ANNUAL DIGEST

CHIRP

An independent and confidential reporting system for the Maritime industry

2023

HUMAN FACTORS
DECK SAFETY
ENGINEERING, TECHNICAL AND ENVIORNMENT
COLREGS AND NAVIGATION
YACHTS, FISHING AND RECREATION
TUGS AND TOWING
SAFETY CULTURE AND REGULATIONS

Annual Digest of Reports and Insight Articles 2022

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Maritime Director's Foreword

I am pleased to present our annual digest for 2022-23, the publication of which is only possible because of the generosity shown by our sponsors and we are very grateful to them for their continuing support. And I'm proud to report that CHIRP continues to deliver meaningful impact.

In 2022-23 we raised safety concerns with a greater number of Flag States and Classification Societies than in previous years, and attended a record number of safety events, either in person or online, in the UK, India, Greece, Brazil, New Zealand and the US. We also published 47 reports, up by 50% on the previous year, and we introduced Arabic and Ukrainian language editions of our Maritime FEEDBACK newsletter which is now available in 8 languages. We also introduced a new publication, Superyacht FEEDBACK, focusing specifically on that community. Our Ambassadors promote CHIRP to their local maritime networks, and I'm pleased to say that we now have 48 Ambassadors in 28 countries.

To further improve accessibility and engagement, we launched an updated website and an 'app' which places our reporting system and safety publications right into seafarers' pockets. We also significantly expanded our digital presence by posting our Chinese-language editorials on popular social media sites in that country and this, along with other initiatives, has doubled the total number of followers that we have to almost 6,000.

I hope that you find this digest both informative and interesting. We are always keen to receive your thoughts on this or any other maritime safety topic which you can email to us at mail@chirp.co.uk.

Adam Parnell
Director (Maritime)

Introduction

Welcome to the eighth annual review of CHIRP Maritime reports, covering all the cases we published during 2022 and including some in-depth articles specially commissioned to highlight important safety topics.

This was our first full year under the guidance of Adam Parnell as Director, Maritime, and Dave Watkins as his deputy, and you will see their influence in the way we analyse reports and seek to extract key points for our readers. As always, they benefit from the wise counsel of our Maritime Advisory Board (MAB) and feedback from our growing band of Ambassadors, who volunteer their time to spread the safety message as widely as possible.

In our editorials in 2022 we have often mentioned recurring themes in the reports we receive, and a common theme has been a lack of communication, either between those on board a ship or between the ship and the shore. It strikes me that our small team at CHIRP Maritime have managed to avoid many of the potential pitfalls of failing to communicate effectively. Adam and Dave give regular briefings and hold discussions with our MAB, our Ambassadors and other staff members to ensure we all know what is going on. They always welcome input from the CHIRP Maritime community, and all of us feel free to express our opinions on any topic, whilst recognising that Adam has the final decision. If more ships followed this excellent style of leadership I believe we would have a much safer and more efficient industry.

2022 was another difficult year for seafarers. As the Covid-19 situation showed signs of improving, mariners were faced with added dangers due to conflicts, especially in waters off Ukraine, and we have marvelled at the courage of many of our colleagues who have, for example, kept vital grain shipments moving despite the risks. In shipping, we are well aware of the sacrifices being made to keep the world's trade moving, but more generally there is widespread ignorance of the services our seafarers continue to provide. I can only repeat what I wrote last year – perhaps one day the world will acknowledge the great debt it owes to the men and women at sea.

Given the difficult conditions, it is a wonder that our reporters still find time to submit so many excellent reports to CHIRP Maritime, but they have never failed us, and this Annual Digest is above all else a tribute to their dedication. I am delighted to thank all our reporters on your behalf.

Our Maritime FEEDBACK magazine continues to be published in English, Chinese, Filipino, Indonesian,

Spanish and Portuguese, so 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.

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.

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 once again acknowledge them 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.

This year we saw a few more reports from the towage and leisure sectors, but very little from the fishing and offshore fleets. I am sure there are useful lessons to be learned from these vitally important parts of the industry, so we would welcome more reports from those of you who work in them.

Once again, we have divided the Digest into themed sections to assist readers to find the topics which most interest them, but as always there are reports which could be allocated to several different sections so 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, and there are still ships where living conditions are abominable, safety is ignored, and crew welfare counts for nothing. We may even be seeing an increase in the number of reports about such vessels, which indicates that the various inspection régimes are not always capable of finding and correcting the problems. I can promise you that CHIRP Maritime will speak up on your behalf if we are made aware of such cases.

Within some 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.

We hope you will find this Annual Digest both interesting and informative, but please let us know. Your 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.

In shipping, we are well aware of the sacrifices being made to keep the world's trade moving, but more generally there is widespread ignorance of the services our seafarers continue to provide. I can only repeat what I wrote last year – perhaps one day the world will acknowledge the great debt it owes to the men and women at sea

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1. Human Factors

All our reports contain references to human factors, but the two we have selected for this section are specifically concerned with situations where the crew had to interact with numerous outside agencies. They highlight the need for rigorous contingency planning, and excellent communication between all parties.

In the first case, a ship was undocking and intending to proceed on sea trials. This is a tricky operation at the best of times and is not something which most crews deal with on a daily basis. In this case, there was a strong wind and the five tugs available do not appear to have been used to best advantage, so when the ship's engine failed to start she drifted onto another vessel and various shore facilities.

In our analysis, we point out that the lack of a coordinated response to a foreseeable emergency suggests inadequate emergency planning and risk assessment. We also question the situational awareness of the participants and the capability of a crew faced with an unfamiliar operation, and ask whether they were under pressure to undock the vessel despite the weather?

The second report concerns a ship discharging oil at a terminal. An emergency stop order from the shore was given using the wrong wording, and the ship's crew did not hear it. At the time, the cargo control room was full of people including a bunker surveyor and the ship chandler, while the vessel was also having a class inspection, a port state control inspection and a vetting inspection.

We highlight the danger of distractions during cargo work, and the pressure on the crew to do so many things at one time.

These reports underline the need for meticulous planning, and remind us that we sometimes need to be quite firm with people from the shore. In addition, it is not enough to rely on experienced pilots or dock masters to conduct operations safely – they should be questioned in detail about their intentions, and a thorough risk assessment should bew made. Similarly, we have all experienced the horror of arriving in a port and being inundated by people from the shore, all wanting our undivided attention, and all convinced that their business takes priority over everybody else. We should develop robust contingency plans to deal with such situations, and I suggest that shore management should be taking the lead in ensuring the ship's staff are not swamped as soon as they berth, and that they have freedom to do their jobs safely. A common factor when we analysed these reports, and the comments we made are as follows:

pressure

- recognising different workloads and pre-planning can reduce the pressure on the crew. This is a team responsibility.
- were the master and crew under pressure to carry out the operation in unsafe conditions?

We also identified:

training

- the crew did not respond appropriately to a machinery breakdown. Do you regularly conduct breakdown drills on your ship?

M1852

Machinery breakdown results in allision

Initial Report

The vessel was undocking following a successful survey in dry-dock. The plan was to move to an inner anchorage to conduct sea trials before her scheduled departure. The vessel was in a very light condition with a draft of 5m and a freeboard of 17m.

The deck and engine room teams completed their pre-departure procedures, but the main engine was not tested. A passage plan had been prepared, and this was given to the pilot by the master. Three dock masters were also in attendance. Strong winds were forecast (27 knots with gusts of up to 35 knots) from the port side.

Five tugs were in attendance, with two attached to the bow, one attached to the stern and two others standing by. The main engine was set to 'Stand By', and the vessel was pulled out of the dock by the tugs. As the vessel exited the dock, the two tugs at the bow were released and the bridge ordered 'Dead Slow Astern' on the telegraph. The engine failed to respond, and the vessel started to drift to starboard because of the strong winds.

One of the tugs was directed to make fast on the port side and pull the vessel to port. The tug attached to the stern was not directed to do anything, so it did not assist.

The vessel drifted onto a newly-built moored vessel which was extensively damaged, as were some of the nearby shore facilities. Fortunately, there were no casualties or pollution. Shortly afterwards, a third tug was made fast on the port side, and the pilot was able to manoeuvre the vessel to the allocated anchorage. An investigation undertaken by the authorities, owners and the engine manufacturers found the exhaust valves had not been properly calibrated whilst in dry-dock.

CHIRP Comment

Manoeuvring into and out of a dry dock would be an unfamiliar operation for most ship crews. Our maritime advisors questioned why the vessel was allowed to undock, given the very strong winds, and asked if this was due to commercial pressure?

The presence of three dock masters and five tugs suggests that a plan had been developed. Still, the lack of a coordinated response to a reasonably foreseeable event (the engine failure) indicates that the emergency response plan was missing or inadequate. Most tugs can push more powerfully than they can pull, but the three available tugs were not ordered to 'push on' to arrest the drift caused by the strong wind.

The fact that the main engine was not tested before departure, despite undergoing significant repairs, is a major failing concerning risk mitigation and reflects poorly on the management, supervision, and the organisation.

Given the proximity of nearby vessels immediately outside the dry-dock and the prevailing onshore wind conditions, the risk assessment, including the consequences for loss of control, was not considered. Nor was emergency anchoring considered.

The dry dock pilot should have insisted that the main engine be tested before departure. Was this raised during the master-pilot information exchange?

Factors relating to this report

Situational Awareness (SA) – Collective situational awareness is based upon formal Risk Assessment and the adoption of agreed Standing Operating Procedures. It also relies on everyone understanding the plan and their part in it and knowing what to do if things go wrong (the emergency response plan).

Capability – The crew in this incident did not have recent experience of undocking a vessel and had to rely on the three dock masters. Did the difference in experience and capability make it difficult for the crew to raise questions or concerns? When writing the risk assessments for uncommon or infrequent tasks, do you consider' capability'? How does your ship empower a 'challenge' culture?

Pressure – The undocking went ahead even though the weather conditions were unsuitable. Dry docks usually are fully booked, and overstaying can be financially costly. Did the master and crew feel under pressure to undock even though the conditions were unsafe?

Teamwork is situational: crews who perform strongly in familiar situations may not do well when facing unfamiliar challenges. This takes time, leadership and open communication. How does your company ensure that your team is ready to face its next task?

Training – The crew did not respond appropriately to the machinery breakdown. Do you regularly conduct machinery breakdown drills on your vessel?

Manoeuvring into and out of a dry dock would be an unfamiliar operation for most ship crews. Our maritime advisors questioned why the vessel was allowed to undock, given the very strong winds, and asked if this was due to commercial pressure?

M1967

Near Miss – distraction and work overload

Initial report

The vessel was discharging oil at a European oil terminal using three pumps through two manifolds to shore with a steady manifold pressure of 9 bar. Operations were coordinated via the terminal's dedicated VHF channel. A hand-held VHF radio was provided to the vessel's chief officer at the ship/shore discharge meeting earlier that day. At the meeting, the terminal's written operating procedures had been reviewed, and these directed that an emergency

The CCR is an operational space, and the simultaneous administrative and logistical meetings should have been held elsewhere. They took place in the CCR because each meeting needed the master's or chief officer's involvement, which distracted them from properly supervising the cargo offload

stop by either ship or shore teams should be initiated by ordering "STOP STOP STOP".

At 1453 the terminal ordered an emergency stop using the word "STOP". The vessel did not respond to the order. However, a cargo expeditor from the terminal who was on board realised that something was amiss and at 1454 verbally ordered, "STOP STOP STOP". The chief officer stopped all pumps using the emergency stop buttons.

At the time of the incident, the chief officer, second officer, cargo expeditor, the bunker surveyor, and the ship chandler were all present in the cargo control room (CCR) making communications difficult to hear because several different conversations were taking place at once.

The ship's internal communications were also overloaded because they were covering both the cargo/deck and the approach of a bunker barge, all via a common ship's walkie talkie channel. The vessel was also taking on stores and provisions, whilst an annual class inspection, a port state control, and a vetting inspection were all taking place at the time.

An investigation concluded that the chief officer's workload stopped him from maintaining an efficient watch on the VHF, so the initial (incorrectly worded) call was missed. However, the chief officer reacted correctly when prompted by the cargo expeditor. The master was similarly distracted by the vetting and port state control inspection.

CHIRP Comment

The terminal's order to 'STOP' was a deviation from pre-agreed procedures and would not have conveyed the same seriousness as the same word repeated 3 times. Because so much was happening in the cargo control room, the level of noise and the distracting parallel conversations meant that the order was initially missed by the ship's team, who were undertaking multiple simultaneous activities. By contrast, the cargo expeditor was concerned only with the discharge of oil and was less distracted. They recognised the intent of the initial order and relayed it using the correct pre-agreed format, which was responded to immediately.

The CCR is an operational space, and the simultaneous administrative and logistical meetings should have been held elsewhere. They took place in the CCR because each meeting needed the master's or chief officer's involvement, which distracted them from properly supervising the cargo offload. This could reasonably have been foreseen by the operating company, who are compromising safety by placing so many simultaneous tasks on the ship's staff.

Factors related to this report

Distractions – The chief officer was overloaded with other communications in the CCR. Relocating all the other meetings would have reduced the level of distraction.

Pressure – Recognising the different workloads during a discharge operation and the importance of pre-planning can considerably reduce the pressure on those involved in the operations. A high workload may lead to overload and essential things being missed. Relieving pressure is a team responsibility and should not be left to one individual.

2. Deck Safety

This section begins with a report about unsafe lifting points on a RIB. Remarkable vigilance by a new joiner identified the problem and prevented potential serious injuries or fatalities. Our second report is the horrific story of a crew member who was killed when a tug messenger trapped them and dragged them through a Panama fairlead. It reminds us we can never relax our vigilance, and I hope it will remind tug operators that they should never start to pull away from a ship until all ropes have been recovered.

We have two reports about ships carrying timber deck cargoes. One had a design flaw which prevented a set of bitts being used when the log stanchions were lowered, and the other loaded a deck cargo but did not construct a safe walkway over the logs. We cite the relevant guidelines so readers who find themselves in a similar situation can ensure they do things properly and safely.

Finally, we learn how a crew were greasing crane wires at sea in a manner which was dangerous, and suggest how the job could have been done more safely.

Our analysis of the human factors emerging from the reports in this section identified some recurrent factors, which are shown below with some of the questions we posed at the time:

capability
- are crew members capable of identifying and reporting potential dangers, and do they have the competence to perform assigned tasks?

culture
- was there a culture of poor maintenance on board, and did the company culture empower crew members to report their concerns?

pressure
- do seafarers feel pressure to carry out unsafe acts?
- is there pressure on senior officers to cut corners, and is profit put above safety?
- These questions are well worth bearing in mind when you attend safety meetings or toolbox talks.

M1979

Unsafe lifting points for RIB Work Boat

Initial report

A new crew member inspected the ship's lifesaving equipment to familiarise themselves with the equipment on board. They discovered that the lifting eyes in the ship's workboat were damaged and loose, which meant it was not the eyes carrying the load but a length of threaded bar which appeared poorly maintained. If the lifting eyes had failed while the boat was being lifted it could have resulted in serious injury to the two crew members who are ordinarily inside when it is lowered into the water.

CHIRP Comment

The condition of the items in the photographs suggest that neither inspection nor maintenance routines were effective, and that the boat's crew were either unaware that the lifting eyes were in a dangerous condition or did not feel empowered to report their concerns.

The reporter is praised for their exemplary safety attitude and for reporting their concerns, which have potentially averted death or serious injury to their crewmates.

Human Factors relating to this report

Alerting – The initiative demonstrated by the new crew member who discovered the defects is admirable. Is this something that you would consider doing during your familiarisation tour? It could avert a serious or even lethal accident.

Capability – Were the crew members responsible for inspection and maintenance of the sea-boat capable of identifying and reporting the poor condition of the lifting eyes? Does this suggest a training shortfall?

Culture – Was there a culture of poor maintenance on board the vessel – or was it not undertaken? CHIRP has previously raised concerns about 'cultures of compliance' (where busy workloads or other pressures cause seafarers to falsely sign paperwork to indicate that they had done work even if it wasn't true).

M1878

Fatality: crew member caught by rope during mooring operations

Initial report

The reporter informed CHIRP that a tanker was approaching the berth under pilotage with the assistance of tugs. The forward tug was to be released from the tanker's bow prior to the vessel turning to starboard. The eye of the towing line was secured to the bitts on the forecastle and had a long messenger rope attached to it. The tug's line was slackened to facilitate its release.

An ordinary seaman (OS) eased the tug's mooring rope out through the closed chock (Panama lead) and had taken a turn of the messenger rope around the bitts. As the tanker turned to starboard to align itself with the berth the tug's line was in the water and as the separation between the tanker's bow and the tug increased, the messenger line paid out at an increased speed which was not anticipated by the line handlers.

The officer in charge of the mooring operation warned the OS to step clear from the messenger rope. The OS attempted to do so but slipped on the deck and became entangled with the rope which dragged him overboard through the Panama chock. The OS was recovered from the water by the tug and resuscitation and first aid was immediately administered until the ambulance took them to hospital. Tragically the OS died the next day.

