greater job satisfaction (Schermuly, C.C. & Meyer, B. (2015). Good relationships at work: The effects of Leader-Member Exchange and Team-Member Exchange on psychological empowerment, emotional exhaustion, and depression. Journal of Organisational Behaviour, DOI:10.1002/job.2060) – all key components in promoting a robust company safety culture; as well as better quality of life for employees and positive personal wellbeing. The consideration of these factors is particularly important in the world of shipping, where on board safety is so crucial for performance.

It is a widely undisputed societal fact that social interaction has a positive effect on a person's mental health and wellbeing. However, in professional environments there is often a disconnect between this knowledge and its application. Within maritime especially, an industry where time = money and where the boundaries between work and personal time are often particularly blurred, a negative view can be taken of seafarers interacting or having what is perceived as 'fun' in a work environment.

The International Seafarers' Welfare and Assistance Network's (ISWAN) mission is to improve the lives of seafarers and their families worldwide with services, resources, strategies, and advocacy. ISWAN's Social Interaction Matters (SIM) Project was developed back in 2019 when, together with the project's funders the Maritime Coastguard Agency (MCA) and the Red Ensign Group (REG), the charity recognised a gap in existing resources related to the topic. Although there are some research projects (https://iosh.com/media/6306/seafarers-mental-health-wellbeing-full-report.pdf – https://journals.viamedica.pl/international_maritime_health/article/view/IMH.2017.0020/42476 – https://healthmed.org/the-effects-of-loneliness-and-social-isolation-on-severe-mental-disorders/ – https://www.martek-marine.com/blog/mental-health-problems-at-sea-a-storm-is-brewing/) about the importance of socially interacting for seafarer wellbeing, there was a lack of actionable guidance for the maritime industry on how to implement effective change in this area.

In September 2015 Olivia Swift, Senior Programme Manager at Lloyd's Register Foundation, wrote a 'think-piece' for ISWAN titled 'Social Isolation of Seafarers: What is it? Why does it matter? What can be done?'. The article explored reasons for the prevalence of social isolation on board vessels and how this could be closely linked to a higher occurrence of mental health problems in seafarers, compared to those working on shore. It was well-received by the industry, and the interest generated helped to justify developing the SIM project, which would explore in greater detail the proposed relationship between social interaction and seafarer wellbeing.

ISWAN's core direct welfare services, the helplines SeafarerHelp and Yacht Crew Help, have seen a sharp increase in calls in the past two years. In the financial year 2020-2021, the charity experienced a +200% increase of calls year on year, a total of over 35,000 seafarers assisted. Helpline data regularly reveals concerning levels of calls about the prevalent issues of loneliness, anxiety, and depression amongst the seafaring population; and occurrences of such problems have only increased as a direct by-product of the COVID-19 pandemic. To turn such unsettling data into implementable change, ISWAN embarked upon a three-phased research project which saw the SIM team connect directly with seafarers and those who support them to seek to understand the drivers and barriers to socially interacting on board, and to provide guidance and recommendations to affect change.

The SIM Project's launch in April 2020 coincided with worldwide escalation of the COVID-19 pandemic and meant that although some plans required hasty revision and reworking, ISWAN was also offered a rare opportunity to learn about the experiences of seafarers during this exceptionally challenging time.

Phase One

This consisted of a review of existing literature, a widely distributed survey amongst maritime stakeholders, and 10 semi-structured interviews with maritime stakeholders. Valuable information was collected about the barriers to social interaction on board, which included fatigue, lack of time, increased workloads, less shore leave, shorter port calls, and the influence of leadership on board and ashore.

Further insight was gathered into the positive effects of social interaction on crew, including the development of trust and better working relationships, improved team cohesion and resilience. Respondents felt that these factors help to increase motivation, combat isolation, provide respite from work environments, and improve safety practices. Our Phase One Report published in January 2021 explores these key findings in detail.

Phase Two

In November 2020, ISWAN launched phase two of the SIM Project entitled – 'The SIM Trials'. Amidst ongoing global pandemic chaos, the charity partnered with 10 enthusiastic shipping companies, which offered access to a total of 21 vessels, to learn about the effects of social interaction on the mood and wellbeing of entire crews over the course of several months.

For each involved vessel a shore and sea ambassador was recruited – a trusted and committed figure who was responsible for keeping a daily log of life on board and a weekly log of any social activities. An in-depth exit interview was conducted with each ambassador on the completion of the trial. Each crew member from all of the 21 vessels was also encouraged to complete a weekly, confidential mood survey to track their emotional wellbeing throughout the trials.

As a result of the phase two trials, several key themes relating to social interaction and seafarer wellbeing have emerged. These will be explored in detail in ISWAN's final phase three report, and guidance and recommendations, which is set to be published in Q1 2022 and disseminated across the industry.

Both publications are intended for use by shipping companies, other maritime stakeholders, as well as seafarers themselves. Part of ISWAN's mission is to become a change-leader in international seafarer welfare, so to ensure the continued benefit of the research the team plan to follow up with an assessment of the effectiveness of the SIM Project's learnings put into practice. Looking to the future, to ensure the longevity of the Project's core values and mission, there are plans to explore key themes that have emerged such as the link between fatigue, safety, social interaction and wellbeing.

Throughout the phase two trials, weekly correspondence between the company ambassadors and the ISWAN team led to the development of relationships of mutual trust, respect and understanding, which in turn led to the collection of a wealth of valuable data above and beyond initial expectations. An Ambassadors Round Table was held, which saw sea and shipping companies from ten partner shipping companies meeting in a confidential space to share their trial feedback and findings. This willingness to connect and engage in the cross-company sharing of experiences was remarkable and demonstrated the key motivations behind the SIM Project in action – seafarers and their peers interacting in a way that achieved greater understanding of one another, increased unity, and a shared ongoing commitment to improving seafarer wellbeing and welfare the world over. ISWAN is very excited to share the project findings with you in the coming months and to keep you updated on future developments.

CHIRP Maritime is delighted to assist ISWAN in highlighting this excellent initiative in its Annual Digest and will support ISWAN in whatever way it can to promote the project and its findings.

Section four

Pilot boarding and pilotage

This section starts and finishes with yet more reports about improperly rigged pilot boarding arrangements. As we say in one of our comments, there is a need to tackle this ongoing problem vigorously, and we will continue to work with IMPA in an effort to eliminate the problem. Very occasionally, problems with a vessel's design make it difficult to rig the pilot boarding arrangements properly, but in the vast majority of cases there is no reason why this fairly simple task should not be undertaken professionally. It is encouraging to note increasing numbers of cases where pilots simply refuse to board a vessel if the arrangements are not safe. We have long suspected that if such action were taken with the consequences of financial loss, the culprits would soon mend their behaviour. *CHIRP* applaud any pilots who insist on ensuring that their lives are not put at risk by those unwilling to follow the proper safety requirements for pilot boarding.

We also include two more cases which may pertain to the idiosyncrasies of modern engines which we referred to in the previous section, but a lack of information precludes us from making any firm assertions. We also discuss the case of a ship where the main engine stopped for 14 minutes in a narrow channel, which raises questions about trust between various departments, and touches on the problems which multinational crews may have in communicating with one another.

Article 16

Why do we get so many pilot ladder reports?

Most seafarers will join and leave different ships two or three times a year and on most occasions via a gangway whilst the vessel is tied up alongside in port. Spare a thought for the marine pilots who guide your ship safely in and out of ports, who regularly embark or disembark from 2 or 3 ships (or more) in a single shift, normally via an arrangement of hairy rope and wood called the 'pilot ladder'.

Pilot ladders are essential items of safety equipment as they come under SOLAS regulations. *CHIRP* questions why we keep receiving reports about non-compliant pilot ladders and pilot boarding arrangements.

Initial report

Combination pilot ladder with a non-compliant trap door.

Further dialogue

The brief initial report was accompanied by a photograph (figure 5) which clearly illustrated the non-compliance. Whilst *CHIRP* received the basic report, a more extensive report was sent to the port state maritime administration by the reporter's professional association, which resulted in two PSC officers attending the vessel on the following day at its next port.

CHIRP contacted the ISM managers and corresponded with the DPA regarding the report.

CHIRP had engaged with the ISM managers regarding a non-compliant pilot boarding arrangement (PBA) report for another of the company's vessels. On that occasion details had been passed to the DPA, but no further engagement had taken place. On this occasion the DPA volunteered that the vessel reported most recently was a sister ship of the previously reported vessel and both were fitted with the same pilot boarding equipment.

In later correspondence the DPA confirmed that the PSC inspection had taken place but stressed that no deficiency was logged by the PSC officer. However, the email went on *"Although we are of the opinion that the PBA is complying with SOLAS requirements, we have decided to make modifications to the PBA. We have instructed the technical department to approach the class & flag to carry out necessary modification"*.

CHIRP comment

CHIRP was surprised to learn that no deficiency had been logged by the PSC officers following their inspection of this vessel.

- there are known issues with pilot boarding arrangements on pre-existing vessels of a certain age.
- some maritime administrations seem to apply "grandfather rights" in this situation – *CHIRP* asserts that there is no such thing regarding pilot boarding arrangements. This is clearly a non-compliant arrangement.
- pilots should be operating to a set of standard operating procedures.
- not having a set of SOPs puts pressure on the pilot to make do. A pilot should not have to make a decision at the bottom of the ladder.
- is there a difference between a non-compliant ladder and an unsafe ladder? – *CHIRP* would argue not. Although some elements of non-compliance are minor, it is a matter of law. The ladder *will* be compliant to the regulations and if it does not comply it should not be used – it's law.
- more and more ports and pilotage authorities are refusing to use non-compliant pilot boarding arrangements with more and more ships being turned away until a compliant PBA is presented.
- ships that continue to present non-compliant PBA's will be delayed.

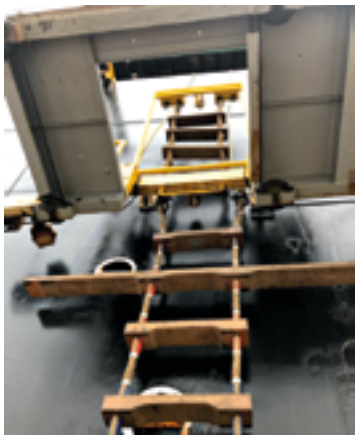


Figure 5. PBA as presented: Pilot ladder presented in two sections. Both sections are secured solely to the accommodation ladder platform instead of to the ship.

Yellow horizontal frame sections are impeding access during accent or descent.

Changes can be made

The following information was passed to *CHIRP* by a pilotage authority to illustrate the extent of the problem and the success that can be achieved.

Regarding trap door pilot boarding arrangements and combination arrangements, over the past few months we have had some success in non-compliant unsafe arrangements being adapted to comply with the regulations and made safer. This is mainly due to the

tenacity of our Harbour Master's department in following up on pilot ladder defect reports.

In 2020 we had 114 pilot ladder defect reports generated on 9512 acts of pilotage, this figure was an increase on 2019.

Case Study 1. Container Ship 304m LOA, built 2008.

The vessel arrived at pilot station at night, pilot refused to board on arrival as ladder appeared to be non-compliant. (Figure 6).

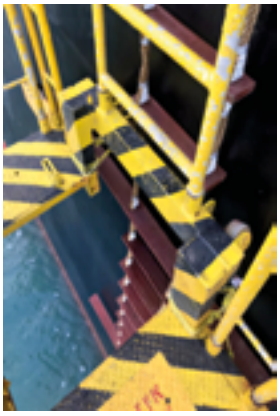


Figure 6 (left) original arrangement as presented. Figure 7 (right) after modifications

A second pilot did board in daylight and the vessel came in, it was reported to local Port State control who, after viewing pictures, deemed it compliant but not safe. Port Authority issued the vessel with notice that the arrangement was to be rectified before next visit otherwise vessel would not have a pilot. Dialogue took place over several weeks and on return the vessel presented a modified configuration (figure 7) as the boarding arrangement. Vessel was served on arrival and the pilot confirmed arrangement was safe.

Case Study 2. Container Ship 259m LOA, built 2013.

A trap door arrangement with the pilot ladder secured to the underside of the platform, so the ladder did not pass up through the hatch. Dialogue took place but no adjustments had been made, on arrival at port limits the vessel was refused pilotage until boarding arrangements were compliant and safe. After 3 days at anchor the arrangements had been adapted to a combination arrangement with the pilot ladder secured to strong points on the main deck.

Figure 8 (left) What was presented originally (rejected)

Figure 9 (below) This was the final arrangement (minus the securing magnets which were in place when used by a pilot)

Case Study 3. Container Ship. 190m LOA, Built 2020.

Combination ladder, the gap between the pilot ladder and the lower platform was greater than 20cm (when measured it was 50cm). Dialogue took place with the vessel who originally stated this could not be modified. Sorry captain, but there will be no pilot boarding your vessel. They found a solution on board and reduced the gap to 20cm. A pilot boarded.

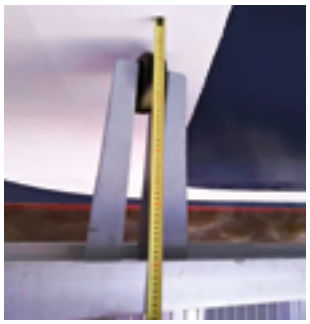


Figure 10 Before modification

Figure 11. After modification

Figure 12. Compliant combination pilot boarding arrangement ready for use

Article 17

Was it an engine issue or a communication issue?

What the reporter told us (1)

On departure from the berth, the container ship exhibited main engine problems. Engine revolutions were restricted to 37rpm (between Dead Slow and Slow Ahead). As a precaution, the tug was kept in attendance until the vessel had cleared the channel and the engine issues were allegedly rectified. No explanation was given by the captain.

Further dialogue

The reporter clarified the following points.

- the Master/Pilot exchange reported no defects or deficiencies.
- the engine tests prior to departure were carried out satisfactorily.
- the first engine movement, once the vessel had been swung off the berth, was when the engine failed to respond as the reporter expected.
- the engine eventually gave 46rpm (roughly Half Ahead)
- the reporter was given no indication that the engine issue had been resolved by the time he disembarked or any explanation why the engine failed to respond as expected.
- after disembarking the pilot, the vessel proceeded to its next port. The pilot station at the next port was notified of the issue.

CHIRP contacted the DPA who readily engaged, which allowed details of the report to be passed on. After checking with the vessel, the DPA responded. "We have verified with the vessel and the master confirms that there was absolutely no issue with the main engine on departure from the port in question. It is possible that the RPM came up gradually due to less underwater clearance in the channel which the pilot misunderstood as a restriction on the main engine."

Not being familiar with the vessel's sailing draft or the available depth of water *CHIRP* felt unable to comment further, but the DPA's response was forwarded to the reporter to close the loop on the communication. The reporter's final response was to note... "At no time was I informed of any restriction on the main engine due to lack of under keel clearance. The pilot card made no mention of this and the master failed to pass this on".

CHIRP comment (1)

After discussion, the MAB noted the following.

- modern slow speed marine engines and power management systems do not respond in the same way that older medium speed engines did in the past.
- ship handling with restricted under keel clearance can be a significant issue when handling large vessels.
- the manoeuvring characteristics of a ship included in a vessel's pilot card are normally ascertained during the builder's trial, which is most often carried out in open water.
- if the reduced revolutions were a normal function of the limited under keel clearance due to increased load on the engine, the captain may not have perceived them as a problem and therefore did not think he needed this limitation to be highlighted or explained to the pilot.
- pilots are very well trained nowadays and are trained to anticipate increased engine load due to limited under keel clearance.

Article 18

Better to keep going than stop

What the reporter told us (2)

After clearing the inner harbour without incident and proceeding outwards at slow ahead, the engine was put to half ahead but the main engine alarm sounded about one minute later. The engine room advised it was the main engine main bearing alarm and requested to stop the engine at the earliest opportunity to investigate. The master was advised the engine was OK to proceed at Slow Ahead until there was an opportunity to stop.

Tugs were attending the imminent departure of another ship, one of which accompanied our vessel outwards as a precaution.

Regular requests were made to the engine room to advise on the condition of alarms and the main engine. Assurances were given that temperatures were not increasing. The pilot encouraged the master to keep the engine going, considering it was prudent for the vessel to proceed if possible, to safer water outside rather than investigate within the harbour. The vessel proceeded to the heads without incident with a tug escort and once clear of port limits proceeded to deep water to investigate.

Further dialogue

The bridge team and engine room team were multinational with English as the common language; however communication was not easy. The regular requests to the engine room for status updates were initiated by the pilot. The water depth was very limited within the harbour to anchor and investigate.

After disembarking, the pilot and port heard nothing further from the ship.

Article 19

Once restarted, do not slow down

What the reporter told us (3)

The vessel was LOA 262m, beam 32m with a conventional propellor and rudder with a single bow thruster.

After letting go and clearing the berth, the vessel built up speed to 12 knots for outbound transit. Just before turning to port to negotiate the main bend in the channel, the vessel lost power to the main engine.

The momentum of the vessel assisted in making the turn safely before the ebb tide started to take effect. The bow thruster was used to keep the vessel in the middle of the channel, but a breeze and ebbing tide started to set the vessel to starboard towards the channel limit. Although the vessel still had headway, it was dropping rapidly into the breeze.

The master was frantically trying to get the engineers to restart the engine, first from bridge control, then engine room control and finally from the emergency local platform. Just before the vessel lost sufficient headway to let go anchors, the main engine was restarted from the emergency local controls.

The main engine was unresponsive for 14 minutes in a very critical part of the pilotage.

Harbour Control was kept informed once the situation was assessed. Both harbour tugs were manned up and ready to head out and assist (ETA would have been close to 30mins at least), the Harbour Master was kept informed of the events by Harbour Control.

With the main engine being operated from emergency local control, it seemed like the engineers were giving revs for Full Away as the vessel rapidly picked up speed and passed the breakwater at close to 17 or 18 knots.

The Master tried to have the engineers reduce the revolutions, but I requested them to be retained to clear the harbour without any further incident now that the vessel had emergency propulsion.

When queried, the master mentioned it was a 'faulty fuel rack' that was the cause of the main engine shut down.

Additional information

The buoyed channel is the only deep water between the heads and the berth for the vessel to remain afloat. The channel is about 300m wide and is narrower in some parts making it very limited for anchoring a 262-meter-long vessel.

CHIRP comment (2 + 3)

After discussing these two reports the MAB noted the following.

- while the bridge team needs to know what is happening, answering telephones can be a distraction from the task at hand.
- once the question, "how long will it take?" has been asked with a request for regular updates and notification of any change in status, let the engineers get on with their job.
- confidence and trust between departments are crucial but it takes time to establish, while language and cultural differences can make that establishment harder.
- companies make conscious decisions to engage multi-national crews and must accept that their decision can have consequences in terms of efficiency.

Article 20

The following three short reports all concern failures to comply with the pilot ladder regulations.

Initial Report (1)

Trapdoor type combination, accommodation ladder platform less than five metres above the sea.

The Pilot told the Master that in moderate sea and swell conditions access would not have been possible due to the risk of the pilot being caught under the platform by the waves.

CHIRP notes that the pilot ladder position is constrained by the design of the vessel and believes that a safer position should be considered to provide pilots and other visitors to the ship with an alternative means of access when the freeboard height is close to the regulation 9.0 meters.

Human factors relating to this report

Alerting – Be assertive – be positive and constructive and propose a solution

Situational Awareness – Had the bridge team properly considered the current and forecast sea conditions prior to ordering the deployment of this embarkation ladder?

Initial Report (2)

Pilot ladder did not meet SOLAS standards.

The pilot ladder had a broken strand. This was not visible before the pilot started to climb the ladder, as it was located at the top. However, it was clearly visible to the ship's staff. The Master was advised that the ladder must never be used again and must be taken out of service and destroyed.

Damage to pilot ladder side ropes is often caused by the ladder not being stowed away off the deck in a safe, well-ventilated storage locker. By being left in the open, the ladder is liable to damage by crushing or abrasion or can be damaged by chemicals, or cargo dust residues which can also chemically and physically attack the rope fibres.

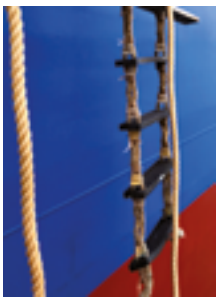
Human factors related to this report

Complacency – Check: is everything really ok?

Culture – Does everyone really care about safety? How do you know?

Capability – Is your team capable of spotting defects?

Initial Report (3)



Comments from reporter: When disembarking from this vessel I found that the ladder appeared well-used, and the chocks and steps were loose. I advised the attending officer that the ladder should be replaced or repaired. The vessel was less than three years old, so I assume it was in use from her maiden voyage. The corrosion on the manufacturer's plate made it impossible to check details. (See photo)

The pilot agreed to disembark using the new manropes provided but advised against the next pilot using this well-worn ladder.

CHIRP Comment

The chocks supporting the pilot ladder steps are not secured against the steps, allowing the steps to rotate. When the pilot places his foot on the steps there is a risk of slipping from the ladder. This is very dangerous. The ladder must be taken out of service and repaired ashore or replaced.

The MAB members were insistent that the issues with pilot ladders must be tackled vigorously as the problem of sub-standard ladders is not going away. If pilots refused to board ships where boarding arrangements are in a sub-standard condition, this would provide the right level of sanction and ensure that ladders are properly rigged and constructed in future. *CHIRP* will team up with the International Marine Pilots Association (IMPA) in an attempt to resolve this continuing problem.

Human factors related to this report

Alerting – Do you really speak up when you should?

Capability – Is your team capable – provide on board training?

Complacency – Never assume all is ok.

Article 21

Insight: **Effective use of tugs for pilots & exempt masters**

by Capt Arie Nygh AM FNI FITA
Ambassador: *CHIRP* & NI MARS

My 51-year career background includes 30 years in the towage sector as an omnidirectional tug master, training master, national operations manager, and towage industry consultant. Along the way, I founded SeaWays Consultants (SC) (Australia based) and SeaWays Global (SG) (UK based). SC & SG have trained more than 2,000 tug masters for some 60 towage companies worldwide.

I mention my towage industry credentials to provide credibility to why SeaWays originally developed the one-day workshop "Effective Use of Tugs for Pilots & Exempt Masters". Having worked and trained, and assessed in more than a hundred ports worldwide, it was evident that there was a significant gap in knowledge about the safe and effective use of tugs by Pilots.

The workshop mentioned above was developed to address this shortfall and has now been delivered to more than 650 pilots worldwide. At no time do we attempt to tell pilots how to pilot; instead, our goal is to inform and educate pilots based on a training tug master's expertise on all things a professional pilot should know about different tugs' capabilities along with what they can and can't do to assist the pilot in their task at hand.

As we know, overnight, COVID changed the world and how we go about our business, particularly in the maritime industry. This energised me to convert our workshop into online eLearning. Over this year-long project, I also took this opportunity to revamp and develop the content. This includes filming live onboard tugs whilst they respond to the pilot's orders, giving a unique insight into when a pilot gives an order, how and why the tug responds and how long it takes. I then sent the draft courses to six highly respected high profile senior pilots worldwide to review and critique the lessons. Their valued input and suggestions were then incorporated into the lessons.

Now, a pilot or exempt master, no matter where they are stationed, can undertake this classification society accredited (by Class NK) course cost-effectively in their own time and at their own pace.

From personal experience on the water, in simulation facilities, and the lecture room, there is a concerning gap in many pilots' in-depth knowledge about tugs and how best to utilise them safely and effectively. Given the evolving new tug and equipment designs, the gap is widening; this course aims to close this gap.

Tugs and their masters are acknowledged as an essential extension of the pilot's BRM team. For mine, given challenges faced by pilots relating to language barriers and onboard ship competencies, I would put forward that tug masters are the essential part of a pilot's BRM team.

Tugs that are well chosen for a specific port and appropriately trained tug masters can significantly support a Pilot in safe day-to-day operations and assist in saving the ship when things go wrong. Furthermore, Tug masters can generally recognise when things are not going to plan, or an incident is imminent. Having appropriate Pilot and Tug master SOPs, including communication protocols, the "shared mental model" between all parties is well understood. A common understanding is a critical aspect of the Pilot's BRM; hence a shared responsibility to communicate concerns to the Pilot enhances safe operations.

This may all seem logical, but this is not always the case. Whilst there has been a marked improvement in many ports, I still witness poor communications and cultural issues whereby a Tug master does not feel comfortable or empowered to give feedback to a Pilot.

I have witnessed pilots ordering tugs to undertake manoeuvres they (the tugs or tug masters) are not designed to do. Conversely, pilots underutilise tugs as they don't understand what the tug can do!

As an example, understanding;

- What a 2nd generation Azimuth Stern Drive (ASD) tug can do easily that a 1st generation ASD tug can't do at all,
- What speed can a tug square up and work a ship at?
- This can vary from <2 knots to >6 knots, depending on the design of a particular class of tug.
- Why it's essential that a pilot knows and understands what the tug's winch can and cannot do (*the variances are significant and will impact how a tug master responds to orders and how long it will take to perform the requested task).*
- Why does a ship transiting a narrow waterway at relatively high speed (8 to 10 knots), with an escort tug tethered at the centre lead aft, has approximately 30 seconds to correctly respond to the pilot's orders to counter a ship having a rudder failure? (There is simply no time for miscommunication, ambiguity, or incompetence).

In many ports, the pilots are the in-house experts on all things towage. They must have detailed knowledge of the tugs they control to ensure that they can be used effectively and safely.

All the above applies even more so to exempt masters, who in many cases only utilise tugs for their vessels when environmental conditions are extreme. Consequently, it is fair to say they are not necessarily entirely familiar or current with tug usage and commands in times of

extreme need. This can heighten the risk to personnel, the environment, third party assets, and their vessel, including the tug itself.

Online eLearning

SeaWays' online eLearning modules involve 20 lessons, approximately 25 minutes per lesson. While undertaking a course, a participant can log on and off with their unique password as many times as they wish.

These courses are divided into two modules and are classification society accredited by ClassNK.

- Module 1 – Harbour Towage.
- Module 2 – Active Escort & Dynamic Assist.

Each Module comprises about 20 lessons that include a combination of:

- Instruction at the whiteboard
- PowerPoint presentation.
- Unique video footage filmed live onboard tugs responding to pilot's orders during operations.
- Pertinent links to website articles.
- A downloadable .pdf file covering the lesson's content.
- Multiple-choice questions & answers to ensure proof of learning.
- A Certificate of Achievement on the completion of each course.

For more information, visit our eLearning website: https://schoolways.thinkific.com or email me direct: MD@seaways.net.au.

Section five

COLREGS and Navigation

This section commences with a report about an encounter between a ship and a fishing vessel in a Traffic Separation Scheme (TSS). Whilst we deliberately avoid any attempt to apportion blame, we do make observations about how a situation can be perceived differently by different vessels, and how height of eye and vessel manoeuvring characteristics may influence the response of the people on board.

Our second report is quite topical, since it involves a large ship going aground in a canal – but we stress it is not the incident which made headlines around the world quite recently. In this canal, groundings were apparently quite frequent although it seems the autorities were not doing anything to resolve the situation. There are important lessons about integrating the pilot into the bridge team, and about conducting a thorough master/pilot interchange of information. But perhaps the most important lesson is that bridge teams should always be prepared for the unexpected in narrow, shallow waterways.

Next is an account of a vessel which suffered a collision following an engine breakdown. This time we cannot blame the idiosyncrasies of modern engines, but offer valuable advice about proper risk assessment, the need to supervise repairs properly and, once again, the need to integrate the pilot into the bridge team.

Finally, we consider a case where a vessel broke away from its berth in strong winds, and comment on windage of high-sided vessels, the wisdom of having the engines at immediate readiness, and the folly of putting all the stern lines from two vessels on a single mooring bollard.