CHIRP Comment

This tragedy highlights the risks associated with all types of mooring operations.

Although SMS manuals detail how mooring should be conducted, they may not highlight that handling of mooring lines including messenger lines can quickly get out of control if they are not properly secured against the effects of gravity or the dynamic interaction between the tug and the vessel.

The officer in charge must always try to anticipate changes in the loading on the lines and have the crew stand in a safe position away from any potential danger. A tug's line and attached messenger should always be recovered on board the tug before it starts moving away.

The forward and aft mooring decks on any ship are classified as high risk zones and have associated risks during mooring operations. The management of the mooring lines requires a very high level of attention by the crew handling the lines as well as the officer responsible for the mooring operation.

A full safety brief should always take place before mooring operations commence, including clear instructions to be followed in normal and emergency scenarios. Mooring operations must never be rushed as this can lead to actions being taken which are not thought out clearly. In this case the OS slipped and fell while attempting to get to a safer location, which tragically led to their death.

Human Factors relating to this report

Situational Awareness – Mooring operations can evolve rapidly and maintaining situational awareness during mooring operations is vital to ensure that everyone remains safe. Anticipation is key: lines can unexpectedly become taut or even break, creating a lethal snap-back hazard; winch brakes can fail or ropes be pulled overboard due to the relative motion of the vessel and the tug or bollard ashore.

Teamwork – This tragedy appears to show that the OS operated alone while handling the tug's line? How many crew do you think should have been handling this tugs line?

Capability – A high degree of seamanship skill is required during mooring operations. During your mooring operations do you always have the right level of competence to carry out safe mooring operations? If you do not, have you raised this matter with management?

M1866

Deck layout: hazardous by design!

A lumber carrier embarked a pilot as it approached a loading berth where a tug waited to assist. The pilot requested that the vessel secure the tug's line to the mooring bitts on the forward deck. After this was achieved, and as the tug came under the line to push up, the tug master realised that his line had been improperly secured: it had been wrapped around the bitts and secured with a shackle, rather than the eye being dropped over the top of the bitts.

When questioned the master explained that, when lowered, the log stanchions were so close to the bitts that they obstructed the bitts. The master was informed that they should not use a shackle in future, and that the bitts should not be used when the log stanchions were lowered.

Log stanchion in lowered position

CHIRP Comment

The vessel is relatively new, and the deck layout has not been modified since she was built. This suggests that the improper placement of the log stanchion and mooring bitts is the product of poor design. This is known as a latent error, and CHIRP believes that there is a high probability that incidents will continue to occur on the vessel because the mooring bitts cannot correctly and safely be used as intended. The likelihood of an incident is further increased because of the proximity of the bulwark brackets which create a trip hazard.

The trip hazard and inability to correctly work the mooring bitts are evident, and CHIRP is concerned that these had seemingly not been detected either during commissioning trials, during flag and class inspections, or by the crew themselves. CHIRP is also concerned that other vessels of the same design might also contain the same latent design hazards.

Human Factors relating to this report

Design (latent factor) – Eliminating poor design from ship construction requires an experienced design team who can understand human centred design and make life easier for those that have to work with the equipment. Removing poor design will improve safety for the crew, ship and environment and lead to better productivity over the life of the ship.

Capability – Was the naval architect aware of the ergonomic implications of placing the items too close together, and the trip hazards created by the bitts being placed so close to the bulwark brackets? If compromises were made due to the lack of space, were these highlighted in the construction and use documents so that they could be brought to the crew's attention?

Culture – Did the company's safety reporting culture empower the crew to report design issues and other concerns? Was there a culture of reporting on this vessel?

Many well-run companies operate a top-down and bottom-up culture where the voices of those that must operate equipment can be heard and something is done about their concerns. Does this describe your organization?

Communications – Did the crew feel empowered and confident to raise concerns about the design of the deck layout? Did they believe that their report would be acted upon, or did they feel that their concerns would be discounted?

M1979

Unsafe access!

Initial report

A pilot embarked on a loaded log-carrying vessel which was about to depart. There was no safe walkway over or around the logs. The only way the crew could access the forecastle was either by balancing on the railings around the ship's side or by climbing over the logs. None of the crew wore the right PPE to climb safely over the logs, and those balancing on the ship's side were at risk of falling overboard.

The pilot raised the matter with the master and alerted the authorities to these significant safety breaches.

CHIRP Comment

The IMO's Code of Safe Practice for Ships Carrying Timber Deck Cargoes (the 2011 TDC Code) applies to timber-carrying vessels over 24m. Although it is not mandatory, it provides safety guidance that says:

> (2.8.2) "Special measures may be needed to ensure safe access to the top of and across the cargo" and
>
> (2.8.5) "A safe walking surface not less than 600mm wide should be fitted over the cargo" alongside a wire lifeline.

The suggested PPE is a safety harness and lifeline and suitable safety footwear. (It is recommended that ankle boots and spiked overshoes are used to prevent slipping and ankle injuries).

Because ships are under commercial pressure to sail as soon as their cargo is loaded, there might not be time to install a safe walkway to the forecastle. This should have been considered part of the vessel's risk assessment for unberthing and alternative safety measures, such as a temporary walkway, should have been provided. CHIRP has previously received reports of serious injury occurring in similar situations.

Factors relating to this report

Culture – A good safety culture is one in which all reasonable steps are taken to remove or reduce risks. If these steps are difficult to implement or take time to put into place, there is a real danger of 'safety apathy', and we no longer 'see' the risks. We tell ourselves that "the risks are the risks" or convince ourselves that the risks we are taking are 'acceptable'. Where is your company on the Hudson Safety Ladder?

Alerting – The crew would have known that walking on a bulwark rail is dangerous, so what stopped the crew members from pointing this out? Did they feel empowered to raise the alarm, or were they afraid of the consequences? Would you raise the alarm if you saw this on your vessel?

Pressure – When working under pressure, we often prioritise completing the task over keeping ourselves safe.

> Seafarers: Do you ever feel pressured to carry out an unsafe act? Do you ever discuss pressure workloads during safety committee meetings? What can you do to reduce workload pressure?
>
> DPAs: is there inadvertent or deliberate pressure on the onboard managers (Captains & Chief Engineers) to cut corners to save time? How do you know?

Local practices – Loading and securing timber cargo is a high-risk operation. If you are not provided with the correct PPE, would you raise the matter with your head of department or through a company hotline?

M1987

Danger! Working at height!

Initial report

Our reporter sent us this picture of two seafarers working on a crane at height while the vessel was underway at sea in poor weather conditions. They appear to be re-greasing the sloping wires of a crane. Their lifelines are attached to the same wires. Nothing would stop them from falling to the bottom if they slipped and fell.

They are not wearing safety helmets or lifejackets despite being close to the edge of the vessel. This activity took place in full view of the bridge team, but they were neither challenged nor stopped.

If you are sent aloft wearing a harness, make sure there is a rescue plan in place. A rescue plan is a pre-planned procedure to safely retrieve someone suspended at height in a harness. It should also be regularly practised to ensure it can be done safely and quickly

CHIRP Comment

Good equipment design can eliminate operating and maintenance hazards. In this case, it could have been possible to design the crane to be lowered to the deck to allow maintenance to take place without ever sending someone aloft. If that were not possible, the designer could have added hand-holds and connection points for safety harnesses to be attached so that the crew had safe access.

When accepted into service by the Flag State and Classification Society, did either organisation audit the maintenance routines to ensure they were safe? It is unlikely that either body would agree that sending people aloft by balancing on greasy wires is a safe system of work.

Is this then a poor local practice? If so, it is sadly a common practice that occurs on many ships. CHIRP questions why the wire cannot be run out onto the deck and grease added as the wire is rewound in?

The maintainers are wearing loose plastic overshoes – this is a common (but unsafe) way of keeping your footwear clean and avoiding transferring the grease from the wires onto the deck. However, grease and loose overshoes significantly increase the likelihood of slipping and falling, and you should carefully consider the risks if you use them.

The crew member in white overalls appears to be wearing only a harness around the waist, not a full-body harness. An incorrect or badly fitted harness increases the risk of internal injuries when coming to a sudden stop at the end of the lanyard.

Fall arrestors reduce this shock but need you to fall another 2-4m to work correctly. If there is insufficient clearance to fall this distance without hitting an object or the deck, the wearer could hit these objects at full speed and be seriously injured. In the photograph, the crew members would likely fall onto the crane arms before their safety harnesses could work.

Hanging motionless in a harness restricts blood circulation and can cause breathing difficulties (this is often called 'suspension trauma') if you are not rescued within 15 minutes. If you are sent aloft wearing a harness, make sure there is a rescue plan in place. A rescue plan is a pre-planned procedure to safely retrieve someone suspended at height in a harness. It should also be regularly practised to ensure it can be done safely and quickly.

If your ship uses safety harnesses for working aloft, make sure there is a rescue plan in place.

CHIRP questions why this task could not have been delayed until the weather had improved and wonders if this is an indicator that the ship's programme was too full to allow maintenance to be properly and safely completed.

Factors relating to this report

Alerting – Our reporter may have sent this to us because they did not feel able to alert the master or OOW. If you saw this happen on board your vessel, would you be listened to, or is this usual practice? Tell us about your experiences.

Teamwork – Why didn't the bridge team intervene? They are all part of the same team.

Supervision/Local practices – Did this incident occur because supervision was lacking, or was it an acceptable local practice to balance on the wires?

Capability – Are the individuals correctly trained to wear a safety harness? Does the ship have a rescue plan? Are you sent aloft in a harness when no rescue plan exists? What happens on your vessel?

Pressure – Was inappropriate time pressure put on the officers and crew to take risks to keep the vessel running to a timetable? Is profit put above safety? If so, why? This task is probably not time-critical and could have been delayed until the weather conditions were more appropriate.

3. Engineering, Technical and Enviornment

We received an excellent selection of reports on technical topics this year, and we thank all our reporters.

The first report concerns smoke which was seen coming from the Bosun's store on a relatively new, laden LPG tanker, and was caused by lubricating oil leaking onto hot motors. An investigation revealed that the problem had been known about for a long time but maintenance had not been done because the ship's staff believed the ship was poorly-built. In our analysis we acknowledge that lack of confidence in a vessel can erode morale, but point out that a solution to the problem was well within the crew's capabilities.

Another new dual-fuel LNG tanker suffered a fire alarm in the compressor room. The crew confirmed the space was gas free, entered wearing full protective equipment and discovered there was no fire. The alarm was the result of a power failure which ocurred because the uninterruptible power supply (UPS) had developed a fault.

There is a tragic report of a crew member who was killed instantly when a boiler tube plug fell out and they were engulfed in boiling water and steam. The risk assessment was inadequate and the boiler was not blown down. In addition, the officer in charge was very tired so fatigue may have been a factor.

In another case, a vessel's engine failed to respond when the ship was approaching her moorings. The mooring operation was aborted and the vessel suffered a significant delay. It was discovered that a cylinder exhaust valve needed replacing, but the three spares on board all needed to be overhauled before they could be used.

Finally, we have a case where four people suffered burns when a fuel oil pump filter cover released hot oil and gases, and we highlight the need for extra care when working on stored energy systems.

Among the recurring human factors we identified in this section, and questions we posed were:

capability

- do senior officers check during and after critical equipment is overhauled, and does your company try to reduce the number of qualified people needed to perform maintenance tasks?

culture

- do your managers listen to concerns about vessel quality, and so you feel free to challenge unsafe practices?

alerting

- does your company recognise the importance of near-miss reporting and encourage such reports, and is an alarm always activated when a dangerous situation is suspected?

fatigue

- are your crew members given a break if there is a possibility they may be fatigued?

M1798

Smoke inside Bosun's Store on LPG tanker

Initial report

As a laden LPG tanker prepared to depart a berth with a pilot embarked, smoke was detected in the Bosun's store in which the motors for the hydraulic winches were housed. The motors were immediately stopped using the remote shut-off controls and the Master immediately suspended the unberthing operation to allow the alarm to be investigated.

Once the smoke had cleared it was discovered that loose screws were allowing lubricating oil to leak onto the hot motor which started to combust. To enable the vessel to sail, the Master allowed the winches to be restarted for a very short time to allow mooring ropes to be slacked off before the motors were once again stopped. The ropes were recovered by hand. Keeping the winch switched off was the only sensible precaution to avoid a significant fire or explosion.

After the vessel had departed the port, full cleaning was carried out to thoroughly investigate where the source of the leakage had come from. The engineers carried out maintenance on the winch hydraulic pumps and replaced the gaskets to prevent further leakage.

The reporter stated that this incident was the result of a near-miss being ignored for a long time, with maintenance not being done properly because the ship's staff believed that the new ship was poorly built.

CHIRP Comments

This incident reinforces the power of acting on near-miss reports. CHIRP was informed that the crew had known about the loose screws prior to the incident but had not tightened them. If they had, the fire would not have occurred. Fortunately, the fire was immediately extinguished but the potential consequences of an explosion on a laden LPG tanker in a port are obvious.

The comments about the vessel's build quality cannot be substantiated, but CHIRP acknowledges that a crew's belief that their vessel is poorly built can significantly erode morale and could result in a culture of not caring about the material condition of the vessel. However, the speed with which the loose screws were fixed shows that this repair was easily within the crew's capability. The fact that they had not been fixed suggests that the inspection and maintenance routines on board were not being properly carried out and furthermore indicates that supervision was also lacking.

Readers are invited to contrast this report with M1761 (published in Maritime FEEDBACK 64) in which a replacement Master and crew took over a vessel with many defects but immediately took ownership of the vessel's condition and worked to fix all the engineering and documentary shortcomings.

Human Factors relating to this report

Culture – Whether or not the crew's belief that the build quality of the vessel was sub-standard was correct, they believed it to be the case, and such concerns must be taken seriously and properly addressed. Crew morale can significantly impact the quality of work undertaken. In this instance the consequences could have been horrific: significant loss of life on board and in the port, considerable infrastructure damage and a major environmental pollution incident. Readers who are in management positions are encouraged to consider how they would address similar concerns from their crews to ensure that morale and pride can be maintained?

Alerting – Convincing busy crews of the value of near-miss incident reporting is difficult because a near-miss does not result in injury or damage. But such reports offer valuable insights into what *could* happen in the future if they are not acted upon. In this incident, the consequences could have been enormous. In general, people are reluctant to report near-misses because they do not like to admit mistakes. To improve near-miss reporting, managers need to encourage and celebrate those who make reports, make the reporting system as easy and user-friendly as possible, and (most importantly) take every report seriously and act on it as appropriate.

CHIRP published an in-depth report on the value of near-miss reporting in its Annual Digest 2020 which readers can find on our website.

M1794

Fire in LNG carrier compressor room?

Initial report

The Dual Fuel Diesel Electric (DFDE) LNG carrier was on passage at sea at night. At around 0400, the reporter was woken by a fire alarm and a PA announcement that there was a fire in the compressor room, which is an unmanned space (UMS).

Fearing an explosion, the reporter donned PPE and met the senior engineer outside the compressor room. It took both of them to open the door against the positive air pressure in the compartment. From the doorway, they could see no sign of fire or smoke but did not enter immediately because neither had remembered to collect portable gas detectors. They sent for them, and once these had arrived and they confirmed that there was no gas present, the three-person fire team entered the compartment wearing breathing apparatus. A thorough search confirmed that there was no fire.

The bridge team were convinced that they had seen flames coming out of the compressor room. The three-person team checked the adjacent motor room and confirmed no fire.

The emergency party went to the bridge, and the bridge team told them that they had seen a big cloud coming from the compressor room ventilation shaft. This was inspected and found warm, so the team concluded that the bridge team had mistaken a steam cloud for flames and smoke in the darkness.

Further investigation revealed that there had been a loss of electrical power throughout the ship, which had been restored only a few moments before the fire alarm sounded.

The ship continued sailing, but it was discovered that the fire detection panel was faulty, and the gas detection mode switched off, so there was no way to identify a fire or gas leak.

CHIRP Comment

LNG carriers use an inert nitrogen gas system in the motor room and compressor room to keep out air/oxygen and water vapour, which could freeze and damage critical equipment. It also serves to reduce the risk of fire.

Excess nitrogen gas is vented through a small gooseneck vent on the compressor room roof, which can be seen from the bridge. Usually, the quantity released is very small and almost unnoticeable, but in a power failure, the system will expel a greater amount in a sudden burst. The gas is super-cooled, and when it meets the atmosphere over the compressor room roof, it causes water vapour to condense into a steam cloud which can look like smoke.

The vessel had suffered a loss of electrical power because the uninterruptable power supply (UPS) had not worked. The loss of power triggered the fire alarm, further reinforcing the perception of a fire in the compressor room.

Because the vessel was newly built (around a year old) and had only recently entered service, the UPS defect likely existed since she was built but had not been previously detected. A review of the existing UPS test and inspection regime would be beneficial, as would raising the bridge team's awareness of the effects of a loss of power on the nitrogen gas system and the likelihood that a temporary burst of steam may be seen shortly afterwards.