Our Insight article, specially written for this Annual Digest, is a discussion of the mental stresses placed upon people who are involved in a serious incident or accident. Research indicates that these traumatic experiences can lead to problems with memory and a number of other difficulties. Yet it is often in the stressful few hours after a major incident that the officers and crew are interviewed by the authorities and it sometimes happens that anything they say is held against them. We suggest it is time that the authorities paid attention to this problem, and we hope the article will start a conversation about the topic. Nobody wakes up in the morning intending to have an accident, so it is time our unfortunate colleagues who make an error of judgement or find themselves in a traumatic situation were treated with a bit more compassion.

Article 22

Colregs Rule 10 incident

Outline: A report highlighting a close quarters situation between a commercial fishing vessel and a container ship

What the reporter told us

A fishing vessel was engaged in fishing within the central separation zone of a major TSS following a basic loop pattern of courses, northwards on 330° then turning to port to follow the reciprocal heading (150°) to the south between the NE and SW traffic separation lanes at 3.3kts. A large container vessel was proceeding at 20kts in the SW lane, holding close to the southern edge of the lane.

On nearing the northern limit of the separation zone, the fishing vessel commenced her planned turn to port to reverse her course. At this time, the container vessel altered course to port leaving the SW lane and entering the separation zone. As the fishing vessel continued her turn to port passing through heading 170° the skipper found himself on the stbd bow of the container vessel and needed to make an emergency manoeuvre to stbd to avoid a close quarters situation or possible collision.

Further dialogue

CHIRP discussed the report with both the reporter (fishing vessel's fleet manager) and skipper to clarify some details and timing of the incident and garner any additional information. The fishing vessel was less than 12 months old and was fully equipped with a range of the latest navigation and fish finding equipment including ENC's. Furthermore, the skipper's emergency manoeuvre to starboard had taken the boat over a shallower patch which fouled the fishing gear, this was later cleared without damage or loss.

CHIRP also contacted the ISM managers for the container vessel, and details of the reported incident were passed to the DPA. Subsequently, after contacting the captain of their vessel, the DPA reverted to *CHIRP* with a response including a series of screen shots from the bridge of the container ship and a commentary from the captain with regards to the incident. The screen shots show that the container vessel was south of the planned route and outside the charted safety corridor in a position close to the boundary between the SW lane and the central separation zone.

Figure 4 – Screen shot from the container vessel.

Both the reporter and the captain of the container ship quoted rule 10 of the Collision Regulations to support their position that the other party was at fault.

Rule 10 (e) (ii) allows vessels to engage in fishing within a separation zone.

and additionally
Rule 10 (b) (ii) states: a vessel using a traffic separation scheme shall: so far as practicable keep clear of a traffic separation line or separation zone.

However
Rule 10 (i) states: A vessel engaged in fishing shall not impede the passage of any vessel following a traffic lane.

CHIRP comment

There are some discrepancies between the two accounts of the same event, however it is not *CHIRP*'s function to

carry out a forensic analysis of an incident but rather to highlight the situation that developed and to promote good practice in navigation and seamanship.

There are two sides to every story and those sides are normally dictated by the individual's perception of events. Different vessels have different handling characteristics, a 340m container vessel is much less manoeuvrable than a 34m fishing vessel and as such must plan and execute collision avoidance manoeuvres much earlier. For that reason it would be prudent not to follow a track unnecessarily close to a separation zone where fishing vessels may well be legitimately engaged in fishing and can change course erratically. However, vessels engaged in fishing and other small craft should bear in mind that the bridge team on large vessels are very uncomfortable with smaller vessels operating in close proximity to them, inside the reaction radius of the larger vessel, thereby taking any form of control away from the larger vessel. It will serve all seafarers well to consider any developing situation from the other vessel's point of view, and to follow the normal precautions required by the ordinary practice of seamen.

The Collision Regulations have the answer to any situation from initial detection to finally passing clear, but there is always the matter of perception regarding the situation, which may vary with your height of eye.

Article 23

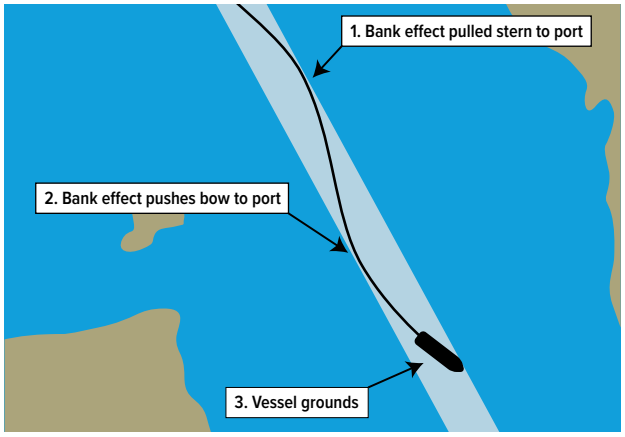
Vessel touches bottom during canal transit

Initial Report

The tanker was transiting a canal with 2 pilots on the bridge in addition to the master, chief officer, helm and lookout. The pilot ordered a turn to starboard later than planned, but this was not challenged by the bridge team. As the vessel approached the channel's port side the *bank effect* pulled the stern to port just as starboard rudder was applied. In combination, these caused the vessel to cross to the channel's starboard side where bank effect pushed the bow to port. The vessel re-crossed the channel and touched bottom on her port side, breaching the water ballast tanks.

The vessel was directed to a safe anchorage for damage assessment by the company, flag state, class, insurers, and the port authorities. An investigation revealed that this type of manoeuvring incident frequently occurred in this canal.

The vessel's track at the time of the incident is shown on the ECDIS screenshot below.



CHIRP Comment

The latent causes of this incident were in place long before the vessel touched bottom. During the planning stage, the available depth of water and the narrow breadth of the channel should have prompted the master and navigator to consider the possibility that *bank effect* and *squat* could affect manoeuvrability and to determine the speed at which these might take effect. If this speed was below the minimum steerage speed, then the use of tugs should have been considered. The need for tugs should have been revisited during the master/pilot exchange (see IMO Resolution A.960(23) Annex 2 for more details).

The port authorities were aware that vessels often touched the bottom in the canal, which could indicate out of date or inaccurate chart data, the need for maintenance dredging, or missing or inaccurate aids to navigation. Suitable control measures could have included the requirement for deep-draughted vessels to take tugs to control manoeuvring in the channel, or at least the provision of navigational warnings of the risk of bank effect and squat.

Integrating a pilot into the bridge team requires a comprehensive and continual exchange of information, such as counting down to the next planned course alteration and challenging the pilot if this is delayed. It also includes monitoring the rate of turn and the vessel's position in relation to the planned navigational track. It is good bridge management to discuss future intentions such as course alterations ahead of time to allow everyone to understand what is about to happen, and when, allowing time for challenges to be aired. In this case, the master had insufficient time to intervene and rectify the pilot's late actions.

It appears that neither the pilot nor the bridge team recognized that the vessel was experiencing the bank effect after the bow's initial swing to starboard, or if they did, they did not take corrective action (e.g., slowing the vessel's speed).

Further information can be found at https://shop.witherbys.com/ship-squat-and-interaction/

Human Factors relating to this report

Local Practices: Does your ship's master/pilot exchange format include reference to bank effect, squat, and their calculated onset speeds in relation to your vessel's minimum steerage speed? Does it call for tugs to be employed in this situation?

Do you embark the pilot early enough to properly discuss navigational intentions and exchange all pertinent information, allowing time for clarifications and challenges before handing over the conn?

Culture: How do you integrate the pilot into the bridge team? How can this be improved in your vessel?

Communication: Does your bridge team proactively brief future intentions (e.g. course and speed changes)? Is there a discussion about known hazards or a history of previous incidents in the port that you need to be aware of and, if so, does this prompt a review of your navigational risk assessment prior and the implementation of additional control measures such as ordering tugs?

Situational Awareness: Does your bridge team continue to monitor the navigation and position of the ship after the pilot has boarded?

Capability: Are you able to identify hydrodynamic interactions such as bank effect, including any unexpected increase in swing or turn rate?

Article 24

Machinery breakdown leads to a collision

Initial Report

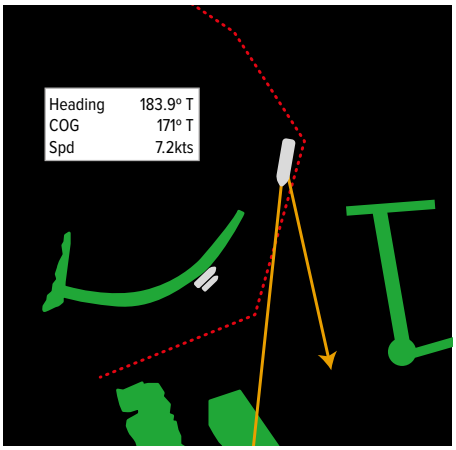
While proceeding for berthing, a tanker experienced main engine failure and collided with a barge berthed outboard of another vessel moored alongside a breakwater.

Prior to berthing, pre-departure tests were carried out following company procedures before embarking the pilot and all were found satisfactory. Weather conditions at the time of the incident were light wind, a calm sea with no swell, and good visibility. The bridge was manned by the master, second officer, lookout, helmsman and pilot. ECDIS was used as the primary means of navigation. The vessel was fully loaded with gas oil on an even keel draft of 10.10m.

The vessel entered the breakwater with a speed of 8.3 knots and was swinging to starboard the main engine was stopped. The pilot ordered hard to port and dead slow ahead as the vessel continued to swing to starboard, but the main engine failed to respond. The vessel's speed was now 7.2 knots.

The pilot ordered bow thruster full to port, although the master advised it would be ineffective at speeds over 6 knots. Vessel speed at this time was 6.5 knots and the pilot ordered an anchor be readied to let go while the engine control was transferred to the Engine Control Room (ECR). Thereafter engine movements were attempted from the ECR, but all attempts failed.

The vessel's speed was still above 5 knots, so the pilot ordered that both anchors be let go. The vessel speed had reduced to 4.5 knots when it contacted a barge that had been berthed outboard of another.



Engine control was eventually transferred to the emergency engine control station allowing the engine to be used. Two tugs were dispatched to assist, and the pilot directed that both anchors be weighed. Engine control was transferred back to the bridge and after confirmatory checks the vessel proceeded to the berth where it safely moored.

A detailed inspection was carried out by the ship's staff, followed later by an inspection by class. Non-penetrating hull damage was identified, with significant indents and minor deformation to internal strength members that required repairs.

The investigation revealed that maintenance work conducted 6 days before on the engine control system had not been properly completed nor had it been inspected afterwards. The red locking pin (see photos below) had not been correctly secured back into position and during manoeuvring it had shaken loose due to vibration. This activated the emergency manoeuvring system which over-rode both the bridge and engine room control systems.

The emergency manoeuvring system located on the side of the engine is fitted with a locking arrangement which under normal conditions rests firmly inside the grove indicated in the photos below.

The investigation revealed that the direct cause of this incident was the disengagement of the emergency manoeuvring system's locking arrangement.

The root causes for this incident were found to be a lack of understanding of the risks by the engineering officers carrying out the checks, which were not overseen by a supervising officer – a procedural requirement that is stated in the SMS procedures for working on critical equipment. It is likely therefore that the engineering officers failed to appreciate the criticality and impact of the locking system.

The investigation revealed that the navigation had been entirely left to the pilot once they had embarked, and there was little evidence of their integration into the bridge team or monitoring of their actions. The investigation report directed that the pre-arrival and departure checklists be immediately amended to include physical verification of the emergency manoeuvring system's locking arrangement. Additionally, an independent navigational and engine room audit was arranged.

The investigator also proposed that the master be psychometrically assessed to determine their suitability for command and that the chief engineer be brought to the office for a thorough debriefing on the importance of maintenance of critical equipment. The management company agreed with these proposals.

CHIRP Comment

Critical equipment defined in the company SMS must be inspected on completion of any maintenance by a supervising officer. Crucially, single points of failure must also be checked as part of routine pre-arrival and pre-departure checks.

In this case, there appears to be a fundamental design flaw with this equipment, given that it can be vibrated out of its secured position when the engine is running.

It is the master's responsibility to ensure that there is an effective bridge team working with the pilot. A master should develop communication and leadership skills as part of the natural progression to the rank of master. It is important that once promoted to master these skills are continually improved. The bridge team must never leave the navigation of the vessel to the pilot.

Human factors relating to this report

Local Practices: Navigational risk assessments should include the risk of engine or control failures and consider whether tugs on stand-by would be an appropriate control measure. Ordering tugs as a precautionary measure is always cheaper than the cost of repairs!

Does your crew regularly practice breakdown drills and transferring control between the bridge and ECR and switching between the bridge and emergency manoeuvring systems?

Situational Awareness: Letting go an anchor while still making way incurs significant risk of damaging or holing the bow near or below the waterline and is an emergency measure of last resort. With no other immediate option, would you have followed this course of action given the situation?

Culture: Does work on critical equipment on your ship involve a senior officer checking the work? Do you have the confidence to insist that your work is checked on completion if for some reason it is not carried out?

Teamwork: It is vital to integrate the pilot into the bridge team and to provide support while they have the conn. Why was the pilot left to conn the vessel without support from the bridge team? Is this a training gap?

Communications: The use of 'closed loop' communications is strongly encouraged, especially when working with an embarked pilot who may be unfamiliar with on board procedures. Does your bridge team adequately communicate and support the pilot in all phases of pilotage operations?

Capability: Is your selection process for senior positions within your company thorough enough to ensure that people with the right level of proficiency and leadership are selected for senior ranks? What process does your company use to ensure that the right person is selected? Is this a training gap?