Factors relating to this report

Situational Awareness – People awakened from deep sleep can feel groggy and disoriented for several minutes after they wake up. This hampers our ability to build situational awareness and explains why the portable gas detectors were not collected initially. Written aide memoir lists can sometimes be beneficial in such circumstances.

Alerting – The bridge team was right to raise the alarm because they believed there was a fire in the compressor room.

Teamwork – The report did not mention that a headcount of everyone on board had taken place, but this is good practice in an emergency.

Training – Responding to an emergency at night is more challenging than during the day. Do you conduct emergency drills at night?

M1920

Fatality – Crew member scalded by steam from a boiler

Initial report

After arriving at the port, the engineering watch officer discovered a water leak from the main engine turbocharger drain. Suspecting that the leak was coming from the boiler, the chief engineer ordered it be shut down so that it could be inspected and repaired later that morning during regular working hours.

About five hours later, the second engineer and a fitter entered the boiler space from the bottom manhole door after they were satisfied that all safety precautions had been taken for entry.

They identified a leaky boiler tube, plugged it from the bottom, and then plugged the same tube from the top of the boiler so that the boiler could be restarted. As the second engineer was leaving the boiler through the bottom manhole door, the inserted boiler tube plug fell off along with a small broken section of the water tube, causing hot water and steam from the boiler drum to engulf the fitter who was just about to leave. He was killed instantly.

The investigation identified that the risk assessment for boiler maintenance was inadequate because not all the hazards were identified nor associated risks assessed. It noted that the boiler had not been depressurised, nor the boiler blown down, nor the boiler vent opened to see that depressurisation had taken place. It also concluded that the fatigue of the second engineer was a likely contributing factor.

Fatigue is widespread among seafarers – a 98-hour working week is regrettably permitted by STCW – so the ship's management has a responsibility to ensure that the crew are sufficiently rested before doing hazardous tasks

CHIRP Comments

The water in the boiler had not been 'blown down', nor the steam vented off. This exposed the engineers carrying out the work to a single point of failure. Where double valve isolation is not practical, the entire system should be depressurised and vented. Although 5 hours passed before the team entered the boiler, it is likely that it or the surrounding pipes would be in a 'hot' condition. Engineers are often put under pressure to fix defects so that the ship is ready to sail as soon as possible. This time pressure can result in compromising safety procedures.

Because one tube had already failed, it would be prudent to assume that the others would be in a similarly fragile condition until proven otherwise. The risk assessment should take this into account.

Fatigue is widespread among seafarers – a 98-hour working week is regrettably permitted by STCW – so the ship's management has a responsibility to ensure that the crew are sufficiently rested before doing hazardous tasks like this and then providing support so that essential safety steps (like depressurising the system) aren't missed.

Factors relevant to this report

Fatigue – The report mentions that the 2nd engineer may have been experiencing signs of fatigue. If this was the case, why were they given this task? A common symptom of fatigue is taking risks and not challenging unsafe situations. Somebody who was more rested could have done this job.

Culture – If there was a good company culture concerning safety, then this operation would have been challenged as unsafe. Where is your company on the safety ladder?

Teamwork – Encourage a healthy 'challenge' culture onboard. This reduces the likelihood of such incidents.

Situational awareness – If the engineers who entered the boiler were aware that a failure of any of the water tubes and associated pipes would kill them, would they have entered the boiler?

M1893

Main Engine failure exposes maintenance deficiencies

Initial Report

A vessel was approaching a mooring to perform Ship to Ship (STS) loading operations. As they approached the mooring, the pilot ordered an increase of the revolutions from slow ahead to half ahead. The main engine failed to respond correctly and an investigation revealed that the number one cylinder had a very low exhaust gas temperature. The main engine slow-down function was overridden, but the problem persisted and the mooring was aborted. The vessel went to a nearby anchorage for a fuller investigation and repair.

Number one cylinder exhaust valve required replacement. There were three spares on board but none could be used immediately, and each needed an overhaul before use. The overhaul created a 12-hour delay before the vessel could return to service.

The removed exhaust valve had only been serviced 4,700 hours previously. The maintenance interval for this equipment is 16,000 hours which suggests that the previous maintenance was neither properly completed nor adequately assured by the senior engineer afterwards. This prompted the company to order a fleet-wide review of critical spare parts to ensure they were ready for immediate use.

CHIRP Comment

The pilot made the right decision to abort the planned manoeuvre in restricted waters because he did not have confidence in the main engine. Luckily the incident occurred in an area where tugs and shore assistance were readily available.

The exhaust valve failure so soon after the previous maintenance interval could indicate poor engineering standards. These can result from insufficient training, supervision or time to adequately maintain the spares. It could also result from inappropriate procurement choices: cheap and poor-quality parts may not last as long as expected.

Items identified as critical spares should be in a good enough condition to be used when needed. None of the three spares carried was in this condition, which could be bad luck or an indication that they were listed as a critical spare for documentary, inspection and audit purposes only. The company had concerns because they ordered a fleet-wide review of spare parts.

Factors relating to this report

Complacency (over-confidence) – The failed exhaust valve had about 70% of its service life left. It should not have failed if it was maintained correctly, indicating that insufficient priority was placed on maintaining critical spare parts and engineering standards.

Capability – Does a senior officer check maintained critical equipment before re-assembling it, or is this left to more junior engineers? If you are a junior engineer, do you get the necessary support when maintaining items of critical equipment? Are you aware of what constitutes critical equipment on your vessel?

Local practices – The manufacturers' maintenance instructions should always be followed. Following practices for maintenance which have been passed down by others but are not in compliance with the manufacturer's requirements is unsafe and can be dangerous.

M1895

Personal Injury: Multiple crew burns in engine room

An engine crew suffered burns from the fuel oil pump of the auxiliary boiler

Risk Category/Severity: High (2 LWC Lost Workday Case, 1 RWC Restricted Workday case, 1 FAC First aid case)

The reporter told us that the chief engineer held the daily meeting at 8 am to discuss the work plan for the day with the senior engineer and the rest of the engine officers and crew. Among others, the inspection and maintenance of the auxiliary boiler's No1 fuel oil pump filter was discussed. A Toolbox meeting was held regarding the precautions and hazards associated with the maintenance work.

The work commenced after lunch at around 13:40. The senior engineer was about to dismantle and remove the pump's filter cover when hot fuel and gases suddenly escaped.

The senior engineer, two wipers and one engine cadet assigned to the work suffered burns on their faces, skin, neck, and hands from the hot oil spray.

All injured crew were offered first aid and immediately transferred to the local hospital for further treatment and medical examinations. The senior engineering officer and

the wiper were kept in the hospital, and the cadet and the other wiper returned to the vessel. The senior engineer and the wiper were eventually repatriated 11 days later.

The specific work was planned and had been carried out on the other fuel pump a month earlier with the same senior engineer accompanied by another engineer.

At the time of the injury, the senior engineer undertook the main work. There was no dedicated assigned supervisor as stated in the Permit to Work (PtW) - the senior engineer had been considered the supervisor for the job.

According to the witness statements, at the time of the incident the pump was switched to manual control and was secured in a stop position. The pump was isolated by closing the inlet and outlet valves. At that time, the system's delivery pressure indicated 1.5 bars. The engineer proceeded with unscrewing the bolts of the filter cover without releasing the pressure from the vent cock fitted to the system.

Following the chief engineer's feedback, the outlet and inlet valves were checked immediately after the incident. Both pressure gauges, one after the delivery valve and one after the suction valve, were working correctly.

Before the commencement of the work, a job hazard analysis, cold work, and pressure pipeline work permits had been carried out. From the review of the evidence provided, it was noted that the pressurised pipes had been considered as indicated on the work permits and the risk analysis form.

All four engine crew had received PPE and familiarised themselves with the company's SMS procedures. No work/rest hours non-conformities were applicable to the injured crew, and no other activities were taking place in the nearby area.

CHIRP Comment

The uncontrolled release of stored pressure is a recurring factor in many reports received by CHIRP. Working on stored energy systems (heat, pressure, potential, tension etc.) always requires additional care, and CHIRP encourages the use of written checklists to confirm that the pressure is reduced, e.g. in this case, by ensuring the pressure relief valve was open before work was started.

Distraction or forgetfulness could have been a factor, especially given that the time gap between the toolbox talk in the morning and the work taking place in the afternoon was almost 6 hours. During that time, the material state of the system could have altered, and furthermore the team could have forgotten critical pieces of information, e.g. whether the pipe was pressurised or not.The PtW system is an independent audit that a safe system of work is in place. By signing the PtW and then conducting the work, the senior engineer undermined the critical supervisory value of the PtW. CHIRP suggests that where the senior engineer is the only one qualified to do the work, another engineer assess the PtW prior to it being signed off. This does, though, rely on the senior engineer being willing to be held to account! The work had been completed a month earlier with two qualified officers. Cadets are not qualified and are still under training. The Permit to Work and the RA should have identified the experience required to carry out the job.

Although 1.5 bar pressure may not seem high, in anything other than a very short pipe it would be sufficient to eject a significant quantity of liquid as the pressure was released. The temperature of the liquid suggests that not enough time had been allowed for the liquid to cool after the pipe was isolated. Does this indicate that the team were under time pressure?

Toolbox talks are a good safety management tool, but they must be carried out in an environment where everyone can hear what is taking place and respond accordingly. The toolbox meeting was conducted in the morning, but the work didn't been repeated.

Factors relating to this report

Communications – Communications appeared to be very ineffective. The PtW and RA discussed in the morning during the toolbox meeting identified the pressure in the system. However, it did not prompt the necessary action required when the work was carried out 5 hours later. If you were assigned to this work, would you want to hear the RA and the PtW requirements again?

Capability – This work had been carried out a month earlier with another engineer officer and presumably two officrs were considered sufficient to carry out the work. This time there was only one engineer. Did this lack of experience contribute to the incident?

Culture – The PtW specifies a supervisor to take charge of the work, but in this case the supervisor was the one doing the work. Why did the chief engineer during the toolbox meeting not assign another engineer? Was this challenged? If the senior engineer accepted being the supervisor, why did he do the job himself, removing a significant safety barrier?

As this work is controlled by a permit to work, if the requirements designed to ensure accountability are not achieved, then the work must not progress and be stopped.

4. Pilot Boarding and Pilotage

Many of the reports in this section are depressingly familiar, because many ships seem incapable of rigging pilot boarding arrangements correctly.

We begin with a report of two cases where accommodation ladder wires parted when used in a combination rig. Both ladders were mounted in exposed locations and in one case the bolts securing the fall wires failed, while in the other a gangway wire parted. We recommend reducing the period for replacing wire falls and cite helpful ICS guidance (again).

We then have a report of a combination ladder where the ropes were all affixed solely with overhand knots! This is so unseamanlike it beggars belief, and we point out the correct knots to use – a round turn and two half hitches or a bowline.

In the next report a pilot found a ladder attached to a rotten handrail, in a position where there were no handholds and where there were numerous trip hazards in the vicinity. The master informed the pilot that the ladder was moved in response to a request from the shore, but he did not challenge the request or point out the drawbacks of moving the ladder from its normal location.

Next we learn of a helm order which was wrongly applied during pilotage, but was noticed by the master and OOW, who immediately gave the helmsman the correct order.

Finally, a pilot required changes to a combination ladder arrangement, and even gave the ship drawings of the changes to be made, but when he boarded the same ship two months later the arrangement was unchanged. There was a new master, who was unaware of the pilot's requirements because they had not been passed to him or the company.

These reports are extremely worrying, because in most cases the pilot cannot see the defects in the boarding arrangements until he reaches the maindeck. We have a duty to ensure the safety of all pilots.

Among the recurring human factors and questions we raise in this section are:

alerting
- is it difficult to tell your company about deficiencies, and do management react poorly to bad news?
- does the pilot always inform the bridge team of current and future intentions?

culture
- do you have experience of a poor communication culture, and do people listen to your concerns?
- do you have a robust safety and maintenance culture or are errors simply repeated (the normalisation of deviance)?

communication
- do you challenge instructions that require a departure from authorised procedures?
- do you recognise the value of closed-loop communications and use them on your ship?
- situational awareness
- do you check equipment settings throughout the watch?
- do you conduct a dynamic risk assessment to ensure working areas are safe?

teamwork
- a high-performing team is open to constructive challenges, whilst poorly-performing teams do not speak up. Which are you?


Kvichak
PILOTS

M1852

Accommodation ladder fails after pilot embarkation

Initial report

A pilot boarded a ship using a combination rig. After their embarkation, and while the accommodation ladder was being recovered, the wire falls parted, and the accommodation ladder dropped to the sea and trailed in the water as the vessel was underway to the port. The Master alerted the pilot to what had happened when the pilot reached the bridge.

A subsequent inspection revealed that the bolts securing the wire had failed. A full port state control inspection took place the next day following a report on the incident. The accommodation ladder had been inspected by a classification society 18 months earlier.

The Master undertook remedial action with respect to the accommodation ladder and the fall securing.

CHIRP Comment

Pilot boarding arrangements are regularly featured in our Maritime FEEDBACK newsletters. However, the accommodation ladder is often perceived by ships' crews to be less of a risk because it is a robust structure and viewed as a part of the hull's structure. Because of these factors, accommodation ladders can be overlooked when undertaking ladder maintenance, especially items such as the hull fixtures to which the wires are affixed. Like the pilot ladder, it is often difficult for a pilot to fully appraise the safety standards of the accommodation ladder's fittings prior to boarding. This incident shows it is also an area of vulnerability and CHIRP wants to highlight this.

Many vessels, especially bulk carriers and tankers, have accommodation ladders that are positioned on exposed areas of the main deck where heavy seas and spray, combined with cargo residue and dust, can affect the fixtures and fittings and bring about accelerated corrosion. Access is often difficult, hampering inspections and maintenance. Design is a significant latent factor in this incident, which could have had extremely severe consequences for the pilot.

The photographs shown below highlight another failure of a gangway that has just occurred at the time of writing this report where the gangway wire had parted just after the pilot boarded the vessel.

SOLAS regulation II-1/3-9 states that all wires used to support the means of embarkation and disembarkation shall be maintained as specified in SOLAS regulation III/20.4 which states that falls should be 'renewed when necessary due to the deterioration of the falls or at intervals of not more than 5 years, whichever is the earlier'.

Reducing the periodicity for changing the falls to between 18 and 30 months for vessels that have accommodation ladders in these exposed areas should be considered, as should changes to the design for securing the falls. However, thorough maintenance must always be provided to the wires, sheaves and fixtures no matter how difficult the access to the wires may be.

The International Chamber of Shipping's (ICS) publication "Shipping Industry Guidance on Pilot Transfer Arrangements, Ensuring Compliance with SOLAS" very clearly describes the safe rigging requirements for pilots, including outlining the responsibilities for shore and on board management plus details for rigging of trapdoor arrangements for combination ladders which is described in IMO resolution A.1045(27).

Some shipping companies employ a permit to work (PtW) system for pilot boarding operations and CHIRP strongly urges all companies to consider adopting this idea as best practice: it is not onerous and can easily be added to the SMS. It would provide assurance to pilots that the vessel takes their safety seriously.

Pilots have the right to decline to board vessels offering defective boarding arrangements, which can result in serious delay [and] report ... which could lead to a full port state control inspection with the risk of delay and financial penalties

The ICS publication makes a very important point with respect to human behaviour: "a pilot who has climbed a correctly rigged ladder, and attended by an officer and a deck party, will be in the right frame of mind to give their best attention to the safety of the vessel." In effect, the pilot's integration into the bridge team starts at embarkation, and not when they arrive on the bridge.

Human Factors relating to this report

Capability – Is your team capable of recognising a worn or corroded securing fitting?

Is your management team receptive to suggestions for change for poorly designed equipment? Does your company operate a Request for Change system?

Culture – Is there a culture of checking items of equipment to see if they are fit for purpose before use?

Does your company have a culture which does not operate at the minimum standards and instead sets higher standards? Do you feel that your gangway wires could be changed more frequently given that a person's life is dependent on their condition and strength?

What procedures does your company employ to confirm that the pilot boarding equipment is safe to use? Does your company have a permit to work system for pilot operations?

Local practices – Is the rigging of pilot ladders part of your vessel's Permit to Work system?

M1875

Poor choice of knot puts pilot in jeopardy

Initial report

While boarding a vessel at sea a pilot found that the combination ladder was affixed solely by overhand knots (see pictures) . These easily unravel if there is strain from the standing part of the rope, e.g., under the weight of a pilot as they ascend or descend the ladder. This type of knot must never be used in the rigging of a pilot ladder or gangway.

CHIRP Comment

The correct knot in these circumstances is either a round turn and two half hitches or a bowline. The rigging of a gangway which is to be used as part of a combination ladder arrangement is a task normally undertaken by 2-3 deck crew. It should then be inspected by the officer detailed to meet the pilot.