Article 25

Collison with bridge and barge after moorings parted in high winds

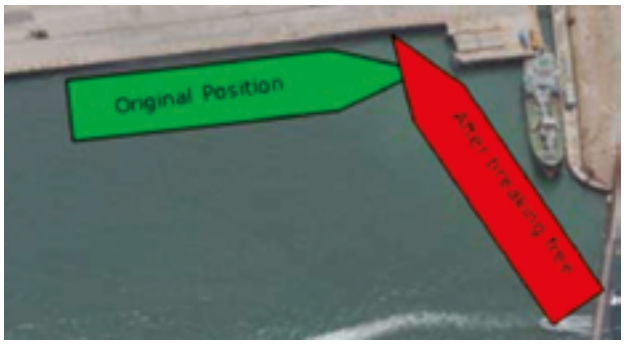
Initial Report

A heavy-lift vessel was berthed alongside with 3 stern lines and 2 springs aft, 3 headlines and 2 springs forward. The three stern lines were all on the same bollard. During the afternoon the port authority issued a strong wind warning and the crew checked that the mooring lines were adequate. Later that afternoon a car carrier berthed astern of the vessel, adding another 3 lines to the same bollard used to hold the heavy lift vessel's three stern ropes.

At approximately 22:00 the heavy lift ship shook considerably when 50 knot winds gusted through the port. The master saw the ship's 3 stern lines detach from the dock, followed by the 2 after springs, allowing the stern to swing quickly into the centre of the dock basin, causing one of the forward springs and one headline to part. The master contacted the engine room and ordered the main engine to be made ready as soon as possible. They then called the port control and requested tug assistance, as did the vessel astern.

The vessel was now attached to the dock with just 2 headlines and one fore spring, and as it continued to swing it hit a berthed bunker barge and a railway bridge, sustaining damage to the starboard side amidships as well as on the starboard quarter. A piece of cargo was also discovered to be hanging over the starboard side.

The Master called port control via VHF to advise that the vessel had contacted the railway bridge and requested them to inform the rail authorities. He also informed the local agent and the vessel's technical superintendent of what had happened.



While not an exact science, it is possible to estimate the likely forces generated by high winds on a high-sided vessel so long as the windage area is known

Tugs were deployed and the vessel was re-secured to the dock at 0300 hrs. A memorandum of class was subsequently issued due to impact damages to the vessel and cargo. There was some minor damage to the bunker barge and the rail bridge.

An investigation revealed that the mooring bollard to which the stern lines of both vessels were attached had been pulled completely out of its foundations due to the wind loading on the side of the vessels. It also concluded that the crew could not have prevented the incident.

CHIRP Comment

Placing all the stern ropes onto one bollard created a single point of failure which was aggravated when the second vessel secured to the same bollard. Either vessel could have identified this latent risk, as could the supervisor of the line-handling party. It is possible that neither the port authority nor the master understood the risk which had been created. There is no evidence of a discussion regarding the possibility of the vessel moving to an alternative berth, either before or after the strong wind warning was issued, and no additional lines were put ashore after the warning had been received. Similarly, the vessel could have brought its engine(s) to immediate notice as a prudent contingency measure.

It is good practice for port authorities who operate tugs to consider having them at immediate notice during periods of forecast bad weather. In this case, they could have been deployed to 'push on' or to at least minimise the swing of the vessel as it broke away. The port authority might also have considered temporarily relocating the vessel(s) to a

more sheltered part of the harbour or even directing them to proceed to sea to safely ride out the poor weather.

While not an exact science, it is possible to estimate the likely forces generated by high winds on a high-sided vessel so long as the windage area is known. Many vessels keep a 'ready reckoner' on the bridge for quick reference, and some port authorities that regularly berth high-sided vessels have similarly developed a guide to assist them in calculating the likely 'pull' forces that the bollards must accommodate. The use of auto-tensioners can cause dynamic loading of lines that potentially exceed bollard holding limits so this should be considered as well.

Bollard holding strength depends on bollard rating, the surface to which it is attached and the vertical angle of pull from the mooring lines. It is possible to determine the safe holding capacity of quayside bollards using non-destructive testing.

When requesting a berth, large and high-sided vessels are strongly encouraged to include their bollard holding requirements in the pre-arrival ship/shore information exchange if they are not already doing so. They should ask if the port has published any environmental limitations (including maximum wind speeds) for vessel movement, berthing/unberthing or cargo handling.

Strong wind warnings should not come as a surprise!

CHIRP draws your attention to the OCIMF Mooring Equipment Guidelines (MEG4), which contain valuable advice on this and related topics.

Human Factors

Local Practices: Vessels and port authorities are encouraged to develop and use a windage 'ready reckoner' to assist in the allocation of berths and the bollards to be used. Does the port authority periodically test quayside bollards to assess their holding capacity?

Communication: Do your ship/shore information exchanges include mention of bollard requirements for the current and forecast weather conditions?

Do they include any requirements to sail from the port if environmental limits are exceeded? How are changes to the weather forecast communicated to the deck officers and line-handlers when alongside?

Would you communicate with the car carrier which berthed astern of your vessel and discuss reducing the number of lines secured to the bollard?

Culture: Is it an accepted local practice in your port or vessel to put all lines onto one bollard? If so, why? Is this a training issue?

Alerting: Do you feel empowered to question why so many ropes have been placed onto one bollard? Does your port or vessel view such questions as good teamwork or as a criticism? Do you alert all the ship's crew to the expected strong winds especially the engineers? Alerting is part of good teamwork behaviour.

Teamwork: Do you feel that your ship operates with a good teamwork spirit *(good teamwork encourages everyone to think and contribute)*?

Situational awareness: Does your port or vessel monitor changes to the situation such as another vessel coming alongside and using the same bollards?

Article 26

Insight: **Trauma-Informed Interviewing in a Marine Setting TIMS**

Marine Investigator Captain Terry Ogg and Clinical Psychologist Dr Rachel Glynn-Williams explain a new approach to working with seafarers and others affected by traumatic events

Seafarers and marine casualties

Seafaring has its own particular demands, risks and everyday stresses as a result of having to live and work for extended periods of time in safety-critical environments without respite. And while increased availability of social media and the ability to communicate in real time with family, friends and loved ones means that seafarers are no longer as isolated from home, that too can bring its own set of stresses. When something goes wrong at sea, however, these everyday stresses can be overlaid by a number of other sources of acute stress.

In the immediate aftermath of a casualty, those directly or indirectly involved may experience the effects of critical incident stress or trauma stemming from the event. In addition, they may also be dealing with the incident aftermath from an operational standpoint, while also grappling with their own basic personal needs and those of others. Even what might be considered less serious events, such as "near misses" and incidents not involving personal injuries or major property & environmental damage, can reasonably lead to very high stress levels for some, in ways that are not always predictable or visible. Depending on a number of different factors, some seafarers involved in critical incidents onboard can experience stronger adverse reactions, such as anxiety, sleeplessness, hypervigilance and changes in cognitive performance.

If that were not enough, when a marine incident or casualty occurs it is usually necessary that information and evidence is obtained from witnesses on board the vessel or installation at a very early stage. During an investigative interview, the interviewee will essentially be asked to re-live what may have been a traumatic experience at a time and place and in a way that are not of their choosing, perhaps when they are still adjusting emotionally and cognitively to the event and have worries about the outcome and implications. The capacity for this kind of setting to distress, confuse and frighten an interviewee is easy to understand.

Critical Incident Stress and Post-Traumatic Stress Responses

A traumatic event has been described by the World Health Organisation (2010) as "*a stressful event or situation of exceptionally threatening or horrific nature, which is likely to cause pervasive distress in almost anyone*". Individuals are more likely to experience a critical incident as traumatic when:

- their individual safety was compromised, or where they experienced or witnessed actual injury or death.
- if there was an intense feeling of distress, helplessness, loss of control or horror as the event unfolded
- if the event led to sudden and shocking changes to ordinary everyday life.

Following any traumatic incident, most people will experience some degree of critical incident stress. We can think of critical incident stress as the common reactions that humans can experience in their emotions, behaviours, thinking ability and physical body in the period of time following a traumatic incident.

Thoughts and feelings: panicky, ruminative, sad, anxious, angry, numb, vivid dreams

Behaviours: irritable, trembling, palpitations, tearfulness, no motivation

Physical: nausea, sleepless, headaches.

Thinking (cognitive) skills: difficulty making decisions, poor concentration, poor memory.

Many people will be familiar with some of these reactions if they have ever lost their wallet or phone for a short period. Immediately after the realisation that the item has gone, conversation stops, all attention goes on this one issue, panic and nausea come, the image of someone using the credit cards and emptying the bank account flashes up, thoughts race – and for a moment, until the phone or wallet is discovered at the bottom of a bag, the world feels like a totally different place.

These cognitive, emotional, and behavioural reactions are all part of a hard-wired human survival response, triggered by the brain in the presence of any perceived threat. The response is triggered and governed by the evolutionary primitive brain stem and mid brain, and it ensures that we focus all our attention on surviving this event unfolding before us – the so-called fight or flight reaction – releasing hormones, such as adrenaline, into the body to ensure cardiovascular and muscular readiness to run away or run towards the threat. Another effect of this automatic response is to minimise the relative activity in the cerebral cortex, i.e. the thinking or cognitive parts of the brain; our human reasoning is just too slow and is more likely to interfere with our primitive autopilot, which moves us quickly out of the way of danger. We are also less likely to be aware of a range of emotions as the event is happening, as they have limited immediate survival value.

It is after the event that our thinking and emotional responses begin to resume, and our bodies begin to recover from the effects of the surge of hormones. This system increases the chance of surviving an incident, but also has the effect of making the recollection of events quite unusual in comparison to non-trauma memories. Our recollections of traumatic events can be patchy, non-chronological, and intensely vivid for some aspects, but weak for other, perhaps more peripheral, aspects. The brain appears also to have the emotionally-protective ability to dis-attend to exceptionally distressing aspects of events and this can contribute to gaps appearing in a recollection at a significant moment in the event. This contributes to the other-worldly atmosphere of a traumatic event, which can often appear to be outside of usual time-frame and normal experience.

Current practice

In the context of marine casualties, there are 3 main types of investigation may occur. First, there are the safety case investigations, such as those carried out by Flag State inspectors. Second, there are enforcement investigations that are carried out by local police, Port State inspectors, coastguards and the like. Finally, there are investigations on behalf of commercial interests – those parties with a financial interest in the consequences of the casualty. Each type of investigation has its own objectives. The investigators involved have specific agendas and are responsible for gathering information and or evidence to meet the investigation objectives. While there is a trend towards reliance on digital data (when it is available) the information and evidence available from witnesses often provides reliable and valuable insights and obtaining witness accounts through interviews is usually required by casualty investigators.

None of these types of investigation put the needs and best interests individual witnesses, or the crew as a whole, to the fore. Enforcement investigations, for example, are frequently directed against individuals' best interests. Invariably, more than one interested party wishes to attend the interviews, which can result in witnesses being more cautious and less forthcoming. We have seen many cases of poor interview techniques and while many investigative interviewers would naturally consider themselves skilled, empathetic and willing to establish rapport, this does not ordinarily translate into doing the least possible harm to psychologically vulnerable interviewees or into obtaining the most complete, accurate and reliable information or evidence. Doggedly employing conventional techniques to obtain information that the interviewee's brain has not acknowledged or processed may inadvertently outpace a gradual, natural recovery and consolidation process and could potentially retraumatise the individual being interviewed, rendering the whole process unnecessarily distressing for them and limiting their access to memories, that the interviewer so wishes to obtain.

In seeking to obtain the interviewee's recollection of events, investigators will generally adopt a chronological structure to the interview process so that the witness's account takes on a narrative form. However, an understanding of the ordinary impact of trauma on individuals shows us that the effects of stress and trauma on the brain may create a mismatch between the usual structure of an investigative interview on the one hand, and the way in which information may have been attended to, processed and stored by the interviewee on the other. A lack of awareness of the potential effects of trauma and stress can lead the investigator to misinterpret gaps in an interviewee's narrative, or an unwillingness by the interviewee to address certain issues, as deliberate attempts at with-holding information. In reality, they could simply be signs that the interviewee was unable to encode and consolidate memories of some aspects of a highly stressful event or is unable to retrieve memories due to ongoing stress at the time of interview.

A trauma-informed approach

Change in investigative practices in marine casualties is overdue. There is an increasing movement toward trauma-informed ways of working in many different industries and services and the authors believe it is time to introduce a trauma-informed approach to the marine casualty interviewing process. Being aware of the ordinary, reasonably expected effects on human emotion and cognition of extra-ordinary and traumatic incidents offers a way to circumvent the problems that traditional interviewing methods can bring, enabling better quality data, as well as better protecting individuals' well-being.

Trauma-informed describes a way of interacting with people in a professional capacity that recognises they may have been impacted by trauma. It encompasses specific trauma-informed interview techniques as well as a more general trauma-informed approach to the interview and investigative processes as a whole.

The authors saw that there was a clear need to remodel the casualty investigation interview process with a view to adjusting the focus towards the interviewee's needs and away from the interviewer's agenda. This may seem paradoxical but a more holistic approach serves the ends of avoiding harm to the interviewee and, when combined with appropriate interviewing techniques, providing the interviewer with the most complete, accurate and reliable information and evidence available. A remodelling of the process also presents the opportunity to assist the interviewee access the wellbeing support they might need. The type of interpersonal connection fostered in a trauma-informed interview creates a space for the interviewee to assess their own mental, emotional and physical states and explore the support options available.

TIMS® stands for Trauma-informed Interviewing in a Marine Setting. It is a documented, structured, investigative interview model that the authors (an experienced marine investigator and a clinical psychologist specialising in trauma therapies and seafarer wellbeing) have developed jointly to provide tangible benefits over existing approaches and techniques. The model draws on investigative best practice and professional knowledge and understanding of human responses. In can be used in remote or in-person interview settings. We started to deploy the TIMS® model earlier this year we have been very pleased with the results.

Section six

Yachts, fishing and recreation

This section contains only two reports, but we have retained it as a separate section because there are increasing numbers of yachts and recreational vessels sharing the waters with us, and we want to encourage them to participate.

Our first report, about a catastrophic fire on a motor yacht, contains lessons for anyone involved in shipping, so we urge you all to study it. We also make the point that the authorities in Jersey were not obliged to publish the results of their investigation into the fire, yet they chose to do so and thereby gave us all some valuable lessons. Whilst we thank and congratulate the authorities, we also make the valid point that it is time all such reports were released to the wider maritime community so we can all learn from them.

The second report generated vigorous discussion between the fishing and recreational experts on our Maritime Advisory Board. The problem of fishing markers which are almost impossible to detect, especially from yachts which have a low freeboard, has been with us for many years, but we offer some advice to all parties and call for the publication of a handbook to guide people on the paths of righteousness.

We thank the reporters who took the time to bring these cases to our attention and hope their reports will encourage others to do the same in future.

Article 27

Fire and sinking of a motor yacht

Outline: *CHIRP* Maritime received a newly-published flag state investigation report and safety bulletin regarding the above fire with an invitation to promulgate the contents to the wider maritime community.

What the reporter told us

The vessel concerned was a privately owned leisure vessel (although it had in the past been operated commercially for a short period). The vessel was conducting an international positioning voyage during the winter with only two crew aboard and was close to the coast at the time of the incident.

Shortly after weighing anchor following an overnight stop, the vessel suffered a catastrophic engine room fire which spread rapidly throughout the vessel.

The two crew abandoned the vessel using a tender and liferaft combination and were unharmed.

Figures 1 and 2

The vessel subsequently sank in deep water whilst a firefighting vessel was attempting to extinguish the blaze.

The incident raised some interesting learning points both from things that went well and from those that did not, and these are reflected in the Safety Bulletin.

The full investigation report and safety bulletin can be read and downloaded at:

https://cdn.ports.je/web/Just-Mine-Incident-report-Nov-20.pdf; and https://cdn.ports.je/web/SB02-of-2021-Lessons-from-a-fire-at-sea.pdf;

CHIRP comment

The investigation report and the safety bulletin are too extensive to reproduce within the pages of Feedback, however *CHIRP* Maritime recommends readers to follow the above hyperlinks and read these two documents which are both interesting and informative and contain learning opportunities for all seafarers.

For any readers without the facilities to access the two documents, the following extracts are taken from the Safety Bulletin.

Although anything mechanical can fail, the risks are reduced when equipment is maintained in accordance with the manufacturer's guidance.

Check (machinery spaces) frequently and act promptly if anything does not seem to be right.

Effective practice enables right actions to be taken, in the right sequence, at the right time. Although checklists may help, an emergency is not the time to be reading the instruction manuals.

The Golden Rule is 'Once a space containing a fire is sealed, do NOT reopen it except under the advice of, and preferably with the assistance of, trained firefighters. A significant period is required to allow cooling'.

'Mayday' or 'Pan'? If you need assistance, ask early; it is better to subsequently downgrade a 'distress' message to an 'urgency' message if the situation improves; than to be unable to send a distress message if it worsens.

Voice or DSC? Both, if possible. The DSC (Digital Selective Calling) function, which would automatically have included a GPS position in the distress message, was not used as it was not user-friendly, not routinely used aboard, and the crew were unfamiliar with its use. Familiarise yourself with your safety equipment. It is better to initiate a call using DSC and back it up with voice communication. Write down your position and update it frequently before making the call so it remains available if your electronics fail.

Hand-held VHFs should be distributed early in an emergency. VHF on channel 16 has the advantage in communicating with all stations in the area and can enable shore stations to obtain your position using DF (Direction Finding) equipment... / ...A mobile telephone, preferably waterproofed, can on occasion provide useful backup to VHF, which should remain the primary means of communication.

Lifejackets are useless if not worn. They need to be distributed early in an emergency and must remain readily accessible. They should also be worn whenever there is a risk of falling overboard.

Summary: During this serious incident, the crew reacted quickly and despite the rapid spread of the fire and a couple of mistakes, took the necessary actions to attempt to save first the vessel and then themselves. It is always better to learn from the experiences of others, and it is hoped that all will benefit from the open nature of the crew sharing their experience.

The benefit of hindsight is that it gives the observer 20/20 vision, but what seems obvious to the writer and reader of this article may not have occurred to the two-man crew in the matter of minutes available to them from first detecting the fire to having to abandon the yacht.

The safety bulletin already highlights the "golden rule" about not opening a space containing a fire once it is sealed. Releasing a fire suppression medium like FM-200 into a compartment is the last throw of the dice that will either put out the fire or not - opening the space will only guarantee that it will not.

The fire was detected when the yacht had been under way for only 10 minutes after weighing anchor. That might suggest that there had been an issue in the engine room from the time the engines were started. It would be prudent to have the deckhand in the engine room for the start of the engines and to remain there until the engine systems have reached normal operating temperatures and pressures.

The investigation report lists the yacht's comprehensive features and equipment for fire protection and fire-fighting. However, an automatic fire/smoke detection system is not listed.

Finally, there is a requirement under IMO for all serious incidents and accidents on commercial ships to be investigated by the vessel's flag state. There is also a requirement for the findings of the investigation to be presented in a report to the IMO. However, there is no requirement for the findings to be published to the wider maritime community. The Jersey marine accident investigation department has done a very good job in publishing their report, but some flag states do not publish their reports. *CHIRP* Maritime asks the question, why are all accident investigation reports not put into the public domain and widely publicised to enable all seafarers to learn from the findings?

Article 28

Sailing boat propeller fouled

Outline: The following report reflects a perennial problem for coastal yachting

What the reporter told us

Whilst coastal sailing in wind force 4-5 at a speed of 7 knots an odd noise was heard, similar to a wave slapping the side of the boat. Nothing else unusual was apparent. Approximately two hours later, and after about an hour's motoring, I was berthing the boat. Upon selecting reverse, I found that there was a lot of vibration and little, if any, thrust.

After berthing safely, I looked underneath and saw something white was fouling the propeller. I then realised what the odd noise had been. It was not possible to clear the object until the boat was lifted out of the water.

The obstruction was caused by a short rope end with a loop that had caught on a propeller blade. The other end of the rope was attached to a small white fender's rope eye. The fender's other rope eye had been ripped off. The type of rope and the rope splice indicated that the fender had been used as a float to aid the picking up of a lobster pot. The fender's small size and profile meant it was inadequate as a visible marker to other craft and was certainly not visible in clear daylight and the prevailing sea conditions at the time of the incident.

Lessons learned (reporter's words)

As always, keep a sharp lookout. However, in the prevailing conditions, it is unlikely that such a small object could have been seen in good time to take evasive action. I am in the process of fitting a rope cutter which may have mitigated the propeller fouling when the engine was started.

Further dialogue

During correspondence, the reporter mentioned a similar incident that occurred last year which required the reporter's boat to be recovered and towed in by a shore-based rescue boat. The reporter also raised the issue of non-buoyant cordage being used to mark pots etc. in preference to buoyant cordage.

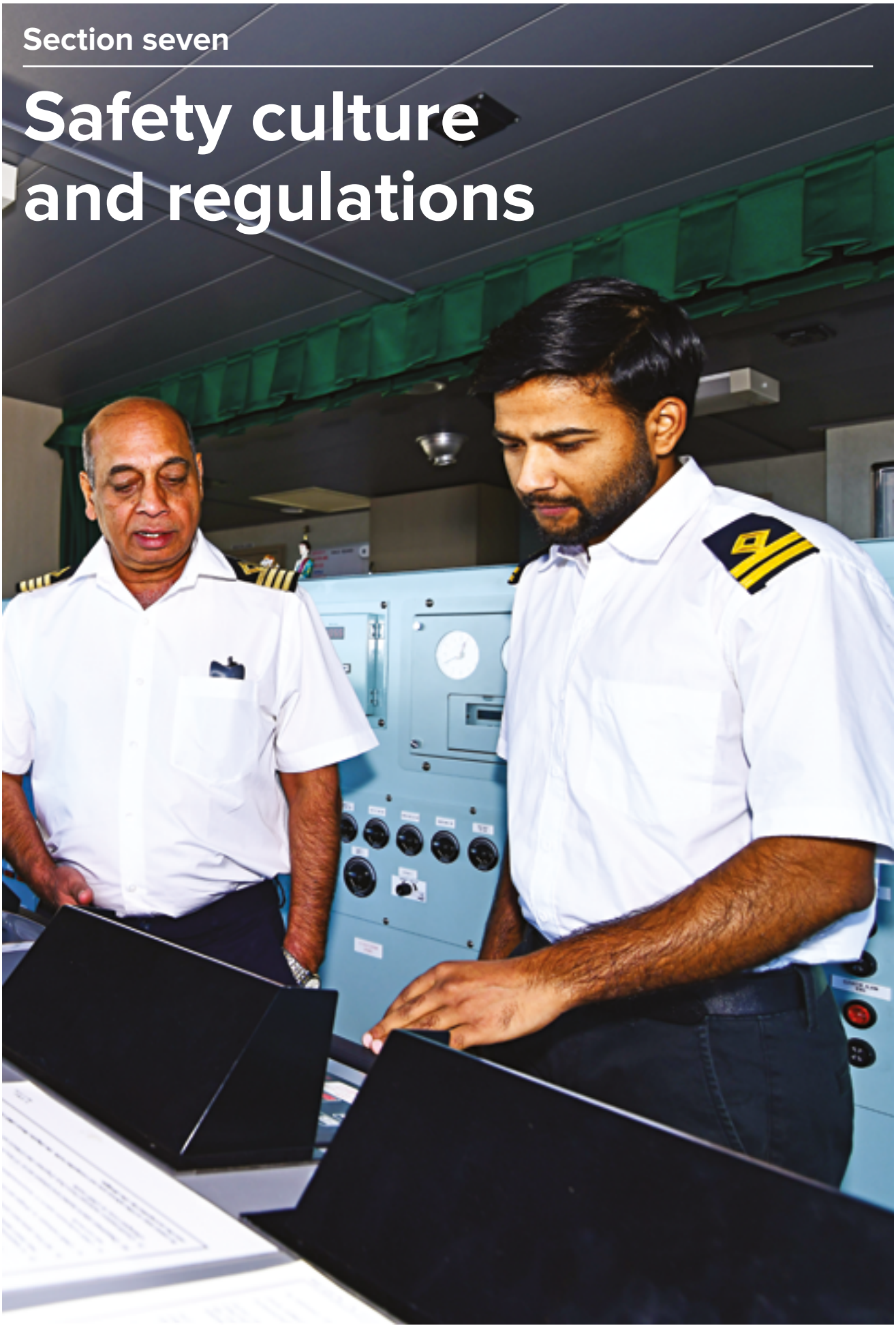
CHIRP comment

The MAB, which includes members from both the yachting community and the fishing community, engaged in a healthy discussion about the issues raised by this report. Among the many points noted were the following:

- the problem of poorly marked fishing gear has been around for many years. Now, in the UK, there is a working group chaired by the MCA (Maritime Coastguard Agency) under UKSON (UK Safety of Navigation) that is looking at how to address this problem.
- many entanglement incidents involve inappropriate gear laid out by non-professional (recreational) fishing boats.
- whilst this is a very emotive topic, a good start would be to ensure that lobster pots and other fishing apparatus are properly secured with floatation devices that are fit for the intended purpose rather than using plastic litter (plastic milk bottles and the like) – which should be banned on environmental grounds.
- a guide to setting fishing gear already exists and can be found via the following link-https://www.gov.uk/government/publications/marking-of-fishing-gear-2008-advice-to-fishermen-and-yachtsmen
- while it is accepted that most sailing and other recreational boating takes place during daylight hours, risks are increased when sailing during darkness. Wherever you are in the world, unlit marks will rarely be seen during the hours of darkness.
- sailing boats and other recreational craft which sail in areas where there is a high degree of fishing activity should consider fitting rope cutters. Additionally, and in accordance with good seamanship, the sailing plan should be made to either give popular fishing areas a wide passing distance or at least to ensure they are navigated during daylight where buoys can be more readily seen. A good lookout is always required when sailing in these high-risk areas.
- *CHIRP* Maritime recognises that there is no definitive answer to this problem and both the fishing industry, and the sailing community should try to reach a practical solution. A handbook which highlights the risks and consequences of being fouled by inappropriate fishing gear should be considered with input from both the fishing industry and the PYA.

Section seven

Safety culture and regulations



Shipping is said to be the most heavily-regulated industry on Earth, so it is impossible for us to be familiar with every regulation. However, there are some rules with which we should all be familiar – MARPOL, SOLAS and the like – and others which should be available on board if we need to consult them. Familiarity with the regulations is part of establishing a robust safety culture, but the reports in this section indicate same of us still have a long way to go. Indeed, some of the reports are extremely depressing.

We begin with a discussion about a proposal to reduce sea time for cadets in exchange for additional simulator training. Whilst we can all appreciate the value of time spent in a simulator, most people, according to our reporter, reject the notion of reducing sea time. It is only a proposal now, but what do you think?

Indeed, we could probably ask a much more sweeping question – given the reports in this Annual Digest, is maritime training still fit for purpose or is it time for a major overhaul? Perhaps readers would care to let us know if they think their training could have been better.

The next report contains some of the most horrendous violations of the regulations which we can remember. If the report is accurate, and we believe it is, then it seems there are still ships and companies where they think the rules are there to be broken. In the report we rightly describe it as a damning indictment of the shipping industry in the 21st century. On a brighter note, there was at least one person on board who thought they should be doing better, and the flag state was quick to act when we brought the case to their attention.

This is followed by a topical report about COVID, and one vessel's sterling efforts to ignore the rules. It makes us question whether the master thought he was helping the company by attempting to cover up the cases on board, and why he deliberately by-passed the DPA in his dealings with his employers? This is the first COVID-related report we have received, but there may be many other ships which flout the rules and put people's lives at risk. The comments we added include some useful links to advice about the pandemic, and you will find our own advice on our website and in the Annual Digest 2020.

We conclude with an account of a seafarer who suffered severe chemical burns when handling a chemical in the engine room. This is tragic because the seafarer was not wearing any personal protective equipment (PPE) and there was a less dangerous chemical available on board which would have done the job just as well. We have included a diagram illustrating the heirarchy of controls, which we commend to you.

Our Insight article comes from our colleagues in CHIRP Aviation and describes how procurement is handled in the aviation world. They are years ahead of most of us in shipping, so we hope the article will prompt people in our industry to think about the topic and look for ways we might improve. There are major differences between the two sectors, of course, with the number of suppliers being the most obvious, but as some of the reports in this Digest illustrate there is plenty of room for improvement in the maritime industries.