The repeated use of overhand knots in this case indicates that either the officer did not correctly supervise and inspect, or that the crew have become desensitized to a deviance from standard procedures: the local practice on the ship or within the company for securing the pilot ladder rope with an overhand knot had become the accepted norm.

Despite being incorrect there appears to be no culture of challenge by the crew or officers to secure the ropework with the correct knot.

Human Factors relating to this report

Capability – Knowing which knot to use in a particular situation is an essential seamanship skill that every deck hand should learn at the start of their career, but in this incident, it appears that neither the crewmember who tied the knot nor those working with them recognised that this was the wrong knot to use. Is this a training gap?

Culture – The wrong knot was used repeatedly but appears not to have been challenged. This is known as a 'normalisation of deviance' which indicates that there is a culture either of acceptance of poor practice or a lack of empowerment to challenge obvious safety deficiencies.

Teamwork – A high-performing team is one where individuals are open to supportive and constructive challenges from other team-members. This ensures that standards are maintained (or even enhanced) and everyone learns from each other.

By contrast, members of poorly performing teams may not speak up either because they lack confidence ("Will I look silly if I'm wrong?") or because they fear reprisals ("Will I get into trouble for speaking up?") or because they don't want to embarrass another team member ("I don't want to get them into trouble"). As a result, opportunities to improve are missed and dangerous situations are created.

M2051

Failure to challenge authority leads to a dangerous occurrence

Initial report

A pilot boarded a tanker at anchor. When they arrived at the top of the ladder, they discovered that it was tied to a rotten railing, there were no suitable hand-holds nearby, and there were many trip hazards on the deck near the embarkation point.

When the pilot raised this with the master, he was told that the ladder was not usually rigged in that position but had instead been moved to accommodate the pilot station's direction to rig a 7m ladder. This was higher than the 5m maximum height at the normal embarkation point, so the ladder had been moved.

CHIRP Comment

The master should have challenged the pilot station's request to move the ladder from its designated position on safety grounds. In many cultures, authority figures are not challenged, which might have been the case in this situation. However, the master and crew know their vessel best! If the request was made because of a high sea state or significant swell, CHIRP would question whether safe embarkation would have been possible in such conditions.

Factors relating to this report

Communication – Vessels should challenge any direction that means a departure from authorised procedures, particularly where safety could be compromised.

Situational awareness – Before any activity, particularly one which deviates from normal procedures, a dynamic risk assessment is vital to ensure that the area is safe. Had this been undertaken effectively, the crew should have noticed that the ladder's fixing point was unsuitable.

Culture – The poor state of maintenance indicates that the vessel's safety and maintenance culture was inadequate. It also suggests a lack of external inspections and audits at the organisational level.

Pressure – The crew put themselves under self-imposed pressure to provide a pilot ladder at 7m despite knowing this would be less safe than the designated embarkation point.

M2048

Bridge Resource Management - Issues concerning helm execution

Initial report

A vessel was entering the harbour by day with a pilot on board. After settling on a course of 168°, the pilot asked for a new course of 170° to set up for a wide turn onto the next (160°) leg.

The helm correctly repeated back the 170° course to the pilot, who then looked down at their portable pilot unit (PPU). When they looked up, they saw that the ship had started to swing to port. The master and OOW challenged the error just as the pilot realised what was happening, and the swing was quickly stopped.

One possibility considered by the pilot was that the helm might have had the next (160°) course in mind, which was to port. Visually too, there was a shoal beacon fine on the starboard bow, and the helm might have intuitively turned to open the distance from that navigational hazard.

The pilot put the incident down to being a human factor slip, which he felt reinforced the need to check the rudder indicator with all course changes.

CHIRP Comment

The reporter (pilot) is commended for self-reporting, a sign of a strong safety culture at that port. Similarly, the use of closed-loop communication by the pilot and helmsperson and the swift challenges by the master and OOW indicate a strong safety culture among the crew.

Closed-loop communications are a good protocol for all safety-critical communications.

Several environmental stressors can affect how the helmsperson responds to helm orders. Creating the right communications environment with clear, concise communications will help the helmsman interpret the orders correctly. Providing advanced intentions of helm action at critical points in pilotage assists the bridge team in anticipating the pilot's action. In this instance, the clearest order would have been "Starboard wheel, steer 170°." Some pilots augment their spoken orders with non-verbal signals, such as raising an arm or pointing in the desired direction, to minimise the risk of confusion. This is a good practice that CHIRP encourages OOWs and other pilots to emulate.

Factors relating to this report

Communications – Ensuring that the spoken message has been received and understood and that the desired outcome is implemented is crucial during navigation manoeuvres.

Different pilots and different bridge teams will all do things slightly differently. Ensuring that there is closed-loop communication at all stages of pilotage for helm and engine orders creates consistency and will improve navigational safety.

Alerting – Keeping the bridge team informed of current and future intentions reduces the risk that others will anticipate or misinterpret orders. This is particularly useful in times of high or low workload.

Local practices – The master's standing orders concerning CPA were not followed.

Situational awareness – The radar and AIS on the tanker were not working well if targets were only detected at close range. The OOW should periodically check equipment settings throughout the watch, particularly if the weather or sea-state changes, and use visual sightings of vessels at range to determine whether the radar and AIS are working as expected.

Port states or individual port authorities are strongly encouraged to empower their pilots with "stop work" authority – to refuse to board vessels with non-compliant or unsafe pilot ladders

Teamwork – The master and the OOW reacted swiftly to the error; this shows a commendably high level of teamwork. Pilots often have many jobs during the day that can result in them feeling tired and making the occasional slip, and it is at these moments that they need backup and support from the bridge team. When you are on the bridge of your next ship, consider how well you work as a team and what you can do to improve bridge teamwork. Does your bridge team ever conduct a post-arrival/departure debrief?

M2065

Failure to communicate a change in the pilot boarding arrangement

Initial report

Combination ladders: Trapdoor Type Combination

The pilot who reported this incident had reported the same non-compliant transfer arrangements on this vessel two months earlier. At that time, the master was advised and given drawings of the required modifications. The port state was also informed. On arrival at the port two months later, nothing had been done to rectify the situation.

The new master on board knew nothing of the previous non-compliance report. As part of the trapdoor combination, the pilot ladder could not rest against the ship's side. It was hanging free of the ship's side by 200mm. This time a formal notification was given to the Port State Control authorities to attend the vessel.

CHIRP Comment

This report highlights several issues in the reporting culture of the company.

CHIRP is very surprised that the ship manager was not informed, so plans using the drawing provided by the pilot were not utilised to make the arrangements compliant. What is equally worrying is that the next master (who would visit this port because it is on a liner service) would have the same non-compliance matter raised against the vessel. From a pilot's safety perspective, this deficiency is very dangerous, and the ship's staff seem to have given scant regard to the deficiency.

Pilotage and port state authorities are generally considerate when genuine first mistakes are made, and advice is given to rectify the problem. They are not so receptive when the advice is completely ignored. Port states or individual port authorities are strongly encouraged to empower their pilots with "stop work" authority – to refuse to board vessels with non-compliant or unsafe pilot ladders. They could make this clear to visiting vessels in their pre-arrival documentation.

Factors relating to this report

Alerting – Alerting the company of deficiencies seems to have been a difficult thing to do. It is unclear why, but it is likely that management does not react well to bad news, and therefore, such news is not delivered. The new master is left with a more severe deficiency, and the company's reputation is damaged.

Culture – There would appear to be a poor communication culture in the company where bad news is not encouraged. Have you experienced similar issues on your ship? Does nobody want to listen to your concerns? Contact CHIRP if your safety management process is not working and you are not being heard.

5. COLREGS and navigation

We begin this section with a report about a laden tanker entering a harbour. The tanker was in perfect working order, there was a comprehensive master-pilot exchange with an experienced pilot, and two tugs were made fast. Despite this, the pilot planned the berthing based upon a current running in a westerly direction, when in fact it was running to the east. The tanker grounded and suffered rudder damage, yet nobody questioned the pilot's actions until it was too late.

We then read about two vessels approaching a harbour at night. The give way vessel did not take action, forcing the stand-on vessel to take drastic action to avoid a collision. This is followed by a report concerning a tanker which only detected a fishing vessel when it was one mile ahead. The fishing vessel did not alter course, so the tanker attempted to keep out of the way but a collision ensued.

There is a report about a tanker which became concerned when it detected a container ship attempting to use the deep water route in a TSS. The container ship eventually went the wrong way through the TSS.

Finally, we hear of a passenger ferry approaching a port which was forced to take avoiding action when another vessel was leaving port with no prior warning from the port control. This was in spite of the fact that the ferry arrived at the same time every day.

Among the recurring human factors in this section are the following, which are accompanied by some of our observations:

situational awareness

- did fatigue impair the ability of the OOW, and what steps can be taken to ensure situational awareness is maintained?
- an improperly-tuned radar can fail to locate targets and thus impair situational awareness.

alerting

- does the heirarchical nature of bridge teams and the presence of a stranger (the pilot) discourage junior staff members from raising alerts?
- CHIRP encourages the use of light and sound signals in accordance with Colregs, rather than reliance on VHF for collision avoidance.
- Standing orders should make the requirement to call the master in good time clear and unequivocal. How clear are the standing orders on your ship?

communications

- clear communications from every port authority are vital.
- be aware of all available means of communication, and always inform the master in good time if you have any concerns.
- communications over VHF are fraught with risk and we caution against using it as a matter of course.

M1828

Touching bottom while berthing causes rudder damage

Initial report

A loaded tanker (14m draft) entered harbour and approached its berth. The bridge and mooring stations were fully crewed. The pilot embarked and a comprehensive master-pilot exchange took place. All equipment was reported in good condition and working. Two tugs were made fast – one at the bow and one at the stern.

As it passed the mooring dolphin, the vessel turned short round to port, assisted by the tugs. About 5 minutes later the officer at the stern alerted the bridge that the vessel was drifting towards the end of the breakwater. The current was running in an easterly direction during the turn to port, which caused the drift, although the pilot believed that it was running in a westerly direction. The pilot gave several engine orders from dead slow to full ahead to increase the distance from the breakwater, but a noise was heard on the port quarter. Following checks within the engine room to ensure the hull was not breached, the vessel berthed port side alongside at the oil terminal.

An investigation revealed that there were no fatigue issues nor any substance abuse. All equipment was in-class and properly maintained. The passage plan berth to berth was very comprehensive and under-keel clearance (UKC) calculations were prepared and shown to the pilot at the master-pilot exchange. All navigational equipment relevant to this passage plan was being used and accurate. The bridge team members were adequately trained for making proper use of all navigational aids, and for being aware at all times of the vessel's position. The master-pilot exchanged information and pilot card was properly completed and the pilot was fully aware of vessel's particulars and manoeuvring characteristics.

Because pilots, masters and officers have different areas of experience and training it is essential that the skills of each be combined into a cohesive working relationship during this critical phase of the passage plan

CHIRP Comment

The vessel was properly attended to by the tugs which were positioned to make a turn to port to align the vessel for a portside alongside berthing. However, the current which was thought by the pilot to be flowing in a westerly direction and would assist the vessel during the turn was flowing in the opposite direction.

Given that the pilot had intimate knowledge of this port and berth and had been briefed on the tide and current conditions, this was a skill-based error. However, it was not challenged by anyone else on the bridge, including the master, nor the masters of the attached tugs. A group-think scenario had developed because everyone placed too much implicit trust in the pilot.

Crucially there was a loss of situational awareness – that the stern was drifting towards the jetty – until this was challenged by the officer at the stern.

Several opportunities to ensure that the pilot and bridge team were equally aware of the environmental conditions were missed. The bridge team would almost certainly have held an entering-harbour brief on approach to the port at which tide and current would have been discussed. The master-pilot exchange provided a second opportunity to discuss the direction of tide. Assuming that the pilot was providing a running commentary to the master as to his intentions (CHIRP recognises that this does not always occur, particularly where language barriers exist) then the choice of a turn to port could have been challenged prior to the turn commencing.

Because pilots, masters and officers have different areas of experience and training it is essential that the skills of each be combined into a cohesive working relationship during this critical phase of the passage plan.

Human Factors relating to this report

Teamwork – To what extent was the pilot integrated into the bridge team after the master-pilot exchange, or did the team mentally disengage once the pilot assumed the navigation? Bridge teams can become misled by the incorrect belief that because pilots have the best working knowledge of the port their decisions are automatically right. To counter this, Bridge Resource Management training courses actively promote challenges and questions during the decision-making process to avoid group-think.

Competency – The master retains ultimate responsibility for the safety of the vessel even with a pilot embarked. Effective master-pilot relationships are an important command skill and should be assessed by the company when an officer is selected for command.

Situational Awareness – What steps should the bridge team and pilot have taken to ensure that situational awareness was maintained and to confirm that they were working with the most accurate information?

Alerting – Does the hierarchical nature of bridge teams, and the presence of a stranger (the pilot) discourage junior team members from raising navigational alerts? Masters are encouraged to promote navigational challenges from their bridge team. Pilots are likewise encouraged to be open to challenge as a means of swiftly building an integrated bridge team.

M1809

Breach of the Collision Regulations Rule 15

Initial report

As a vessel approached a harbour at night in good visibility, an OOW detected a second vessel 9nm on their port side which was also heading for the port. Radar plotting showed that the second vessel would cross their bow at only 0.3nm – a close quarters situation in which the second vessel was the give-way vessel according to the Collision Regulations.

The lookout in the first vessel (the stand-on vessel) kept a close watch on the give-way vessel, which appeared not to be taking action to avoid collision in accordance with the Collision Regulations, so the OOW called the give-way vessel on VHF to request the give-way vessel's intentions. It became evident during the call that there was little monitoring of the situation from the give-way vessel. After a while the OOW of the give-way vessel stated he would like the stand-on vessel to "just keep going" and cross his stern.

The OOW of the stand-on vessel was not happy with this reply and stated that they would maintain their course and speed and asked the give-way vessel to take early and effective action in accordance with the Collision Regulations. The OOW of the give-way vessel said "OK, I will do my best to keep clear"

The OOW in the stand-on vessel monitored the situation for another 3 minutes by which time the range between the two vessels had reduced to 2nm. It was apparent that the give-way vessel was not taking any action so the OOW in the stand-on vessel altered course 40° to starboard to parallel the second vessel's course, and reduced speed to 4 knots. To avoid any chance of miscommunications, no further radio calls were attempted.

The action by the OOW resulted in the second vessel passing clear at a range of 1.7 nm down their port side. Once the give-way vessel was safely past and clear, the stand-on vessel resumed her course and increased speed.

Using ECDIS it was confirmed that the give-way vessel had not taken action to keep clear as agreed on the VHF.

CHIRP confirmed with the reporter that they had not made use of their signalling lamp or ship's whistle during the incident, nor were compass bearings taken of the give-way vessel during this crossing situation.

The reporter has highlighted a breach of the collision regulations and was particularly concerned that the give-way vessel took no action to keep clear and pass at a safe distance despite having agreed to do so.

CHIRP Comment

CHIRP applauds the OOW in the stand-on vessel for maintaining a proper lookout and taking decisive action to avoid the risk of collision. However, CHIRP strongly discourages the use of VHF for the purposes of avoiding collision because of the risks of miscommunication or misinterpretation by either vessel which can inadvertently increase the risk of collision. Moreover, the use of VHF can tempt vessels to make 'arrangements' that deviate from the Collison Regulations (which provide clear requirements for the stand-on and give-way vessels).

In this case, the two power-driven vessels were in sight of one another and crossing so as to involve risk of collision. In this scenario, Rule 15 required the give-way vessel to "keep out of the way and … avoid crossing ahead of the other vessel" and Rule 16 required the give-way vessel to "take early and substantial action to keep well clear." They do not, however, stipulate a minimum separation distance that the give-way vessel must maintain. The rules do allow either vessel, if it is in any doubt as to the other's intentions or actions to "indicate such doubt by giving at least five short and rapid blasts on the whistle. Such signal may be supplemented by a light signal of at least five short and rapid flashes." The rules also allow the stand-on vessel to take action under Rule 17(a)(ii) "by her manoeuvre alone, as soon as it becomes apparent to her that the vessel required to keep out of the way is not taking appropriate action in compliance with these Rules."

The reporter stated that the OOW on the give-way vessel appeared not to have recognised that a risk of collision was developing and CHIRP wonders if fatigue was a factor in this incident.

CHIRP contacted the give-way vessel's company which investigated the incident and determined that their vessel had not acted in accordance with the Collision Regulations (COLREGS). The company instigated a series of training briefs for the fleet which included a full review of the incident, focus on the application of the master's standing orders, the use of effective communications in accordance with the COLREGS and summoning the master to assist when there is doubt about a navigational situation. CHIRP wishes to thank the company for their demonstration of a "just culture" approach in managing this incident report.

Human Factors relating to this report

Situational awareness – Did fatigue impair the ability of the OOW in the give-way vessel to correctly determine that a risk of collision was developing? Was the OOW comfortable with a crossing distance of only 0.3nm?

Communications – Communications given over the VHF have a degree of risk especially if the communication is not clearly understood by the vessel receiving the call. Similarly, confusion will arise if the message is not clear, concise, and positive from the person making the call. Additionally, and often overlooked, is the time that it takes to make a call - valuable reaction time is lost. CHIRP cautions against using VHF as a matter of course.

Alerting – CHIRP encourages the use of the light and sound signals as permitted in the COLREGS in preference to VHF for the purposes of avoiding collision. The use of a directional signalling light for a give-way vessel where there is doubt about the intentions of the give way vessel has high impact on the receiving vessel and cannot be confused, similarly with using a ship's whistle.

Masters' standing orders should make the r equirement to call the master clear and unequivocal. How clear are your master's standing orders? Does your new joining master explain the orders to all officers at the start of their command?

Culture – Was there an on board culture that to seek advice was looked upon as a sign that you could not do your job, and therefore was there was a reluctance to call the master?

M1977

Collision between a tanker and fishing vessel

Initial report

A laden tanker was sailing in an area well known for high levels of commercial and fishing vessel traffic. The sea state was moderate with Beaufort wind force 5, although visibility was good. The ARPA radars were set at 6nm and 12nm for the X and S-band, respectively, linked to the ECDIS.

At 0449, an AIS target appeared at a range of 1nm. Neither the OOW nor lookout could see anything through their binoculars, but a bright light was switched on from the fishing boat shortly afterwards.

The OOW detected the fishing boat on the port bow and assessed that there was a risk of collision as the CPA was 0.01nm.

The OOW repeatedly flashed the fishing boat with an Aldis lamp but observed no response or action by the fishing vessel. At 0504, the OOW judged that the fishing vessel was not taking action to avoid collision and ordered hard starboard rudder. At 0506, the fishing boat hit the tanker's port side. The fishing vessel maintained its course and speed until it collided with the tanker. There was no evidence that it was engaged in fishing.

After the collision, the fishing vessel briefly slowed and then resumed its original course and speed.

At 0520, the duty officer reported the collision to the master. The master immediately proceeded to the bridge, ordered the engine to standby and started investigating the condition of the fishing boat and the vessel.

At 0525, the master took over the watch from the OOW and called the chief officer to check for damage.

The master observed the fishing boat for about 30 minutes to determine whether she was damaged and needed any help. Attempts to communicate with the fishing vessel through VHF were unsuccessful. The fishing boat appeared to be without serious damage, and she resumed her voyage.

At 0543 the master called the operating company using the emergency contact number and reported the incident. The VDR data were saved and ECDIS screenshots were taken as well. The lookout and OOW were tested for alcohol in accordance with company policy, and both had negative (alcohol free) results.

Both vessels resumed their passages after the incident, and the master of the tanker reported the incident to local port authorities. When the tanker reached port, there was attendance by the local P&I and Class, and the marine superintendent for the management company.

Findings were damage to the hull shell plating, which required further examination and subsequent repairs by an agreed due date.

A review of the VDR playback revealed no significant traffic in the vicinity at the time of the accident. The fishing boat switched on her navigational lights just one mile before the accident and then took no action to avoid the collision, keeping her course and speed unchanged.

The VDR playback revealed that neither radar was properly tuned – both had the radar clutter too high, which decreased the radars' efficiency in detecting weak targets. The visibility was good and there was no rain. Additionally, the CPA and TCPA that had been set were different from the requirements stated in the master's standing orders.

Although the Aldis was used by the OOW and was verified through the VDR, the ship's whistle was not used.

CHIRP Comment

Both vessels failed to maintain a proper lookout, and the tanker's radar was incorrectly configured, making it harder to detect small vessels in the moderate seas. The lack of navigation lights on the fishing vessel made detection even harder. The AIS symbol does not always align with the radar echo return – were the lookout and OOW looking in the right place before the fishing vessel turned on its navigation lights?

The tanker's OOW correctly used the Aldis lamp to attract the attention of the fishing vessel but should also have used sound signals (5 short blasts) which would also have alerted the master that something was wrong.

The tanker's OOW correctly maintained course and speed (Rule 17) but subsequently took action "as will best aid to avoid collision" when it became apparent that the fishing vessel was not taking avoiding action.

CHIRP could not discover why the OOW did not inform the master of the collision until 15 minutes afterwards – this is highly unusual.

The OOW should periodically check equipment settings throughout the watch, particularly if the weather or sea-state changes, and use visual sightings of vessels at range to determine whether the radar and AIS are working as expected

Factors related to this report

Capability – Did the OOW on the tanker know how to set up the radar in the prevailing weather conditions correctly? Was this equipment different to that which the OOW had been trained to use? Were they shown when they joined and had they been assessed by the master or chief officer before taking their first watch? Does your vessel have checklists and aide memoirs to help you set up the bridge equipment?

Was the OOW on the fishing vessel aware of their responsibilities under the collision regulations? They were the give-way vessel yet did not take action to avoid collision.

Communications – There were several ineffective channels of communication in this incident. The fishing vessel did not respond to VHF or light signals; sound signals were not used to alert the fishing vessel. The tanker's master was not told of the incident until 15 minutes later.

Local practices – The master's standing orders concerning CPA were not followed.

Situational awareness – The radar and AIS on the tanker were not working well if targets were only detected at close range. The OOW should periodically check equipment settings throughout the watch, particularly if the weather

or sea-state changes, and use visual sightings of vessels at range to determine whether the radar and AIS are working as expected.

M2036

Breach of TSS regulations

Initial Report

Shortly after midnight, a tanker with a deep sea pilot on board was approaching a traffic separation scheme (TSS). The ship's draught was 20 meters. The tanker was about to enter the internationally recognised designated deep water route.

The master of a container ship with a draught of 14m approaching the same TSS informed the tanker that both vessels would arrive at the entrance of the deep water lane at the same time and asked the tanker to give him more room.

The pilot on the tanker informed the container vessel that the tanker was following the deep water track and directed that the container vessel should take the other lane, east of the deep water lane, and it should avoid overtaking at that point.

Instead of entering the alternate TSS lane to the east, the container vessel entered the southerly TSS lane against the traffic flow, which was clearly marked on the charts. The container ship called several oncoming vessels to request they alter course to starboard to permit the container ship safe passage.

Shortly afterwards, the Coastguard asked the container ship what it was doing in the opposite lane.

CHIRP Comment

Either of the vessels could have slowed down to avoid a close-quarters situation at the entrance to the TSS deep water lane. It is considered unlikely that a few minutes delay at this point would materially change the arrival time at their next port. The container vessel could safely have navigated the alternative lane to the east but ignored the pilot's advice to do so and entered the lane to the south, against the general direction of traffic flow for that lane.

CHIRP could not determine whether the container vessel's Standard Operating Procedures empowered the OOW to amend their speed (i.e. slow down) or their nav track, but in such circumstances the master should be called. Slowing down could have generated the space to avoid a close-quarters situation and provided more time to assess the situation. CHIRP encourages watch officers to think in terms of 'time' as well as 'space'.

When approaching a congested area such as the entrance to a traffic separation scheme, it is good practice to prepare a contingency plan if the situation allows and identify the time or place by which you need to make a decision. In this case, the container vessel had a choice of two traffic separation lanes and, when it became apparent that the tanker was using the deep water route, could have elected to use the alternative route to the east.

The container vessel's actions were hazardous and contravened international regulations regarding traffic separation schemes; good seamanship requires vessels to use the correct lane, to proceed in the general direction of traffic flow for that lane, and not impede vessels which are restrained by their draft and manoeuvrability.

CHIRP contacted the container vessel's DPA to get their version of events and they kindly provided CHIRP with their investigation report, which included a full-on-board navigational audit. It found that navigational procedures were not followed, nor the master's standing orders which included calling the master and additionally informing VTS that the vessel intended to enter the opposing traffic lane.

The report found incorrect ship handling, and inadequate hazard and risk identification due to poor situational awareness and the company introduced additional training to improve navigational competence across the fleet. This included Bridge Resource Management training for all new officers and periodic refresher training for navigation officers. They also increased the frequency of inspections by port captains, with additional focus on navigational procedures and their application.This incident was promulgated to the fleet, with masters instructed to convene team meetings to discuss this incident.

CHIRP wants to praise the company for its excellent response and subsequent actions to ensure navigational safety remains a top safety priority.

Factors relating to this report

Pressure – This incident arose because of perceived time pressure. Slowing one vessel down so they arrived at the channel's entrance at different times would not have meaningfully delayed either vessel's journey. Slowing down generates additional time to think through a problem. Thinking about 'time' and not just 'space' is an excellent navigational skill to develop.

Situational Awareness – Workload and distractions is the factor which causes the highest loss of situational awareness. Having the master on the bridge would have provided the additional experience to the bridge team and shared the burden of information overload. Slowing the vessel down to allow more time to assess the risks will significantly improve situational awareness. How many deck officers feel empowered to slow the vessel down, do you?

Alerting – The bridge team on the tanker, nor any of the oncoming vessels in the opposing lane, warned the container vessel that it was in the wrong traffic separation lane, and it was only the intervention by the Coast Guard monitoring station approximately 15 minutes later that brought this to their attention.

M2062

Contingency action to avoid a close-quarter incident with a passenger ferry

Initial report

Our reporter, a passenger ferry captain, writes: "As per the timetable, we arrived at the standby location for the port at the required time. It was daylight, with good visibility and a stiff wind. We worked, as usual, on the pre-arrival checks

and verifications as we closed on the berth. When I called the port per the pre-arrival checklist, I was informed that a large passenger liner had just let go and that I might have to 'slow her up' (referring to my vessel). However, given the proximity to the berth, the other boat and the increasingly confined waters, it was clear that I would have to lose speed quicker than I safely could. So, I had to opt for a rapid turn upwind (to avoid being set onto the nearby lee shore). I continued my turn and completed a 360, and during this time, the passenger liner was clear of the port and the berth we were aiming for. Our distance from the breakwater was approximately three cables when we started the turn.

For each port of arrival, we plan two abort positions. We had passed the first, where 'Standby' is rung, the crew called to stations, the pitch response verified, and hand steering engaged. We had not yet reached the second abort position (approximately four cables from the first), so a direct abort was still viable.

Shortly after passing the first abort position and confirming the items mentioned, I called the harbour for permission to continue into the berth. I was given the all-clear whilst being advised of a departing cruise ship that might be leaving. The operator told me I "might want to slow her up a bit", but it was now clear to me that I would need to abort the arrival to avoid a close-quarters situation with the cruise vessel, which was manoeuvring off her berth. Given the proximity of the lee shore to starboard, I elected to turn to port upwind and gain distance from the shore, together with slackening speed to a minimum.

With the above avoidance measures well underway and having the desired effect, I communicated with the cruise vessel to establish which general direction they intended to take upon clearing the harbour to allow me to plan the rest of my manoeuvre and not result in additional unnecessary risk. With them advising a course to the east initially before turning to the north, I elected to complete a full 360, allowing time and space for the cruise ship to exit the immediate harbour area and for me to generally pick up the standard approach to our berth for arrival.

The main hazards were the proximity of the lee shore, with easterly winds, something that is factored into the passage plan to allow extra room, including the shoaling waters to the south of the berth; this knowledge allowed me to decide on early, positive and bold avoidance measures quickly, rather than allowing the risk to increase by proceeding onwards, even at a reduced speed, and allowing an unnecessary close quarters situation to develop.

As my vessel is on a timetabled service, we arrive and leave at the same time every day, weather permitting. Despite this, the cruise ship was allowed a departure that directly clashed with our arrival. A clash in movements such as this could have been avoided with a simple telephone call or email. After that, we could have timed our arrival later, thus preventing the situation above entirely.

It is worth noting that the bridge team worked well together in the initial arrival, the abort actions, the passage/arrival resumption, and subsequent safe berthing".

CHIRP Comment

The ferry traded time for space and safe water and avoided a close-quarters situation. This was the correct course of action. Readers are encouraged to compare this with report M2036, published in our last edition of FEEDBACK, which highlights the perils of taking the opposite approach.

Port authorities are responsible for managing vessel traffic and would have been aware of the ferry's scheduled arrival time. Cruise vessels operate to an itinerary, but better coordination between the port and the cruise ship would have avoided this incident. This suggests either a breakdown in communication or the ferry's arrival was not correctly considered when the cruise ship planned its departure time. Radio procedure by the port authority was also ambiguous: was "You might want to slow up" a direction or a recommendation?

In smaller ports, particularly those not staffed 24 hours a day, it might be wise to publish notices to mariners directing specific sizes or categories of vessels to broadcast their arrival and departure on the port's VHF working channel. This alerts other vessels in their vicinity and allows them to coordinate with each other. CHIRP encourages small ports to consider whether such a scheme would be appropriate in their harbour.

Factors relating to this report

Local Practices – Port management must not leave marine operations to chance. Establish clear safety risk measures and define procedures to understand what is required for arriving and departing vessels at this port.

Communications – Clear communications from the port authority, which prioritises incoming and outgoing vessel traffic, should be established, especially in ports with limited room to manoeuvre.

As my vessel is on a timetabled service, we arrive and leave at the same time every day, weather permitting. Despite this, the cruise ship was allowed a departure that directly clashed with our arrival. A clash in movements such as this could have been avoided with a simple telephone call or email.

6. Yachts, fishing and recreation

Our first report concerns a fisherman and guest who returned to the fishing vessel in the late evening. It was low water, and access to the vessel was by a vertical ladder. The guest fell into the harbour and the fisherman jumped in to assist. The water temperature was 10˚ C but fortunately both people were rescued before they succumbed to hypothermia.

Next we learn about a yacht tender which hit a charted rock when the helmsman became distracted, and this is followed by the report of an encounter between a yacht and a motor cruiser where both vessels could have done better.

Finally, we have a report about a yacht which went aground in the entrance to an unfamiliar port which was prone to silting. Fortunately, the skipper managed to refloat the yacht but admits they were too focused on advice in the pilot book, which was a few years old, and did not pay enough attention to notes on the chart.

The Insight article in this section is a very interesting paper by Dr. Jess Sparks, demonstrating the link between good working conditions and safety. There is a growing body of research which demonstrates that safe companies are profitable companies, so the points made by Dr. Sparks are relevant to all of us, and are worth careful study.

The recurring safety factors in this section, and our comments are summarised below:

spatial awareness

- all vessels must keep a proper lookout at sea – there are no exceptions.

local practices

- is there a shared understanding of responsibility for safe means of access between your vessel and the port?
- yacht owners should update charts and publications annually whenever possible – they cost less than an accident!

culture

- a good safety culture will assist in fending off distractions.
- to be effective, there must be a shared safety culture between ports and port users.

M1877

Fall from vertical quayside ladder has near-fatal consequences

Initial report

A fisher returned to their vessel with a guest in the late evening after they had met ashore. Both had drunk alcohol. It was low tide, and the vessel was approximately 6m below the quay edge due to the tidal range in that port.

As they climbed down the vertical quayside ladder, the guest fell off the ladder and hit the vessel's hull before falling, injured, into the water. The sea temperature was approximately 10° C (50° F).

The fisher was unable to recover the person in the water and entered the water himself in an attempt to keep the guest from drowning.

A crew member from another fishing vessel moored nearby heard the commotion and managed to recover the injured person and the crew member from the water back onto the deck of the fishing vessel. Due to the effects of the cold water and the injuries, the guest was unresponsive and not breathing.

The port authority's security team called an ambulance and commenced CPR on the casualty until the emergency services arrived, but it took over an hour to lift them from the vessel and up the 6m to the quayside and into the ambulance where they made a full recovery within a few days.

Due to the range of the tide the vessel did not put out a gangway and instead relied on the vertical metal ladder secured to the quay wall. At low tide this generated a significant risk of falling from height and onto the steel deck of the vessel and/or into cold water.

CHIRP Comment

The Master is responsible for ensuring a safe means of access to their vessel. This can be difficult, especially for small vessels that lack the space on board to carry or rig a gangway, or where the tidal range would make the gangway too steep to safely use. In these cases, Masters consider that they have no option but to use the vertical ladders as the only means of access or request a more suitable berth. By contrast, many port authorities view the vertical quayside ladders as 'self-rescue' equipment for anyone who falls into the water. They do not consider them as a safe means of access onto vessels, especially those that lie some distance below the quay edge at low tide. The rules that determine whether it is the port authority or the master that is responsible for providing safe access onto vessels vary by country and are not always clear. CHIRP urges regulators in those jurisdictions to reduce the scope for different interpretations wherever possible.

The need to recover casualties from vessels at low tide is reasonably foreseeable, so ports are strongly encouraged to conduct thorough risk assessments to deal with this scenario and develop an emergency recovery plan. This might require the purchase of specialist equipment or the nomination of a suitable 'casualty recovery' berth.

Ports and vessels' masters are also encouraged to ensure that visiting crews are aware of the local arrangements for summoning emergency assistance and can describe their location to the emergency services when doing so.