Article 29

Substitution of simulator time for sea time

Outline: We live in an ever-changing world but is all change appropriate?

What the reporter told us

It has recently come to my attention that it is the intention of a major flag state, with industry support, to reduce the sea time required by cadets in favour of simulator training. The proposal is to allow 5 days in a full mission bridge simulator to count as 15 days sea time, 10 to count as 30 and 20 to count as 60. It is my professional opinion that this will be of detriment to the industry. In a recent study of serving deck officers, 75%-80% reject this notion. I agree that more simulator training would be good for cadets in developing collision avoidance skills, but this should not be at the expense of time spent on board ship.

I believe that cadets will come out of their cadetships with certificates of competency (CoC's) of a lesser value because of this. The CoC is being seriously devalued and the flag is becoming a flag of convenience because of decisions that the flag state administrator is making regarding exemptions and dispensations such as this. Sea time during a cadetship is incredibly important as it allows cadets to get hands on whilst under the tuition of a professional and serving mariner, be that an officer or crew member. Life at sea cannot be replicated in a simulator. The whole of shipboard life including bridge watchkeeping, cargo work, dealing with crew and shore personnel is incredibly important in a cadet's development and these are skills that will be used throughout their careers.

Further Dialogue

CHIRP clarified the source for the figures quoted in the initial report with the reporter and was directed to a formal document in the public domain which does clearly state the figures quoted.

Correspondence was also held with one of the organisations that had been involved in the initial consultation surrounding this proposal. They informed *CHIRP* that while the figures quoted by the reporter were correct, the wording of the formal document had been poorly chosen and that the flag state had no intention of pursuing that level of substitution. The actual proposal discussed was for a maximum of 30 days remission of sea time for any cadet that completed a Bridge Watchkeeping Simulator Course consisting of 2 separate one-week modules with each stand-alone module attracting 15 days remission of sea time. The scheme would run for a 12-month trial period and was not compulsory. At the end of the trial period the scheme would be reviewed, and the results and other data assessed before a decision was taken regarding rolling out the scheme to all cadets training under the flag state.

CHIRP comment

After considerable discussion by our Maritime Advisory Board members, the following points were noted.

- there was unanimous support for more quality simulator time, at the appropriate stage of a cadet's training. Cadets enjoy the simulator experience and relate to the technology.

- full mission bridge simulators are very good regarding introduction of the Collision Regulations, ship handling, ECDIS and ENC's etc., but they do not simulate 'life' at sea. Simulator training sessions need to be more realistic, rather than "one on one" situations. Life at sea, both the good and bad aspects, needs to be experienced for cadets to develop a full appreciation of their future role and responsibilities as an officer.
- most week-long courses consist of 5 days actual instruction, it is difficult to see the rationale for 1 day simulator training equating to 3 days sea time.
- whilst accepting that standards of training on board ship do vary greatly, do not underestimate or undermine the hard work of the many officers and crew who give unstintingly of their time and knowledge to help train and mentor the next generation of seafarers.
- quality simulators are expensive and there are limited numbers available at present. For the proposed scheme to be effective there would need to be large investment, and if that sort of investment is going to be made then go further and incorporate integrated virtual reality.
- the concept that the scheme is not compulsory is an issue. If the scheme is beneficial then it should be compulsory, so all cadets benefit from it. If only the trial is optional, then the results available at the end of the trial will not be representative, instead reflecting the effect on a small group of cadets who probably already work for companies whose training regimes are already more effective.
- finally, it was highlighted that this is currently a proposal and will be reviewed following the trial. Watch this space.

Article 30

Alleged MARPOL contravention and MLC non-compliance

Outline: A report concerning alleged blatant contraventions of both the MARPOL and MLC international conventions. Under the MOU that exists between *CHIRP* Maritime and ISWAN, the following was another safety related referral by ISWAN.

What ISWAN told us

We have been contacted by a seafarer having safety related issues on board.Oil from the vessel is directly discharged to the sea without going through the oil discharge monitoring equipment (ODME). The equipment has not been working for over a year. The ODME equipment has not been working for over a year. The seafarer has raised this with the captain, but he threatened to fire the reporter.

Further details were included in the email sent by the reporter to ISWAN.

On board I am working with no MLC rules being complied with – this generally applies 24 hours a day. I complained to the master regarding this, and now he is going to terminate my contract for that reason.

In addition, a magic pipe is being used for sewage disposal. Not all crew have proper certificates (and some do not even have basic tanker course certificates).

Further dialogue

CHIRP Maritime contacted the reporter directly and over a series of e-mails more details emerged of the alleged contraventions and non-compliances.

- STCW and MLC regulations regarding hours of rest are not being complied with and records are being falsified.
  - on three consecutive days the reporter was required to work throughout without rest breaks and on the fourth day he was again called by the master for duties outside the scheduled shift pattern.
  - at the end of the month the master presented the reporter with a completed hours of rest form that did not reflect a true record. When the reporter refused to sign the document, the master signed in his stead and filed the document.
- MARPOL contraventions.
  - waste oil is illegally disposed of by filling empty drums and dumping same into the sea and falsifying vessels positions in the Oil Record Book.
  - there is a 'magic pipe' within the engine room allowing discharge of sewage without passing through the waste treatment plant. The vessel is allegedly discharging sewage within port limits and inside special areas contrary to Annex 4 of MARPOL.
- SOLAS contraventions.
  - tThe port lifeboat engine has an issue with starting and has been like this for more than a year (according to notes on board).
  - the GMDSS HF/MF transceiver is not working properly.
  - the ECDIS, ENC's and paper charts on board are not being corrected up to date because there is no internet at sea to allow the corrections to be downloaded.
- Crew Certification.
  - not all crew have the basic tanker safety course certificate as required.
  - a crew member joined without a yellow fever vaccination certificate and one was falsified onboard to avoid problems and prevent an inspection.

According to the reporter there are also issues regarding withheld wages and a payment of $4000 to an agent to secure placement on board the ship. The reporter accepted that this was illegal but where he lives it is the only way to gain employment.

CHIRP Maritime contacted the flag state administration for the vessel who responded and requested details of the report, which were duly forwarded. In a subsequent email the flag state acknowledged receipt and expressed appreciation for *CHIRP*'s direct communication and advised that they had also been made aware of the complaint raised by the crew member through other channels.

CHIRP comment

The prompt and positive engagement by the flag state is acknowledged and commended by *CHIRP* and is one of the few positive highlights in this report.

The question is, how has this situation been allowed to arise? Audits, inspections, and vetting programmes should prevent this type of situation from existing but there are too many ships and too few inspectors. Surveyors and inspectors tend to be concentrated in major shipping hubs for obvious reasons but there are many smaller and more remote ports and terminals around the world where there

is less likelihood of an inspection taking place. Is it any wonder that these are the very ports and terminals that the older vessels tend to operate in?

As new shipping tonnage is built by the leading companies in each branch of shipping, the older ships that are being replaced are often not scrapped for recycling but sold on to other companies for a further working life. So, the process continues with many ships being sold numerous times during their working life. Each time they are sold the ships are older and require more maintenance to keep them operational and in a safe condition. The irony is that companies that buy ships that are 20 or 25 years old tend not to have the money or the inclination to spend it on the ship and crew so the gradual decline with age becomes a race to the bottom of the barrel, to make as much money as possible from their asset before the ship fails surveys and is sold to the breakers or slips beneath the waves.

As reported to *CHIRP*, this case is a damning indictment of the shipping industry in the 21st century. Companies, and their employees have both a legal and moral duty to not just comply with the various legislation but to adopt a safety culture whereby incidents of this nature cannot happen. Whilst many companies do indeed have an effective safety culture in place, it is clear that many others do not. This report highlights the fact that *CHIRP* will follow up reports of this nature with flag states and that the flag states will take up the concerns. Any further reports of this nature would be welcomed.

Article 31

Failure to declare reportable cases on entering port

Outline: A conscious decision not to declare notifiable disease symptoms on board when entering port put the pilot, dockworkers, and the wider community at risk.

What the reporter told us

Following a full crew change in port, the vessel sailed that evening and went to anchor outside the port. Soon after joining, two of the crew exhibited COVID symptoms – one of them later learned he was a 'close contact' with a confirmed COVID sufferer – both seafarers were isolated on board.

Initially, the master kept the presence of symptomatic crew quiet, choosing not to inform the vessel's management company, additionally the master falsified the seafarers' temperature records by asking them to stand outside in the cold before recording their temperature. When the master was persuaded to inform the company (as per the COVID management plan), the company instructed the master not to disclose the issue – the vessel remained at anchor.

The symptomatic seafarers were employed through a manning agency which applied pressure to the management company to conduct COVID tests.'

Three days after COVID symptoms were first exhibited, the management company instructed the vessel to proceed into port. The two symptomatic seafarers would be replaced on board and then accommodated and tested ashore.

During the phone call with the company, the captain volunteered to lie to the harbour authorities about having COVID symptoms onboard – the harbour authorities ask all arriving and departing vessels "if they have any reportable symptoms onboard" – the company accepted the captain's offer.

Subsequently, the vessel entered port without informing any authority of the reportable symptoms on board. The pilot who boarded the vessel was not informed of the symptomatic crew and neither was the taxi driver who drove the two seafarers to their accommodation ashore.

The day after the symptomatic seafarers were taken ashore, two replacement crew joined the vessel. Only one of them had been informed of the suspected coronavirus on board the vessel before they joined. The vessel departed the harbour after embarking the two crew replacements and taking on food stores. The vessel did not take a pilot for sailing.

Five days after the symptomatic seafarers were landed ashore (and 8 days after their symptoms first appeared), the two seafarers were finally tested by a private company. The test results were positive for coronavirus.

After departing the harbour no further symptoms presented on board.

Sometime later, the two previously symptomatic seafarers were re-tested – the results came back negative for coronavirus. The company offered them employment on another vessel, but they declined and their contracts were terminated. Their manning agency paid for alternative accommodation and flights back to their home country.

The reporter had contacted the DPA, but only after the two crew members were landed ashore, which the reporter recognised was too late. Earlier action might have led to a better outcome with proper procedures followed and safety precautions in place for the pilot and the taxi driver. However, the conversation between the master and the company had been with the company directors, by-passing the DPA. It is unclear if the DPA would have had any influence given the direct relationship between the master and company directors.

Further dialogue

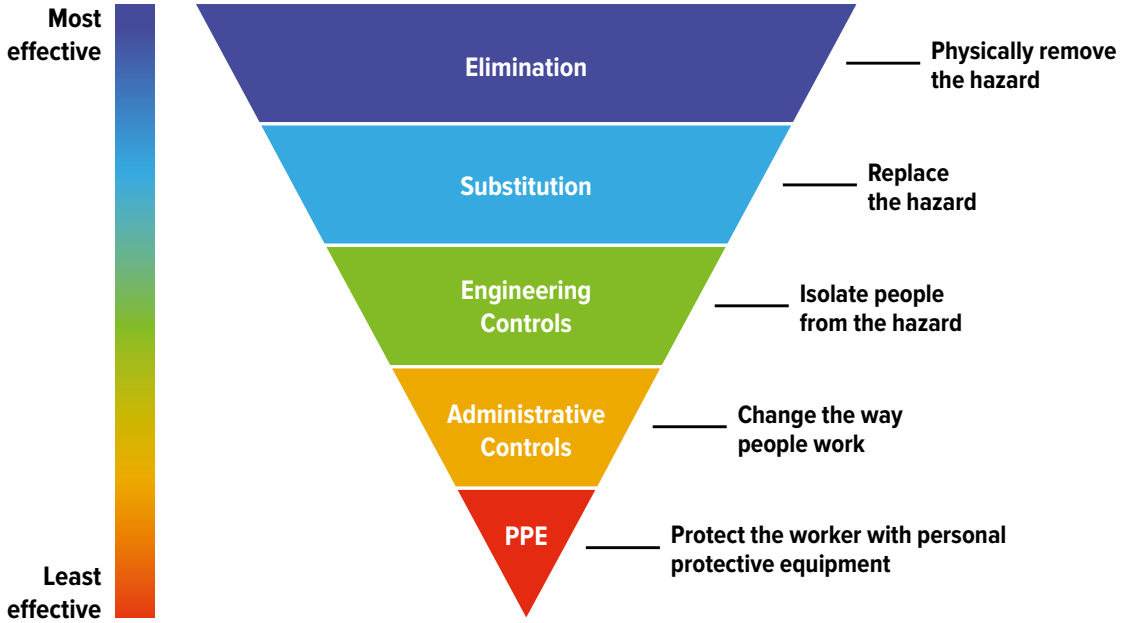
In response to questions the reporter noted the following: there are many human element failures within this report including the reporter's own. Whatever the captain's misguided reasoning for offering to lie to the authorities, the company should have declined and instructed him to make a full and honest declaration to the port authorities.

Finally, the reporter thought that there must be other vessels in similar situations waiting outside ports in various parts of the world.

CHIRP comment

The *CHIRP* Maritime Advisory Board (MAB) noted the following points.

- this report identifies an absolute violation of the WHO International Health Regulations (2005) concerning the requirements to report the presence or suspected presence on board of a notifiable disease. Beyond the regulations are questions of moral and ethical integrity.
- long established by the WHO, IMO, and ILO is an obligation on the master of a ship to make an accurate declaration when entering port.
- early in the coronavirus pandemic, a broad coalition within the maritime industry came together to produce a framework of protocols to facilitate safe crew changes and repatriation. On 5th May 2020, IMO issued a Circular Letter (No.4204-Add.14), informing maritime administrations, national authorities, and



shipping companies of the Recommended framework of protocols for ensuring safe ship crew changes and travel during the coronavirus (COVID-19) pandemic. The protocols are detailed in MSC.1/Circ. 1636 02/12/2020.