Ports and vessels' masters are also encouraged to ensure that visiting crews are aware of the local arrangements for summoning emergency assistance and can describe their location to the emergency services when doing so

Human Factors relating to this report

Design (latent factor) – Vertical ladders are exposed to the elements and prone to damage by vessels berthed alongside. There is no fall protection inherent within the design and unless regularly maintained they are prone to rusting and marine growth

Fit for duty – Alcohol increases the likelihood of an incident occurring and CHIRP recommends that Safety Management System (SMS) risk assessments include alcohol/intoxication as a factor when appropriate, particularly in cases where access arrangements include a climb up and down vertical ladders.

Local practices – CHIRP acknowledges that high tidal ranges preclude the use of gangways, and that many ports lack the space, water, and money to install pontoon berths, so must therefore rely on the use of vertical ladders as the safest means of access.

Is there a shared understanding between the port authority and the vessels regarding who is responsible for providing the means of safe access? This can vary by country and regulatory area. Does your vessel adhere to the local regulations?

Culture – To be effective, there must be a shared safety culture between vessels and port authorities, particularly where regulations on the provision of a safe means of access can be interpreted differently by the port authority and a vessel's Master. Port safety forums are one way of developing this shared safety culture with everyone working to a shared understanding of risks and their control measures.

Capability – Do ports have the correct equipment to facilitate recovery of a casualty from a vessel at low tide, and is this operation regularly practised?

M1969

Boat tender strikes charted rocks at speed

Initial report

Two crew members were performing a tender run ashore at night to collect a third crew member who was returning from shore leave. The helm used the chart plotter to follow the transit courses made earlier that day. The course was not a straight line because it had to account for two rocks that protruded about 50cm above the waterline.

On the trip back to the parent vessel, the tender crew conversed with the crew member they had just collected, who was returning from an extended leave. They were distracted from monitoring the chart plotter and they hit the rocks at around 15-18kts.

The helm and deckhand were both thrown out of the tender by the force of the impact but were otherwise uninjured. Both were wearing life jackets and because the helm was correctly wearing the 'kill cord', the engine shut off. The collected crew member was thrown against the windbreak and sustained bruised ribs.

Both crew members climbed back into the tender and radioed the yacht to tell them what had happened. The tender still worked, so it was carefully navigated back to the yacht. When the tender was lifted out of the water, the crew discovered large holes and gouges in the hull.

CHIRP Comment

Although the rocks were visible in daylight, they were not lit or marked at night, and background lights might have masked their silhouette. Following the previous routes on the chart plotter would have been a sound choice. Still, because of the lack of visual clues, and the conversation with the returning crew member, the helm became distracted from monitoring the chart plotter.

As their attention wandered, they likely forgot about the rocks and instinctively headed directly back to the yacht. At night the second crew member would not have had any visual cues that the tender was off course, so they could not remind the helm to regain the planned track. And unless the tender was being actively tracked by the crew on the yacht, they also would not have been able to raise the alarm.

As their attention wandered, they likely forgot about the rocks and instinctively headed directly back to the yacht

Factors related to this report

Distraction – There is a natural tension between concentrating on navigational safety and keeping your eyes and head 'out of the boat' while simultaneously being friendly and attentive to passengers and guests who might not understand the consequences of distracting the helm from their primary task.

Competence – Night navigation requires different skills to navigating by day. Regular training is necessary to keep these skills current.

Safety culture – A good safety culture will empower the helm to fend off distractions as they arise and deliver a short safety brief at the start of every trip.

M2033

Collision between power-driven vessel and yacht narrowly avoided

Initial report

Our reporter writes, "We were sailing in our yacht, with a flat sea, light wind, and perfect visibility, making about 4 knots on a course of 132° degrees. A very large motorboat came into view dead ahead several miles away and continued towards us on a reciprocal course. We observed this motorboat as it came closer, mainly because its bow pointed directly at us.

As it came closer, it showed no sign of changing course, even though it was motoring and we were sailing. When it was just a few seconds away, we started our engine and made a 90-degree course change to starboard to avoid being run down by it. We do not doubt that, had we not started our engine and turned out of its way, it would have run us down.

Our AIS receiver gave the vessel's name and showed a speed of 12.9 knots. The motor cruiser is a 50-meter-long vessel. We called the vessel on VHF Channel 16 and immediately received a response. We said, 'we are the yacht off your stern that has just had to alter course to avoid being run down by you. The radio operator on the motor cruiser said three times that they had not seen us and seemed to be completely unaware of our presence or that they had nearly run us down."

CHIRP Comment

The power-driven vessel (PDV) should have maintained a proper lookout to "Make a full appraisal of the situation and the risk of collision" and then taken action under rule 18 to "keep out of the way of" the yacht. The yacht avoided a collision by her manoeuvre alone (rule 17). However, the moment it started its engine, it became a PDV; thus, this manoeuvre was required under rule 14 (head-on situations).

Both vessels had an obligation under rule 2 to 'comply with the ordinary practice of seamen', which, in layman's terms, means always using common sense. Although the yacht was strictly correct in maintaining her course and speed, CHIRP suggests that an early and bold alteration to starboard to stop a close-quarters situation developing could have been an equally valid course of action since both vessels have a responsibility (again under rule 2) to avoid a collision.

The yacht might also have considered sounding five short blasts (rule 34d) to indicate that it did not understand the intentions of the PDV. And notwithstanding the risks that CHIRP has previously noted about 'VHF-assisted collisions,' it might also have been prudent to alert the PDV of their presence.

Factors relating to this report

Situational Awareness – The yacht's crew displayed good situational awareness, which was lacking on board the motor cruiser. All vessels must keep a proper lookout at sea – there are no exceptions.

Alerting – When in doubt of another vessel's intentions, five short blasts on the whistle and at night, the flashing of a white light is an effective way to get another vessel's attention. The VHF can also alert them to your presence, but the message should be short, concise, and positive if used.

M2069

A sailing yacht grounded at the entrance to a marina

Initial report

The skipper and five crew of a 17m sailing yacht with a draught of 2.5m were on passage in a large sea area. They approached a port with charted depths that should have presented no difficulties. However, a chart note stated that the marina entrance was prone to silting and that vessels should proceed with caution, keeping a close eye on the depth sounder.

Sails had been lowered about a mile from the marina entrance, and the engine engaged. The crew used up-to-date paper charts and the pilot book for the area. This warned of reports of shallow spots extending up to 50m from the marina breakwater and advised giving this a wide berth.

As they approached the entrance, the following sea became more pronounced as the depth decreased. Mindful of the pilot book's warning, they kept clear of the end of the breakwater and expected to see the three starboard-hand lateral beacons and four port-hand lateral buoys to guide them in.

They began their turn to starboard, having seen a single set of port and starboard lateral buoys inside the entrance and made a course between them. The depth was monitored but reduced quickly, falling below 1m under the keel.

In the belief that this was one of the shallow areas noted on the chart, they continued but grounded shortly afterwards. The engine was put hard astern, but the swell was driving them further towards the beach. They were able to bring the boat head to sea using the bow thruster, and the anchor was deployed.

Fortunately, the vessel re-floated, and they were able to motor into the marina, taking a course much closer to the breakwater than that advised by the pilot book but which they had observed in the previous hour being successfully used by vessels of a similar size.

When the boat was lifted out of the water and inspected, nothing more than superficial damage was found to the keel bulb.

The reporter clarified that mistakes had been made by not referring to the chart notes and acting on their information concerning silting at the approaches. The reporter had become too focussed on the advice in the pilot book, which was four years old, regarding the shallow patches extending from the harbour breakwater.

The reporter had become too focussed on the advice in the pilot book, which was four years old, regarding the shallow patches extending from the harbour breakwater

When the depths began to reduce, instead of stopping and going astern, the yacht continued with the approach, resulting in the grounding.

The reporter also informed CHIRP that the yacht's engine was not working at full efficiency due to an, at the time undiagnosed, broken turbocharger. While it could propel the yacht at between 6 and 7 knots in calm conditions, there was insufficient power when needed in an emergency.

CHIRP Comment

This report highlights the dangers of using older sources of navigational data. The discrepancy between the actual and expected depth should have been a 'red flag' to the crew that they were not necessarily where they thought they were. Although they turned at what they thought was a safe distance, they had turned too soon because they did not see the expected number of lateral buoys. There is evidence of confirmation bias in the report – they felt they were in the right place and explained away the rapidly shoaling ground as the 'shallow patch'. The correct action was to turn around and confirm their position.

CHIRP wants to reinforce the requirement that a fully performing engine on a sailing yacht should be considered an essential safety item, not only for the circumstances experienced at the time of grounding but also for collision avoidance, MOB situations, and executing crash stops in close-quarters cases.

Factors relating to this report

Situational awareness – The pilot book was several years out of date, and it is likely that it no longer described seabed depths accurately. The expected number of lateral buoys was not visible before the course alteration around the breakwater. Although the second entry into the marina was successful, this was mainly based on guesswork by estimating the route other vessels had followed.

Communications – Contacting the port authorities to ask about the latest seabed changes should have been considered to plan a safer approach to the port. Is this something that you would do if you were approaching a port for the first time?

Local Practices – Although most charts and pilotage books are issued annually, many yacht owners admit to only updating their copies every few years to save on costs. This is a false economy compared to the potential costs of an incident. Similarly, engine maintenance can be costly but could be the difference between an accident and a near-miss.

Insight: Demonstrating the link between working conditions and safety

Dr Jess Sparks

In June 2022, the International Labour Organization (ILO) of the United Nations adopted "safe and healthy working environments" as their fifth category of Fundamental Principles and Rights at Work, demonstrating the intrinsic links between safety and decent work and unsafe and indecent work.[1] As fishing is notoriously one of the world's most dangerous professions,[2] recognition of these links is also embedded in the ILO's (2007) Work in Fishing Convention (c188) – which establishes minimum standards for decent work on board fishing vessels.[3] Decent work is just one end of the spectrum of working conditions on board fishing vessels, with egregious violations of human rights constituting forced labour, human txrafficking, and modern slavery at the other end. In between decent work and forced labour are a range of conditions that may be exploitative and discriminatory but not in violation of labour laws (e.g., unequal pay for migrant fishers for equal, shared work with national fishers) or conditions that violate labour rights and protections, but may not amount to forced labour).[4]

Bidirectional linkages between (un)safe working conditions and (in)decent work across fleets globally have also emerged in research. First, exploitative labour practices make the work on board vessels even more unsafe. For example, many exploited fishers working in fleets from Thailand[5] to the UK[4] to China[6] report excessive working hours in contravention of ILO C188; denial and sometimes falsification of rest hours; and tied immigration schemes that blur the lines of what constitutes work – compelling some fishers to perform unvalued work (e.g., mending nets and vessel repairs) onboard the vessel while in port on their 'rest' days, or this may involve the denial or withholding of food and water until a certain amount of fish has been caught; as punishment for a poor catch.

Both scenarios compound the dangers already involved when working on a vessel as fatigued and malnourished fishers are more prone to making mistakes with serious consequences to their health and safety, and potentially the health and safety of others on board the vessel through no fault of their own. In research from the UK, migrant fishers in the sample were significantly more likely to incur injuries than national fishers.[4] Further, since many exploited fishers globally are transnational migrants, their precarious immigration status may deny them access to medical care, including routine medical care that could offer early detection of illnesses associated with extreme and chronic fatigue and malnourishment.

Safety matters may also influence working conditions. There is some speculation, though it has yet to be empirically tested, that safety violations may be an early indicator of future exploitative labour practices, as these violations may be an early warning sign of a tipping point into decreasing profitability and the associated 'corner cutting' that often underpins the exploitation of crew.[7] And increasingly, the fishing industry needs to anticipate and plan for future scenarios where climate change will also likely exacerbate these links between safety and decent work, such as extreme storms, extreme heat, and wave and wind changes that may lead to occupationally hazardous work, longer trips at sea, longer working hours, and the need for more safety equipment. Suppose these impacts are not mitigated, and the industry is perceived as becoming more dangerous due to climatic changes. In that case, it could intensify crew labour shortages that are known to increase reliance on migrant fishers and drive exploitative practices.

The industry must also grapple with how to understand and frame these interconnections. On the one hand, contextualising working conditions within a more significant reference of safety offers the potential for greater stakeholder buy-in as it is frequently less divisive of a topic than the treatment of migrant crew. On the other hand, such contextualisation may also risk overlooking the systemic drivers of fishing crew exploitation and fair washing exploitative practices that do not reach the threshold of forced labour as decent work.

Dr Jess Sparks is a Research Assistant Professor at the Friedman School of Nutrition Science and Policy at Tufts University and a Research Fellow at the University of Nottingham Rights Lab. She has almost ten years of experience researching working conditions in the global fishing industry.

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7. Tugs and towing

Our first report is the tragic account of a tug which capsized when it became pinioned on the bow of a ferry whose master had a pilotage exemption for the port. We explain the danger of bow tug operations, especially at high speeds (which should be avoided), and point out that tugs should always be fit for purpose.

Next we learn about a tug which was in transit when its stern compartments began taking in water. The tug foundered but the crew were rescued. The accident investigation determined that the tug had unsecured or open aft deck hatches, and the investigating authority noted they had dealt with five similar cases in the previous five years. We remind our readers that all maindeck doors and hatches should always be secured when a tug is operating.

Our next report concerns a mooring launch which was caught by a ship's mooring ropes when they were heaved up rapidly. The launch was lifted and crushed against the flare of the hull, but fortunately the crew were not seriously injured.

The Insight article in this section is an excellent paper by Arie Nygh, possibly the world's leading expert on training tug masters. He discusses the effective use of tugs by pilots and exempt masters, and highlights the need for effective communications, a common understanding of what can or cannot be achieved, and a thorough knowledge of tug capabilities and all aspects of tug operations. This is an article which deserves to be studied by all who manage or operate ships because there are numerous valuable lessons to be learned.

Among the recurring factors we discuss are:

capability
- do you understand the risks?
- what checks do you make before connecting a tug?
- does your company provide tug officers with theoretical and practical stability training?
- tug companies should assess staff competence as part of their employment criteria.
- when was the last time you reviewed your risk assessment for towing operations?

local practices
- are the requirements for exempt masters to employ tugs the same in every port?
- do the International Maritime Pilots Association (IMPA) have any criteria for granting pilotage exemptions?
- should ports examine masters before granting them pilotage exemptions?

pressure
- was there pressure on the master not to take a pilot?
- mooring operations must never be hurried – orders must be carried out carefully and never rushed.

M1909

Collision between a passenger ferry and tug results in fatalities

Initial report

A tug had been engaged to assist a RO-RO passenger ferry in berthing in high winds. The ferry's master held a pilotage exemption certificate for the port, so no pilot was embarked. The tug was manoeuvring close to the port bow of the ferry and attempting to connect a tow line when its stern collided with the ferry's bulbous bow, where it became pinioned, heeled to port and took on water. This caused the tug to capsize, resulting in the loss of 2 crew.

The tug manoeuvred close to the RO-ROs bow to connect the tow. However, once it had left the 'safe zone', the hydrodynamic interaction between the vessels' hulls drew the tug towards the ferry's bulbous bow

The ferry's speed through the water was too fast to connect a tow line safely. The high speed meant that the 'safe zone' was further away from the ferry's hull, and the tug had to use most of its available engine power to match the ship's speed, leaving minimal reserve power for the tug to manoeuvre.

The pilot-exempt master of the ferry was not required to have undergone additional training for tug assistance, which was usually requested during adverse and challenging weather conditions.

Water down-flooded through an open door and engine-room ventilation duct when the tug turned broadside on and heeled over. This allowed down-flooding to occur, further reducing stability and ultimately leading to capsizing.

The tug crew could not close the engine-room ventilation duct during operations because it was required to be open to supply air for the tug's engines.

The tug did not comply with stability requirements, which meant it was prone to excessive heeling during operations and early down-flooding.

Tugs should be fit for the purpose for which they are being used, with appropriately trained crews, and sufficient power and manoeuvrability for the intended operation

CHIRP Comments

Establishing a tow between a tug and ship should be conducted at as low a speed as practicable in the circumstances and conditions to give the tug greater manoeuvrability and avoid it departing from the "safe zone" where dynamic interaction is less likely to occur.

Ship masters (especially pilot-exempt masters) and tug masters must thoroughly understand the theoretical and practical aspects of safe tug/ship operations.