- this report concerns a recent incident which was a wilful breach of the regulations and those established protocols, not just by the master but by the management company as well. Given the potential harm to those individuals involved in repatriating the two seafarers with symptomatic Covid-19 conditions, pilot, crew, agents and taxi driver, this case highlights the imperative to properly report any notifiable disease.
- COVID restrictions and quarantine have both direct and indirect consequences on seafarers and additionally on a ship's ability to continue to work cargo. All such issues can be compounded by restrictive charters and inflexible charter parties.
- the reporter also highlighted that the master engaged directly with the company's directors and by-passed the Designated Person Ashore (DPA) (The DPA is the authorised direct link between the ship and the highest level of management of the Company who is responsible for ensuring the safe operation of the ship.)
- while this is the first such report to be received by *CHIRP* Maritime it is unlikely to be an isolated case but rather the tip of an under-reported industry-wide problem, made possible by lack of enforcement.
- as far as *CHIRP* Maritime is aware, the company has not carried out an internal investigation so there are no lessons learned from this incident. However, *CHIRP* Maritime feels it is incumbent on all shipping companies and masters to understand the reporting requirements for reportable diseases and to make accurate declarations. Notwithstanding any charterer's contractual agreements, the master must ensure that the regulations are robustly adhered to and that reporting via the correct channels is followed.
- clear guidance is available on how governments, national authorities, shipping companies and masters, should act – it just remains for everyone involved to follow the protocols to ensure that all seafarers and those involved with their repatriation are looked after safely.

Article 32

Chemical burn to body

Initial Report

During maintenance work on the purifier, an engineer was instructed to bring a specific chemical (carbon remover) from the chemical locker to clean the purifier. The engineer went into the chemical locker to transfer a quantity of the above-mentioned chemical from the drum to a small can. However, during this activity a quantity of the chemical liquid was spilt on their thigh, resulting in a severe chemical burn.

First aid and medical treatment were provided on board before the engineer was landed ashore two days later when the ship reached port. The engineer was subsequently repatriated for further treatment.

The engineer had recently joined the vessel and during the familiarisation tour received training on the safe handling of chemicals.

The company's safety instructions which were posted at the entrance to the chemical locker were not reviewed, nor was the chemical personal protective equipment (which was also positioned at the locker entrance) used.

Cleaning the purifier was a planned work activity that took place almost every day. The company's documented procedures directed that the appropriate Job Hazard Analysis be reviewed prior to work starting. However, the Job Hazard Analysis for this task did not require a toolbox meeting, nor was one carried out.

The investigation determined that this chemical should not be used for cleaning purifiers because a less hazardous alternative was available.

CHIRP Comment

Taking shortcuts by not wearing PPE for a job that is done regularly and which takes a very short time is common. It is a typical example of "it won't happen to me" syndrome. This new crew member should have been shown the way that chemicals are handled using the PPE matrix and donning the PPE. Taking time to demonstrate how to do a job safely sets the safety culture for all crew to follow.

A new joiner to a ship or company should be supervised for their own safety during their induction period. Ideally, the induction process is formally documented and includes a formal or informal assessment to check that they have learned, and can consistently apply, safety procedures to the required standard.

Similarly, it is best practice that all staff or crew are empowered to challenge any apparent infringement of safety standards and to raise concerns if they discover even minor equipment defects. This does not necessarily come naturally: some may worry that they will get into trouble for speaking out; others may believe it must be ok because no one else has said anything.

In this case, the post-incident investigation identified that a less hazardous chemical could have been used as a carbon cleaner. In the hierarchy of controls, substitution is only second to elimination. Personal protective equipment is the least effective method of protecting against a hazard. *CHIRP* wonders why the company did not insist on this substitution throughout its fleet? Was this a question of cost?

Human factors related to this report

Culture: Does your company have a safety culture that operates throughout the whole organisation and operates with a top-down bottom-up approach? Are you encouraged to challenge apparent safety infringements?

Local practices: Do you see local practices becoming the norm on your ship? If you are used to good working practices on other ships, how do you resist accepting lower standards and attempt to raise standards?

Teamwork: If this was a daily task why did nobody say "stop"? Would you alert a crew member when you see potential problems concerning their safety?

Capability: Was the management company capable of understanding the hazards associated with this chemical? The report states that other less toxic and corrosive chemicals should have been used for removing carbon deposits, so why did management continue to procure this chemical if they were aware of the risks?

Article 33

Insight: **Aviation procurement, control, and maintenance standards**

Protection of Aircraft and Aircraft components
An overview of Regulations and Standard procedures
Reference to *CHIRP* article 64-4 M1008

Preamble

The Airworthiness Directive (AD) is the ultimate method or protection of the aircraft and its components, followed by the requirement for component traceability.

High Level Protection and Control

The airworthiness management of an aircraft shall be carried out on behalf of the operator, by an approved organisation. In the European Union aviation safety agency regulations this is known as a Part M Organisation.

The part M organisation shall ensure the aircraft is maintained in accordance with its approved maintenance schedules. The Part M will arrange for an (EASA part 145)1 approved maintenance organisation, to conduct maintenance inspections based on hours flown or calendar time.

The part M also arranges defect rectification, repairs, and modifications. They will also monitor the hours of life for components, (e.g., landing gear). They will retain the aircraft maintenance records including original authorised release certificates and Certificate of Conformity C of C's (Components deemed to be "on Condition" will be subject to the inspections required by the approved maintenance schedules).

The part M will also monitor any defects that are permissible to operate with, under strict controls of allowable deferred defects. Any issues subject to repeat inspections e.g., a small crack in tertiary structure, will also fall under the remit of the Part M. Lastly and most importantly, the Part M will monitor all communications relevant to the aircraft, sent out by the aircraft or engine and occasionally the component manufacturer, although component manufacturers normally communicate directly to the aircraft manufacturer who then promulgate the information.

There are a lot of such communications but the main one is the service bulletin (SB). Compliance with a SB is optional, and the operator is under no legal obligation to comply. However sometime SB do include an Airworthiness Directive (AD). An AD is issued by the national aviation authority (NAA) of the aircraft manufacturer but can also come from other NAA to cover the aircraft on their register. AD are mandatory and have a compliance date depending on the seriousness of the issue. Operating beyond a compliance date requires a mandatory occurrence report (MOR) 2 to be submitted to the state of registry and may carry a serious penalty. The MOR is the reporting vehicle for all safety reporting to the National Aviation Authority, not just for Airworthiness Directives.

Practices

All items: Engines, Auxiliary Power units (APU), Major Structural Assemblies and Components which are referred to as Rotables or Line Replacement Units (LRU) **shall be traceable**.

- component origin, installation, the registration, and serial number of the aircraft on which they are installed and the location of the aircraft, shall be held in the aircraft records.
- component, replacement or removal and re-fit, shall be carried out in accordance with the approved maintenance data, and legally certified by an appropriately licenced aircraft engineer, having passed an approved aircraft type training course, exercising the privileges of an authorisation issued by the employer, subject to a competence assessment.
- part and serial number of the component being

removed, and the component being installed (off/on) plus the approved maintenance data used, shall be recorded on the record of replacement / installation.
- goods in Inspection (GII) which is required by regulation, Inspection staff authorised by the employer, are subject to a competency assessment. The GII staff are the first line of defence against bogus or suspected unapproved parts. However overall responsibility rests with the licenced engineer.
- mutilation or similar, shall take place of un-salvageable components, to prevent them returning into the supply chain.
- storage of components shall be in accordance with approved standards recommended by the manufacturers and their approved maintenance data.

Certification requirements:

- the standard paperwork certification for components, is the Authorised Release Certificate. There are various national versions of these, but they all serve the same purpose of verification that the component has been subject to manufacturer, inspection, repair, modification or overhaul, in accordance with the applicable requirements.
- the Certificate of `Conformity (CoC for standard parts, raw materials, and consumables, is a requirement of lower level certification, to demonstrate conformity to the applicable standard. Examples of some standard parts are rivets, nuts, bolts and washers, O-rings and packing, raw materials e.g., sheets of duralumin, carpet, consumables e.g., paint, sealant, oil, grease. The C of C also applies to approved tooling equipment.

This article has been written in response to comments made by the *CHIRP* maritime advisory Board in connection with the article *CHIRP* 64-4 M1008 Steering gear malfunction. The advisory board felt that the maritime industry could learn a lot about how the aviation handles air safety-critical spares especially as mentioned in the article that safety-critical electronic components will become more complex over time because commercial off the shelf (COTS) electronic equipment is almost invariably neither type approved nor marine hardened and crucially has hardware and software obsolescence built in. Therefore, it should be assumed that all safety-critical and or high usage equipment has a limited life expectancy and should be periodically renewed or replaced based on a formal documented risk assessment.

The maritime industry has a large number of owners and managers of ships which do not operate using a high level protection and control maintenance standard similar to the Part M Organisation. It is largely self-controlled with compliance to quality standards being maintained by ships staff, shore management and shore technicians. The standards are policed by Flag States, classification societies and port state control authorities.

Maintenance training for specific items of critical machinery and electrical equipment is available although there is no mandatory requirement to undergo maintenance training for marine critical equipment.

Aviation practices differ markedly from those in the maritime industry especially when it comes to spare parts which are not from original equipment manufacturers (OEM) and can be of inferior quality and prone to early failure.

One area where maritime has improved is the issue of technical service letters and bulletins both from the manufacturer and the classification societies. These are delivered to class societies, shipping companies and widely posted on the technical pages on the websites of the manufacturers. The key issue for shipping companies is to ensure that this information is made know to the ship management technical departments and ship's staff. The *CHIRP* article 64-4 M1008 was written in response to this highlights this issue.

This insight article covers a very large topic and cannot be adequately covered in this article. It is hoped that this article which has kindly been provided by our colleagues at *CHIRP* Aviation will create some collected thought on how the maritime industry can better manage the purchase, control, recording and replacement of critical spare parts including quality maintenance for merchant ships using the high standards in use in the aviation industry as a guide.

Note 1: Part 145 is the European standard for the approval of organisations that perform maintenance on aircraft and aircraft components that are registered in EASA Member States.

Note 2: A MOR is the reporting vehicle for all safety reporting to the NAA not just AD violations.

Section eight

CORRESPONDENCE RECEIVED

1) REGARDING THE ARTICLE PUBLISHED IN MFB61, SUPERYACHT – CREW WORKING OUTBOARD WITHOUT PPE

Within the article it was noted that *CHIRP* attempted to contact the PYA (Professional Yachting Association) to establish a dialogue, but sadly the PYA had not engaged.

At the time of writing the article and going to press that was correct.

Happily, that is no longer the case with the new CEO of the PYA contacting *CHIRP* Maritime recently when a fruitful engagement took place. *CHIRP* Maritime is now looking forward to further engagements and collaboration with the PYA.

2) REGARDING ACCIDENT PREVENTION

To enhance safety on board and as a proactive action against willful disregard, sabotage and recklessness caused on a ship I am looking for an organization to report some events where the local flag did not show a positive reaction toward some actions that could cause a fatal accident in the future.

Please advise if there is any specific organization or International Branch.

CHIRP Maritime responded.

With regards to accidents, incidents and near misses on board any ship, the suggested normal chain for reporting, investigation and engagement about such things would be:

- Safety Officer/ Chief Officer / Chief Engineer
- Captain
- Company (ISM Manager's) DPA
- Classification Society – depending on the issue.
- Port State – if vessel is in a foreign country.
- Flag State

We stress that the normal chain of safety reporting is per your company SMS.

Beyond that, should the flag state not positively address concerns, there are no international authorities with statutory powers to investigate safety issues, incidents, or accidents on board ships. *CHIRP* Maritime does operate on a global basis, but we have no statutory authority or investigative powers, we can only attempt to correspond with the relevant ISM managers (DPA), classification society or flag state administration to bring issues of concern to their attention but we must stress there is absolutely no obligation for any third party to engage with *CHIRP* Maritime.

Reading your mail again, it is disconcerting that you mention wilful disregard, sabotage, and recklessness onboard ships.

Section nine

APPENDICES

Appendix I: **Acronyms**

AB	Able Bodied Seaman
ACGIH	American Conference of Governmental Industrial Hygienists
ADA	American Disabilities Act
AIS	Automatic identification system
ARPA	Automatic Rader Plotting Aid
BA	Breathing Apparatus
BRM	Bridge Resource Management
BS	British Standards
CBM	Conventional Buoy Mooring
CD	Compact Disc
CHIRP	Confidential Human Factors and Incident Reporting Programme
CNIS	Channel Navigation Information System
COLREGS	The International Regulations for Preventing Collisions at Sea
COG	Course Over the Ground
COT	Cargo Oil Tank
CPA	Closest Point of Approach
DGPS	Differential Global Positioning System
DPA	Designated Person Ashore
ECDIS	Electronic chart data information system
EEBD	Emergency Escape Breathing Device
EMSA	European Maritime Safety Agency
ER	Engine Room
ERM	Engine Room Resource Management
EU	European Union
FRC	Fast Rescue Craft
GISIS	The International Maritime Organization's Global Information System
GPS	Global Positioning System
H_2S	Hydrogen Sulphide
HE	(The) Human Element
HELM	Human Element Leadership and Management
HRO	High Reliability Organisation(s)
HSE	Health, Safety and Environment
IG	Inert Gas
IMO	International Maritime Organization
IMCA	International Marine Contractors Association
IMPA	International Maritime Pilots Association
ISM	International Safety Management Code.
ISGOTT	International Safety Guide for Oil Tankers and Terminals
ISO	International Organization for Standardization
ISWAN	International Seafarers Welfare and Assistance Network
IT	Information Technology
ITF	International Transport Worker's Federation
LOP	Letter of Protest
MAB	*CHIRP* Maritime Advisory Board
MAIB	Marine Accident Investigation Branch
MARPOL	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978
MCA	The United Kingdom Maritime and Coastguard Agency
MEPC	The Marine Environment Protection Committee – IMO
MFB	Maritime FEEDBACK
MGN	Marine Guidance Note
MLC	Maritime Labour Convention
mmwg	millimetres of water gauge
MNM	Merchant Navy Medal
MOU	Memorandum of Understanding
MPX	Master / Pilot Information Exchange
MSC	Maritime Safety Committee (IMO)
MSF	Marine Safety Forum
NB	Nota Bene
NM	Nautical Mile
NOx	Nitrous Oxides
OOW	Officer of the Watch
OS	Ordinary Seaman
PACE	Probe, Alert, Challenge, Emergency
PDF	Portable Document Format
PEC	Pilot Exemption Certificate
PM	Particulate Matter (Nox and Sox)
PM	Planned Maintenance (System)
PPE	Personal Protective Equipment
Ppm	parts per million
PPU	Portable Pilot Unit
PSC	Port State Control
QA	quality Assurance
RHIB	Rigid Hulled Inflatable Boat
RIB	Rigid Inflatable Boat
RN	Royal Navy
RPM	Revolutions per Minute
SCABA	Self-Contained Breathing Apparatus
SI	Statutory Instrument
SMS	Safety Management System
SOG	Speed Over the Ground
SOLAS	International Convention for the Safety of Life at Sea (SOLAS), 1974 as amended
SOx	Oxides of Sulphur
STCW	The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978 as amended
STEL	Short Term Exposure Limit
SWL	Safe Working Load
TCPA	Time to Closest Point of Approach
TDG's	Tactical Decision Groups
TLV	Threshold Limit Value
TSS	Traffic Separation Scheme
TWA	Time Weighted Average
UCL	University College London
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UKMPA	United Kingdom Maritime Pilots Association
US	United States
USCG	United Sates Coast Guard
VHF	Very High Frequency (radio)
VLCC	Very Large Crude oil Carrier
VTS	Vessel Traffic Services

Appendix II: **Insight on the role of Ambassadors**

Are you interested in becoming a *CHIRP* Maritime Ambassador?