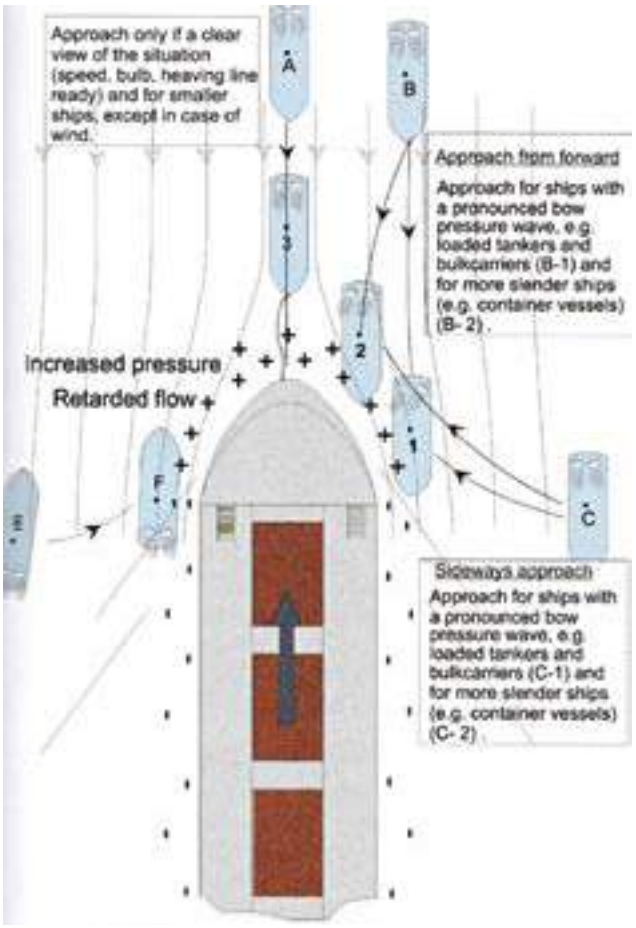

Diagram courtesy of Captain Henk Hensen – *Tug use in port: A practical guide.*

Tugs should be fit for the purpose for which they are being used, with sufficient power and manoeuvrability for the intended operation, and should always comply with stability requirements. Down-flooding will quickly erode any stability reserves and will be a significant factor contributing to a capsizing. During critical or high-risk operations, all doors and other openings that need not be opened should be securely closed.

It is considered necessary for tug masters to have a good understanding of the elements of tug stability. They need to know where the limits are and the consequences of tug handling practices not conforming to the rules of stability in normal circumstances.

A tug's stability is not a static condition but can change rapidly due to the evolving forces acting on the tow line and the dynamic interaction between the tug and its tow. These changing forces can negatively affect the tug's stability if they are not adequately monitored and controlled. In this case, as tragically shown in this report, it culminated in the capsizing of the tug with loss of life.

Factors relating to this report

Capability – Do you understand the risks to your tug when

operating in the vicinity of a vessel requiring a tow line? What checks do you make before attempting to make the tow line fast? Would you ask the vessel to slow down before approaching? See *Tug use in port: A practical guide*. by Captain Henk Hensen.

Does your company provide the necessary theoretical and practical stability training for tug masters and mates?

Local Practices – Are the requirements for engaging with a tug by a PEC master the same at every port? Do the IMPA have any criteria for PEC masters and their training? Should the port require that a PEC master be examined in managing the use of a tug?

Pressure – Was there any pressure not to take on a pilot, because the master had an exemption certificate?

Alerting – As a master with a PEC for the port, would you consider asking for assistance from an experienced pilot to manage tug use?

M1910

Foundering of a tug

A towing vessel was in transit when its stern compartments began to flood. The three crew members aboard attempted to pump out the water but were unsuccessful and subsequently abandoned the vessel. They were rescued, and the towing vessel later sank close inshore. No injuries were reported. The ship was later recovered but was considered a constructive total loss. Pollution in the form of an oil sheen was sighted when the tug sank.

The investigation determined that the probable cause of the sinking of the towing vessel was unsecured or open aft deck hatches, which resulted in the flooding of the vessel's aft compartments from water on deck, leading to progressive flooding of other compartments through openings in watertight bulkheads. Contributing to the flooding of the vessel was the owner's lack of a practical hull inspection and maintenance program.

The investigating authority noted that in the last five years, it had investigated five casualties involving towing vessels whose weather decks and openings were in poor condition—leading to flooding and subsequent sinking.

To protect vessels and the environment, it is good marine practice for owners to conduct regular oversight, inspection, and maintenance of hulls, including between drydock periods, regardless of inspection requirements.

Effective maintenance and hull inspection programs should proactively address potential steel wastage, identify hull and watertight integrity deficiencies, and ensure that corrosion issues are repaired promptly.

CHIRP Comments

There have been a number of incidents of tugs foundering, and in several cases the common cause was the leaving open of weatherdeck doors . Although this may make it easier to access internal compartments it compromises the tug's watertight integrity and is an incorrect and unsafe local practice. Watertight doors must be closed during towing operations, especially during heavy weather.

This report again reinforces the need to understand the stability characteristics of the tug doing the towing.

A common factor in recent tug foundering incidents was the leaving open of weatherdeck doors

Factors relating to this report

Local Practices – Tug owners and operators must ensure weather deck doors are closed when towing. Training is crucial and should be from a recognised authority to ensure consistency. Even if the good practice has been passed down in your company, refresher courses should be part of the company's safety culture to ensure that best practice is followed.

Capability – Tug companies should assess their staff for their skills and emergency preparedness as part of their employment criteria. The ISM code demands that all identified risks are assessed – when was the last time you reviewed your risk assessment (RA) for towing operations?

Culture – What is the training culture in your company? Is knowledge passed on informally between employees or is it provided through recognised training courses given by expert training providers?

M2070

Mooring launch crushed against the side of a container vessel

Initial report

The port berthing officer was attending to a large container vessel's berthing when he received a radio message from the mooring team to quickly head aft to investigate a serious incident during mooring operations.

The aft mooring launch sat at the stern of the containership, waiting for the third line to be lowered to them. Instead, the two lines that had been run ashore and were fast on the bollards were slackened off by the aft mooring team and dumped into the water. The launch tried to move away from the lines to avoid getting tangled. When the launch was almost clear, the ship heaved up on the two lines again, only to catch the mooring launch, lifting it out of the water and crushing it against the underside of the ship's flare. The two launch crew considered abandoning the craft, as the prolonged shouting and blast of their horn did not succeed in getting the crew's attention. Finally, the ship's after mooring crew realised what had happened and slackened off the lines. Other than the boat crew being severely shaken by the incident, there were no injuries to the crew but some damage to the mooring boat.

CHIRP Comment

This is an obvious case of miscommunication during a critical phase of the mooring operation.

Vessels often pay out lines to take the weight off them before transferring them to the working drums. The safest method is to do this only after all lines are ashore, then move one at a time to keep the lines and the vessel under control. CHIRP wonders if there was a real - or perceived - time pressure on the mooring party for them to take such a dangerous shortcut.

Factors relating to this report

Situational Awareness – While launches or other vessels, such as tugs, often make line handling easier, it complicates the mooring officer's task because that officer must simultaneously be aware of what is happening on board and over the side. A vessel rarely has enough crew to dedicate one person to each of these tasks, although that would be ideal. Instead, additional care must be taken when working lines with vessels nearby.

Pressure – Mooring operations must never be rushed. Care is required by the master and pilot to provide timely messaging to the mooring teams to ensure that each order is carried out carefully and unhurriedly.

Distractions – The mooring team were distracted when they failed to hear the mooring boat crew's signals when they were trapped against the ship's hull. Keeping alert during mooring operations is vital, given the changing nature of the ship's movement and the strain on the mooring lines.

Insight: Effective use of tugs for pilots and 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).

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

- 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.

8. Safety Culture and Regulations

In Section 1 we learned about a tanker which was overwhelmed by a swarm of surveyors and inspectors all arriving at the same time, but in this section we have two reports about vessels which appear never to have been visited by an inspector at all! First is a report about horrendous conditions on a 50-year-old floating armoury vessel. As a result of our efforts both flag state and class withdrew the vessel's registration, but we discovered there are no generally-accepted international standards which apply specifically to floating armouries. Later we have another report about awful working conditions and a crew who were threatened with dismissal if they complained. We might have thought the reporter was exaggerating, but the accompanying photographs proved they were not. It is worth reminding readers that, normally, welfare matters are dealt with by our friends at ISWAN but both these cases had safety implications so we were asked to become involved.

We also have a report about a totally new crew which joined a vessel and sailed after a very brief handover. Bad weather caused the ship to list heavily, and the crew abandoned ship before she sank. It appears they never sounded the tanks or attempted to discover what was causing the list.

This is followed by an account of a bulk carrier loading a timber deck cargo. A crew member fell overboard whilst lashing the cargo and their body was never found. The vessel's SMS manual did not require crew members to wear a lifejacket or rig safety lines during the work.

Another fatality ocurred when a crew member was descending from a cargo crane grab stowed on deck. They unhooked their single-lanyard safety harness and slipped during the descent.

We also learn about a senior engineer performing a repair with all safety precautions in place, who removed his eye protection to access a restricted space and suffered an eye injury as a result.

Among the recurring safety factors and comments from the reports in this section are the following:

culture
- are commercial pressure and profit undermining the safety and welfare of seafarers?
- does your SMS have procedures for all the cargoes you carry?
- do managers engage with the master to advise on specific safety requirements?

fit for purpose
- safety harnesses should be double-lanyard type
- is the regulatory environment for private maritime security companies fit for purpose?

complacency
- did over-confidence lead to the injury

alerting
- we are often contacted when seafarers fear adverse repercussions if they report to their employers
- if you see a colleague's performance dip due to fatigue, do you feel empowered to speak up?
- is your safety culture robust enough for you to challenge the chief engineer if he does something unsafe?

capability
- management must always ensure the crew can operate their vessel safely
- does your company consider the experience and competency required for loading and carrying different cargoes?
- do flag and port state inspectors have the resources and ability to strictly enforce minimum standards?

pressure
- do commercial considerations lead to violations of safety standards?
- do commercial concerns take priority over the safety of the ship and crew?

M1787

Poor safety standards on floating armoury vessel

Initial report

A security guard working aboard a 50-year-old and 50m LOA floating armoury vessel reported unsanitary and unsafe conditions on board. These vessels provide privately contracted armed security personnel to commercial ships for armed protection while they transit areas of high risk.

Despite having a maximum capacity of 60 people, the floating armoury reportedly carries up to 150, and many are forced to sleep on the upper deck even in rough weather, due to the lack of available bunks. The water in the showers is rusty, there are cockroaches in the food, the electrical wiring is in a poor state of repair and water drips from the cable connections, creating a dangerous fire risk. The lack of an isolation area for Covid cases caused the virus to spread rapidly on board.

Transfers onto and off merchant vessels are made using an inflatable boat, and embarkation is ordinarily by ships' pilot ladders. Transfers take place even in high sea states (6-8m waves) because the merchant ships cannot afford to be delayed, so these transfers are especially risky.

The reporter stated that the floating armoury is resupplied with food and water at sea: it often spends many months in international waters and rarely visits port due to the difficulties of entering territorial waters with guns and ammunition on board.

Because of this, garbage is thrown into the sea, contravening Marpol regulations. The hull was recently punctured, and repaired using quick-drying cement, but is unlikely to be properly repaired for many months until the vessel next visits port.

The reporter approached CHIRP because there was no-one else that could help them. The reporter stated that the floating armoury vessels and the private maritime security companies who employ the guards vary in quality. Because there is very little access to the internet on the armoury vessels, they could only contact CHIRP once embarked on a merchant ship.

CHIRP Comment

CHIRP raised these concerns with the Master and owners of the floating armoury vessel, who initially said that they wanted to improve conditions on board. However, no significant changes occurred so CHIRP passed the report to the vessel's registered flag state and its classification society, both of whom withdrew registration. This means that the vessel can no longer legally operate at sea until these issues are resolved.

A report issued by the United Nations Office for Drugs and Crime (UNDOC) in 2020 highlighted that there are no generally accepted international standards that directly apply to floating armouries, nor is there an overarching industry organisation that can set expected minimum standards to which the companies providing armed guards can adhere. Furthermore, because floating armouries operate in international waters for lengthy periods it is difficult to enforce compliance to national or international regulations because such inspections almost always take place only when the vessel is alongside in port.

Unlike the crews of the floating armoury vessels, the armed guards are not recognised as seafarers under the current IMO definitions, but rather viewed either as "passengers" or "industrial personnel". As such, they have fewer legal protections than the seafarers they work alongside. This, compounded by the competitive commercial environment in which the private maritime security companies operate, reduces the incentive to ensure high safety and welfare standards. CHIRP wonders whether there is an expectation that, because of their military backgrounds, armed guards will be prepared to tolerate poor conditions and to accept increased safety risks?

CHIRP intends to discuss the issues raised in this report with both the International Transport Workers Federation (ITF) and the International Labour Organization (ILO) because of the obvious safety risks highlighted.

CHIRP intends to discuss this issue with both the International Transport Workers Federation (ITF) and the International Labour Organization (ILO)

Human Factors relating to this report

Fit for purpose – Is the existing international regulatory environment in which private maritime security companies operate fit for purpose? The UNDOC report suggests that this should be reviewed.

Culture – Judging by the vessel's condition, and its safety and welfare standards, there were many longstanding breaches of IMO, ILO and Marpol regulations, which both the Master and the company employing the guards must have known about. This incident raises questions about culture: are commercial pressure and profit being pursued to the detriment of the guards' and crew's safety and welfare? Is this allowed to happen because the guards operate on pseudo-military lines and are thus expected to be task-oriented and tolerant of greater hardships and risks to achieve their aims?

Alerting – The reporter contacted CHIRP because they feared that they would lose their job if they raised this issue through their company or with the Master. Likewise, the Master initially said that he wanted to assist CHIRP in resolving the issue but ultimately this did not happen – was this for fear of speaking up? Are you in a similar position – if so, CHIRP is interested in hearing from you? Similarly, the ITF and ISWAN can assist with employment issues and welfare.

Local practices – The report highlighted several poor local practices such as throwing rubbish overboard and using the inflatable boat to transfer people to other vessels in high sea states. The condition of the vessel indicates that on board maintenance was similarly inadequate. All these significantly increase the dangers to the safety of people on board and to the environment. The correct procedures should be documented in the vessel's Safety Management System

M1910

Foundering

Initial report

The ship had recently changed management company, and a totally new crew joined the ship. Following a brief handover from the previous crew, the ship sailed with no cargo. The off-going crew had reported that all the double bottom ballast tanks were full, and the wing ballast tanks were 60% to 65% full. In total, about 80% of the ballast capacity had been filled. The replacement crew accepted these figures but did not verify the status of the ballast tanks.

116 loaded TEU's (twenty-foot-equivalent containers) were loaded into the hold and on deck, with an estimated deadweight of 1900 mt. No change was made to the ballast configuration, which remained at 80% of ballast capacity. There was no verification of the ballast capacities in each tank.

The ship departed for the next port, where it took on freshwater before departing for its next destination. Shortly after departing, it encountered heavy weather caused by monsoon winds and a typhoon. The passage plan required the vessel to go beam-on to the heavy seas and it rolled heavily. It then developed a severe list of about 25 degrees to starboard toward the wind and waves, which increased quickly to 30 degrees.

Without attempting to establish what had caused the list, the master issued a Mayday and ordered the crew of 12 to abandon ship into a life raft. The crew were all safely rescued from the life raft by helicopter and observed that the ship was now listing at about 45 degrees. All the deck containers were still in place, and as they had left the main engine and generators running, the lights were still burning. The crew reported that there had been no noticeable failure of the ship's equipment or systems, and there had been no movement of the containers on deck. The crew assumed that there was no movement of the containers in the holds because the containers were so tightly packed athwartships that no appreciable transverse movement would have been possible.

Six days later, a search found the ship still afloat and listing between 15 and 30 degrees to starboard. All the deck containers were missing, but the hatch covers were in place and appeared intact. A salvage tug arrived about four days later, but the ship had sunk.

The cause of the list and subsequent sinking was not conclusively identified. The crew were not fully aware of the severity of the forecast weather conditions and consequently had not implemented heavy weather procedures.

In the absence of any other obvious factors, the reason for the ship developing a heavy list is likely related to a change in the ship's stability resulting from the ingress of water.

The crew had not verified the amount of water in each ballast tank since they had boarded the ship three weeks before the incident. The pre-departure stability calculation on the ship's stability computer may not have been an accurate representation of the ship's actual stability condition.

The crew took no action to identify why the ship took on a list and therefore took no remedial action (if any was possible).

The crew were unlikely to have been adequately familiarised with their ship before it departed on the voyage. There appeared to be minimal support and assistance provided to the new crew by the new ship management company when it took over the operation of the ship.

CHIRP Comment

The crew were unfamiliar with the vessel and had insufficient time to properly familiarise themselves. Their repeated failure to take ballast soundings supports this conclusion. Four opportunities to take soundings were missed: as soon as the new crew had joined, after taking on the containers, after taking on fresh water and before entering an area of heavy weather.

Crews must have time to familiarise themselves (ISM Code section 6) properly. It also takes time for a new crew to become a team. Had they had more time, they might have been more confident in trying to find out why the vessel had developed a list rather than abandoning the vessel immediately. 15 degrees of list is alarming but not necessarily dangerous if the chief officer is confident in their stability calculations.

The management company are responsible for ensuring that the crew is safe to operate the vessel and never more so than when sending it into an area where monsoons and typhoons could be expected. This suggests that the company had not adequately assessed the risks of placing a new crew on an unfamiliar ship in such conditions.