CHIRP and the Nautical institute have an established ambassador scheme to raise awareness of our incident reporting schemes and encourage the submission of incidents, accidents and near-miss reports.

We seek additional volunteer ambassadors around the world, especially in China, Cyprus, Indonesia, the Philippines, Spain and the USA.

As a *CHIRP* ambassador we want to create an awareness among mariners of the reporting programmes. These activities may include all or some of the following:

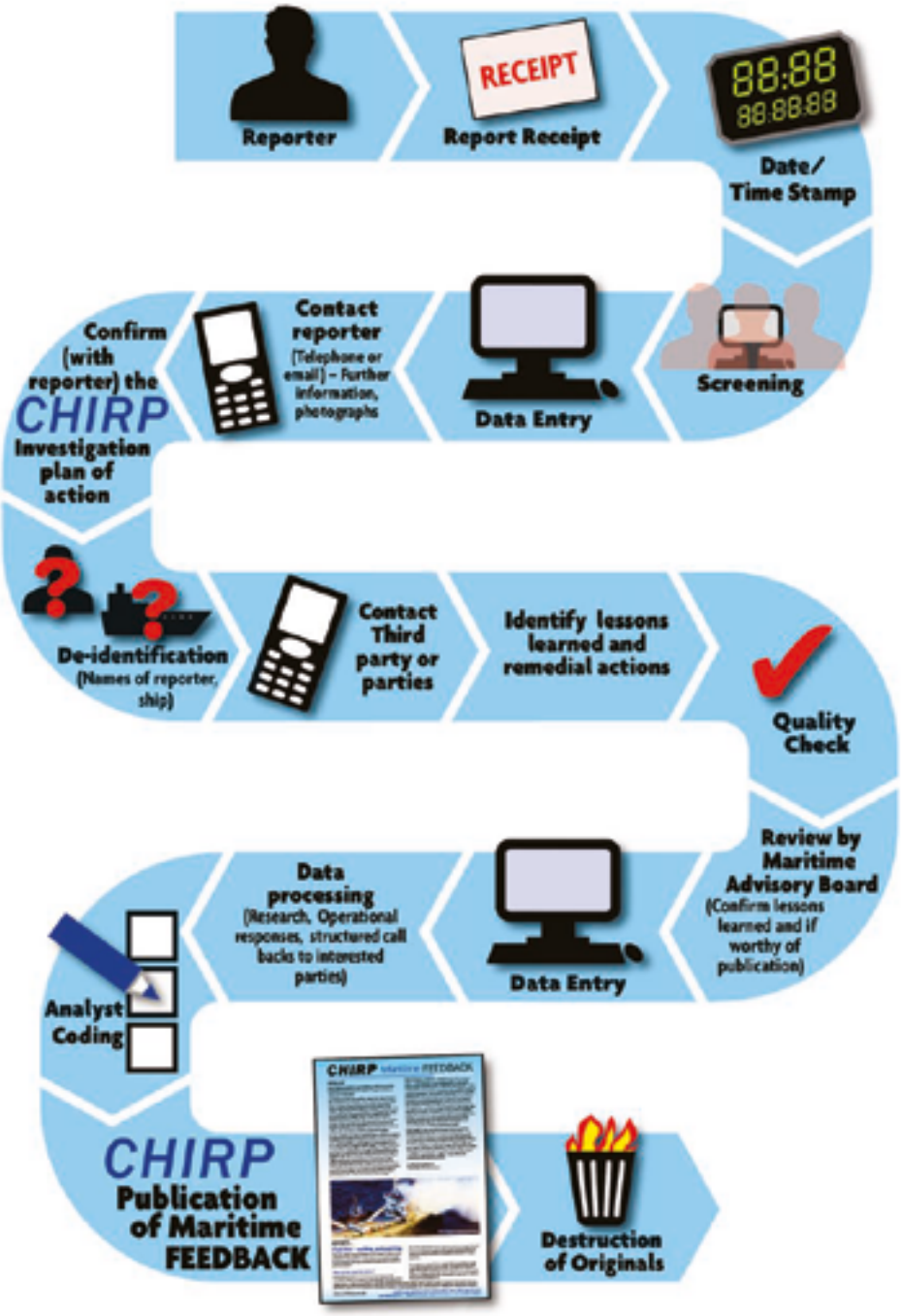
- giving presentations and briefings to Nautical Institute branch meetings and other maritime-focused events (presentation and briefing materials can be provided upon request).
- giving presentations to maritime training colleges and academies to raise awareness of the *CHIRP* and MARS programmes among students and lecturers.
- assisting in the distribution of *CHIRP*'s 'Maritime FEEDBACK' publications.
- providing guidance and encouragement to those considering submitting reports. Note that Ambassadors are NOT expected to submit reports on behalf of others, or to collect or forward reports (these should instead be sent directly to the *CHIRP* or MARS programme as appropriate).
- meeting with and encouraging maritime companies to submit reports, particularly DPAs (Designated Person Ashore.
- assisting *CHIRP* staff in translating documents into their local language(s).

As an ambassador you will join an international network of seafarers who also share your passion for safety, and you will quickly gain a broad knowledge of current safety issues. These are great additions to your CV and increase your employability. Together we can promote the development of a just culture across the maritime sector to improve safety outcomes. The key attributes of a successful ambassador is a passion for safety and a willingness to speak up for CHIRP among your colleagues and contacts.

If this sound like you, please contact us to discuss this opportunity at: mail@CHIRP.co.uk

Appendix III:
How the *CHIRP* reporting process protects your identity

Report processing flow – *CHIRP* Maritime



Guiding Principles:
Confidentiality Protection / Non-Punitive/ No "Whistle Blowing"

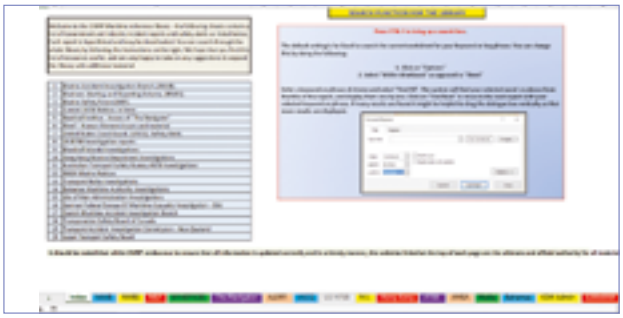
Appendix IV: **The Maritime Programme – How it works**

- reports can be generated either online (through our secure website www.chirpmaritime.org, by email (reports@chirp.co.uk).
- *CHIRP* currently receives confidential incident reports from professional and amateur participants in the maritime sector, throughout the world and across all disciplines. For all potential reporters, they can be reassured the identification of all reporters is always protected even if their reports are, ultimately, not used.
- every report that is received is acknowledged and investigated, with feedback provided to the reporter before closure of the report.
- on being received, reports are screened then validated as far as is possible and reviewed with the objective of making the information as widely available as possible whilst maintaining the confidentiality of the source.
- anonymous reports are not acted upon, as they cannot be validated.
- *CHIRP* is not a "whistle blowing" organisation.
- each report is allocated its own unique reference identification. Data is entered into the internal network computer system.
- when appropriate, report information is discussed with relevant agencies with the aim of finding a resolution.
- only depersonalised data is used in discussions with third party organisations and the confidentiality of the reporter is assured in any contact with an external organisation.
- the report in a disidentified format will be presented to the Maritime Advisory Board (MAB). The MAB meets every quarter January, April, July and October. The MAB discuss the content of each report, they then provide advice and recommendations for inclusion in Maritime FEEDBACK. All reports are analysed for casual factors and potential risk.
- no personal details are retained from any reports received, including those not acted upon. After ensuring that the report contains all relevant information, all personal details of the reporter are removed with an acknowledgement email sent to close the report.
- after the deletion of personal details, *CHIRP* is subsequently unable to contact the reporter. The reporter may, if he/she wishes, contact the *CHIRP* office for additional information by using the report reference identification.
- the Maritime FEEDBACK publication is written by the Maritime Advisors with the assistance of volunteers from the MAB who are experts in the written article to be published. All published "Lessons Learned" are disidentified and therefore the possibility of identifying the Company, Ship or Seafarer reporting or involved shall be almost impossible.
- all our published material is freely available for use by other safety systems and professional bodies.

Director (Maritime)
December 2021

Appendix V: **Our Publications**

Reference Library



The link below will take you to the reference library page on the *CHIRP* website. From there you can download an Excel workbook which contains links to a comprehensive list of incident investigations, near miss reports and safety alerts issued by a selection of government maritime agencies and shipping industry sources around the world.

The library has been written in Microsoft Excel on a Windows 10 operating system – the browser used for links was Google Chrome. With these in place, all links should open automatically. It has been found that when viewing the files on an Apple Macintosh, that links to the internet tend to open correctly, but links to a specific PDF file do not open. If this is the case, then copy and paste the link into your browser – the requested file should then open.

We should emphasise that that the official source of information is the actual web sites of the Agencies included in the workbook. The links to these sites may be found at the top of each sheet of the workbook and should be consulted for the most current data.

The library is updated on a regular basis – any suggestions for further enhancements of the library will be very much welcomed.

www.chirpmaritime.org/reference-library

Appendix VI: **Our Sponsors**

We are grateful to the following sponsors for funding the publication and distribution of this *CHIRP* Annual Digest 2021. They are:

Fleet Management Limited
A Caravel Group Company

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THE MISSION TO SEAFARERS

CHIRP MARITIME

www.chirpmaritime.org

CHIRP Maritime – the voice of the mariner

Who are *CHIRP* and what do they do

The *CHIRP* (***C***onfidential ***H***uman Factors ***I***ncident ***R***eporting ***P***rogramme) Charitable Trust has provided a totally independent and confidential safety reporting system to seafarers worldwide since 2013, complementing the reporting system it has offered to the UK aviation industry since 2003. By publishing our analysis of received incident and near-miss reports we raise awareness of safety issues and contribute to improved safety outcomes through all sectors of the maritime industry.

What is the purpose of *CHIRP*?

Our programme complements (but does not replace) existing statutory, company or other organizational incident reporting systems by providing a voice to those mariners who feel that they cannot otherwise speak out, or feel that their concerns have not been heard. We are the voice of the mariner, concerned only with the enhancement of safety for everyone employed by or associated with the global marine and UK aviation industries.

Confidential Reporting

Reports can be submitted online via our website (www.chirp.co.uk), or via email (reports@chirp.co.uk).

Reporter's identities are kept confidential. Once we have collected sufficient report details from our reporters we delete their personal details so that neither we nor anyone else can identify the reporter. Any photographs or other details have all identifying features removed and are only published with the approval of the reporter.

Information Sharing

CHIRP publishes its findings and other important information in the languages most spoken by seafarers (including English, Chinese, Filipino, Indonesian and several others) both online via its website and social media and in its Maritime FEEDBACK paper publication to make a wider audience aware of situations. Subscribe to mail@chirp.co.uk to make sure you never miss a copy.

CHIRP MARITIME
@CHIRP_Maritime

What do I report?

Safety-related incidents or events involving:

- Yourself
- Your organisation or your vessel
- Other people
- Your organisation or organisations you deal with

Incidents/events can include:

- Errors
- Individual performance
- Regulatory aspects
- Unsafe practices or design

What don't I report?

- Incidents or events with no safety content
- Issues involving conflicts of personalities
- Industrial relations and/or terms and conditions of employment problems

When do I report?

- When you are concerned and wish to protect your identity (please note that anonymous reports are not accepted)
- When you wish others to benefit from an important "Lesson Learned"
- When other reporting procedures are not appropriate or are not available
- When you have exhausted company/ regulatory reporting procedures without the issue having been addressed

How do I report?

Reporting can be sent via:

- Email: reports@chirp.co.uk
- Online: www.chirp.co.uk
- Telephone: +44 (0) 1252 378947

We are grateful to the sponsors of the *CHIRP* Maritime programme. They are:

The Corporation of Trinity House

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The Britannia Steam Ship Insurance Association Ltd

The UK P&I Club

Seafarer's Trust

Red Penguin Marine

Lloyd's Register Foundation

Seafarers UK

SeaWays Consultants

CHIRP MARITIME

The *CHIRP* Charitable Trust, One Kingdom Street,
Paddington Central, London, W2 6BD, United Kingdom

For general correspondence, please use: mail@chirp.co.uk
To submit email reports, please use: reports@chirp.co.uk

Please add as much detail as possible about the incident/safety issue, including date, time and location. Please note that *CHIRP* does not recommend the use of unencrypted email for reports and the preferred method of reporting should be online at www.chirpmaritime.org.

Telephone: +44 (0) 1252 378947