The loss of containers in the heavy weather would have reduced top weight and made the vessel more stable. It is likely that the ship sank after the generators ran out of fuel and the automatic pumps stopped working.

As well as the safety implications of this report, ballast management is also essential to ensure that harmful organisms or pathogens are not inadvertently transferred between ports in the ballast water.

It also takes time for a new crew to become a team. Had they had more time, they might have been more confident in trying to find out why the vessel had developed a list rather than abandoning the vessel immediately

Factors related to this report

Situational Awareness – The new crew were unfamiliar with the vessel and its equipment and relied on the information provided by the off-going crew, who were from a different company. Verifying the material condition and seaworthiness of the ship are essential to understanding any safety issues. How organised is your company when taking over a new ship?

Capability – The management company did not verify that the crew could safely operate the vessel.

Pressure – The crew were not provided sufficient time to familiarise themselves with the vessel. Did commercial considerations take priority over the safety of the ship and the crew?

Culture – Does the company care about safety and their crews? Would you consider working for a company that operates as this company did?

M1912

Fatality by drowning

Initial report

A bulk carrier was loading a timber deck cargo at anchor. While lashing down the timber, an Ordinary Seaman (OS) fell overboard into the sea. Another crew member jumped in to search for them but was unsuccessful, and despite an extensive search over several days, the victim was never found. What caused the OS to fall into the water could not be determined as there were no witnesses. The OS was inexperienced yet had not been trained or briefed on the risks of working on timber. He wore coveralls, gloves, a safety helmet, and studded overshoes. Still, the ship's SMS manual did not mention the rigging of safety lines or wearing safety harnesses when working on top of the timber, nor did it require the crew to wear lifejackets or buoyancy aids.

CHIRP Comments

This report raises several organisational safety concerns. There was nothing in the company SMS about working at height on logs, nor any guidance on the rigging of safety lines or the wearing of safety harnesses. It would be impractical to rig a lifeline over the timber because it would interfere with the timber being loaded or unloaded by crane, but alternatives should have been considered. On board, the operational leadership knew of his inexperience, but did not provide a safety briefing or assign the person a 'buddy' or supervisor to ensure his and others' safety.

Was safety compromised because of poor safety culture on board, or because the operational programme set by the company could not be achieved without reducing safety?

In a similar previous report (M1979, see FEEDBACK edition 67), CHIRP referenced the IMO's *Timber Deck Cargo Code* (the TDC Code), and the reader's attention is drawn to section A2.22, which states that

> **While working on the cargo, there should be provisions to attach a safety harness. (TDC Code)**

Working on top of logs to carry out lashings is hazardous and requires experience and training to do the work safely. The average height of a completed stack of logs varies from 5 to 8 meters above the main deck; a fall either overboard or to the deck can be fatal.

Factors relating to this report

Capability – This job was beyond the capability of the crew member because he had no experience performing this work. Does your company consider the experience required for log carriers; are the crews staggered so that experience can be passed down? Does your company provide practical training courses for the officers and crew to understand the hazards of carrying timber deck cargo?

Situational Awareness – Being alert to your position on the logs is crucial to maintaining good situational awareness. A constant check is required. This can be impaired if you are tired or fatigued.

Teamwork – A vital component for a successful lashing operation. The team working on the logs should be working as a cohesive unit and looking out for each other.

Culture – Does your SMS have information and procedures for a bulk carrier carrying logs? Does the company provide sufficient details for carrying logs, especially if this is not a regular cargo? Does the marine manager actively engage with the master to advise on the safety requirements for log carriage?

M1908

Fatality – Falling from height

[Note: CHIRP received this report from a company who were happy to share their safety learning. CHIRP applauds their transparency and commitment to safety and welcomes reports from other similarly-minded organisations.]

Initial Report

A three-person crew had been tasked to replace the wire rope of a cargo crane grab stowed on the main deck in its designated storage position. The weather was fair, and working at height precautions, including completing a Permit to Work, had been taken.

The work started in the morning and was completed in the evening. Two seafarers first descended from the grab. The senior crew member then unclipped his safety harness as he prepared to descend. Tragically he lost his footing and fell about 5 metres onto the platform railing and a further 1 metre onto the deck below. He suffered a head injury and was taken to the ship's hospital. The ship's master sought radio medical advice, but the crewman died of his injuries about an hour after the accident.

The grab's shape, size and position meant poor hand and footholds, although it was concluded that the crew member probably perceived the risk involved as acceptable and within his control. The fall prevention equipment on board was not ideal for vertical movements, so using equipment such as a double-legged energy-absorbing lanyard would have been more appropriate. The equipment was of a type that necessitated unclipping the safety harness lanyard to ascend or descend at the work site.

The ship's SMS procedures did not refer to hazards related to access/egress from a worksite at height, and it could not be determined if the risk of going up and down from the grab had been assessed.

CHIRP Comments

The task was lengthy and required concentration throughout, which can bring about fatigue. When we finish a job, particularly one that is challenging or difficult, our brains release dopamine which causes positive feelings but can also impair decision-making, including when assessing risks. In combination, these factors would make the descent from this task perhaps the riskiest part of the job.

A fatigue management plan is useful in these circumstances: if a task can be broken into smaller parts, and either sufficient rest breaks or crew rotations are provided, then concentration and decision-making can be protected.

The company have suggested that a double-legged energy-absorbing harness would have been appropriate. CHIRP agrees, because a single-leg harness must be unclipped when climbing, descending, or navigating obstacles, thus removing the benefit of wearing a harness. And in this incident, a fall arrestor would not have worked because the crewman would hit the grab or the deck before it functioned.

Were the placement of hand-holds or other safe means of access and work considered at the equipment's design stage? If not, why not? Some vessels have fold-away temporary scaffolding that can be quickly erected around equipment. This takes up minimal deck space and is relatively cheap.

Factors relating to this report

Teamwork – Supporting one another is crucial during high-risk work which is long and physically demanding. Is this the case on board your vessel or in your company? Do you feel supported by your ship workmates, or do you operate like an individual with everyone doing their own thing?

Alerting – If you see a team member's performance dip due to fatigue, do you feel empowered to point it out and take a short break?

Fatigue – The task started early morning and finished early evening. Regular breaks should be incorporated into lengthy tasks and, if necessary, the task should be broken into smaller tasks spread over several days. Team members should also be monitored for signs of fatigue. Fatigue management planning should take these factors into account.

Fit for purpose (equipment) – CHIRP recommends that safety harnesses have two lifeline lanyards (also known as double-lanyard harnesses) so that at least one can always be connected when climbing up or down a ladder. For wearers of harnesses fitted with only one lanyard, the ascent or descent to a task is the most hazardous time.

M1895

Personal Injury: Multiple crew burns in engine room

An engine crew suffered burns from the fuel oil pump of the auxiliary boiler

Risk Category/Severity: High (2 LWC Lost Workday Case, 1 RWC Restricted Workday case, 1 FAC First aid case)

The reporter told us that the chief engineer held the daily meeting at 8 am to discuss the work plan for the day with the senior engineer and the rest of the engine officers and crew. Among others, the inspection and maintenance of the auxiliary boiler's No1 fuel oil pump filter was discussed. A Toolbox meeting was held regarding the precautions and hazards associated with the maintenance work.

The work commenced after lunch at around 13:40. The senior engineer was about to dismantle and

remove the pump's filter cover when hot fuel and gases suddenly escaped.

The senior engineer, two wipers and one engine cadet assigned to the work suffered burns on their faces, skin, neck, and hands from the hot oil spray.

All injured crew were offered first aid and immediately transferred to the local hospital for further treatment and medical examinations. The senior engineering officer and the wiper were kept in the hospital, and the cadet and the other wiper returned to the vessel. The senior engineer and the wiper were eventually repatriated 11 days later.

The specific work was planned and had been carried out on the other fuel pump a month earlier with the same senior engineer accompanied by another engineer.

At the time of the injury, the senior engineer undertook the main work. There was no dedicated assigned supervisor as stated in the Permit to Work (PtW) - the senior engineer had been considered the supervisor for the job.

According to the witness statements, at the time of the incident the pump was switched to manual control and was secured in a stop position. The pump was isolated by closing the inlet and outlet valves. At that time, the system's delivery pressure indicated 1.5 bars. The engineer proceeded with unscrewing the bolts of the filter cover without releasing the pressure from the vent cock fitted to the system.

Following the chief engineer's feedback, the outlet and inlet valves were checked immediately after the incident. Both pressure gauges, one after the delivery valve and one after the suction valve, were working correctly.

Before the commencement of the work, a job hazard analysis, cold work, and pressure pipeline work permits had been carried out. From the review of the evidence provided, it was noted that the pressurised pipes had been considered as indicated on the work permits and the risk analysis form.

All four engine crew had received PPE and familiarised themselves with the company's SMS procedures. No work/rest hours non-conformities were applicable to the injured crew, and no other activities were taking place in the nearby area.

CHIRP Comment

The uncontrolled release of stored pressure is a recurring factor in many reports received by CHIRP. Working on stored energy systems (heat, pressure, potential, tension etc.) always requires additional care, and CHIRP encourages the use of written checklists to confirm that the pressure is reduced, e.g. in this case, by ensuring the pressure relief valve was open before work was started.

Distraction or forgetfulness could have been a factor, especially given that the time gap between the toolbox talk in the morning and the work taking place in the afternoon was almost 6 hours. During that time, the material state of the system could have altered, and furthermore the team could have forgotten critical pieces of information, e.g. whether the pipe was pressurised or not.The PtW system is an independent audit that a safe system of work is in place. By signing the PtW and then conducting the work, the senior engineer undermined the critical supervisory value of the PtW. CHIRP suggests that where the senior engineer is the only one qualified to do the work, another engineer assess the PtW prior to it being signed off. This does, though, rely on the senior engineer being willing to be held to account! The work had been completed a month earlier with two qualified officers. Cadets are not qualified and are still under training. The Permit to Work and the RA should have identified the experience required to carry out the job.

Although 1.5 bar pressure may not seem high, in anything other than a very short pipe it would be sufficient to eject a significant quantity of liquid as the pressure was released. The temperature of the liquid suggests that not enough time had been allowed for the liquid to cool after the pipe was isolated. Does this indicate that the team were under time pressure?

Toolbox talks are a good safety management tool, but they must be carried out in an environment where everyone can hear what is taking place and respond accordingly. The toolbox meeting was conducted in the morning, but the work didn't been repeated.

Factors relating to this report

Communications – Communications appeared to be very ineffective. The PtW and RA discussed in the morning during the toolbox meeting identified the pressure in the system. However, it did not prompt the necessary action required when the work was carried out 5 hours later. If you were assigned to this work, would you want to hear the RA and the PtW requirements again?

Capability – This work had been carried out a month earlier with another engineer officer and presumably two officrs were considered sufficient to carry out the work. This time there was only one engineer. Did this lack of experience contribute to the incident?

Culture – The PtW specifies a supervisor to take charge of the work, but in this case the supervisor was the one doing the work. Why did the chief engineer during the toolbox meeting not assign another engineer? Was this challenged? If the senior engineer accepted being the supervisor, why did he do the job himself, removing a significant safety barrier?

As this work is controlled by a permit to work, if the requirements designed to ensure accountability are not achieved, then the work must not progress and be stopped.

M2028 (submitted by ISWAN)

Enforcement of safety regulations – is it adequate?

Initial report

A seafarer complained about awful working conditions on board their ship. The accommodation was unhygienic, food was insufficient, and the equipment was in disrepair: the main engine and gearbox leaked oil, and the seafarer claimed that oil and garbage were frequently discharged overboard. The air conditioning was also broken.

The reporter stated that the chief officer was blackmailing the crew by threatening that anyone who reported the poor conditions would be dismissed.

CHIRP Comment

The reporter initially contacted ISWAN with their concerns. Because of the obvious safety implications, and with the reporter's consent, these were passed to CHIRP. Shortly after CHIRP received this report, the coastal state detained the vessel when it next docked, and the crew were repatriated.

The photographs suggest that the vessel has not been compliant with minimum regulations for a considerable time, yet this was not detected by any external audit. This is not an isolated case, and CHIRP regularly receives similar reports. The number of vessels with unseaworthy or poor conditions remains stubbornly high, despite numerous international and national regulations regarding minimum safety, environmental and welfare standards. Flag states are obliged to enforce standards, but international law has few consequences if a flag state fails to do so adequately.

Capacity and resource limitations reduce the number of inspections a port state may conduct, so substandard vessels like this can operate for a considerable time before being identified and detained. Seafarers on board unseaworthy or non-compliant vessels are encouraged to contact CHIRP, who will advocate on their behalf.

CHIRP remains the confidential, independent and impartial voice of the mariner, whose safety remains our priority.

Factors relating to this report

Alerting – The ship's crew have been responsible for raising this matter to ISWAN and CHIRP, which is commendable. Alerting by the internal and external audit process has failed.

Competency – The management company does not have the necessary skills or willingness to run a shipconforming to the ISM code. There appears to be a total lack of adherence to the requirements of the Code, which is the minimum standard that should be applied. The Recognised organisation and Flag for this company must do more to achieve the minimum standard.

Pressure (Commercial) – The threats by the Chief Officer suggest that commercial considerations have contributed to a culture where violations of environmental, welfare and safety standards are not just tolerated; they are expected.

Capability Do Flag and Port State have the ability to enforce minimum standards strictly? According to records which have allowed the ship to keep operating in this condition, the flag state appears to have not carried out any quality control inspection

This is not an isolated case, and CHIRP regularly receives similar reports. The number of vessels with unseaworthy or poor conditions remains stubbornly high, despite numerous international and national regulations regarding minimum safety, environmental and welfare standards

9. Correspondence received

Please find some correspondence from organisations and reporters that have contacted CHIRP Maritime or have been notified of safety and regulatory breaches.

Personal Rescue

The quote is from a rescued Master kept under ship arrest by the Crew. The report was passed to CHIRP from ISWAN due to severe safety issues identified in their reporting form.

"Thank you so much. My father is certain that CHIRP's good work ensured such a good approach from the authorities to secure his release. He sends his gratitude through us while he makes his way home. We hope that tomorrow evening he will be home".

International Seafarers Welfare & Assistant Network (ISWAN)

Dear CHIRP,

Thank you for helping the seafarer to get back home, you have tremendously helped his family, and they are extremely grateful.

Following the good news of the seafarer's return home, do you know what happens next?

We made a new referral to ITF for unpaid wages for the present and previous contracts on the demand of the family.

Best wishes,
SeafarerHelp Officer
International Seafarers' Welfare & Assistance Network (ISWAN)

From The Islander Magazine

Dear Adam and team,

We from "The Islander" are interested in supporting the CHIRP program. I believe you are sending out monthly reports, and we'd be happy to feature these in our monthly publication, which goes out to pro yacht crew, industry professionals and crewed yacht owners. They contain highly valuable and educational info for our readership.
Super Yacht Manning Agents

Hi,

I came across your Superyacht report and thought it was brilliant.

Having looked at the website, I would like to become an ambassador and potentially sponsor you.

As a crew agent, I have great relationships with hundreds of captains and chief officers. I can help push what you are doing.

Safemode Project

SHIELD Human Factors Taxonomy and Database for Learning from Aviation and Maritime Safety Occurrences

Dear Adam and Dave,

I would like to let you know that we have now published an open-access paper on SHIELD, including the full details of its human factor taxonomy, in Safety of MDPI:
https://www.mdpi.com/2313-576X/9/1/14

I hope this will be useful for your work on the analysis of maritime occurrences. Thanks a lot for your support and use of SHIELD!

Best regards,
Sybert Stroeve

Flag State

Dear CHIRP Maritime,

On behalf of the Flag State Government, I would like to express that we appreciate and value your consideration in mentioning our flag and the confidentiality of our communications exchange.

In the same way, we would like to extend our gratitude for the awareness and professionalism in approaching us in this case.

My colleagues are included in the cc, and from this desk, we'll continue to follow up on this case.

Thanks to you, and best wishes,
General Directorate of Merchant Marine

Flag State

Dear CHIRP Maritime,

We wish to thank you for raising this serious safety matter with us. This Directorate will immediately look into this matter with the owners/managers.

1. *Violation of enclosed space entry procedures.*
   a. *Forcing the crew to enter enclosed spaces without issuing an Enclosed Spaces Entry Permit,*
   b. *Neglecting the protocol to be observed when working inside the enclosed premises of a ship.*
   c. *There is no proper monitoring equipment to monitor the oxygen and gas levels inside the enclosed spaces.*
2. *The master also omits other safety permits.*
3. *The crew work long hours without any reference to the WRH regulations*
4. *Bullying tactics.*

Marine Advocate Issue 819 from Michael Grey.

A very preventable tragedy.

Is the equipment on board the ship designed to detect oxygen depletion fit for purpose? The Confidential Hazardous Incident Reporting Programme director, maritime Adam Parnell, recently posed the question of whether poor design might be a contributor to any accident, and this may well be true with some enclosed space accidents.

Our seafaring contributor points out that a "core issue" is "how to detect oxygen depletion in that remote corner" and refresh the space with 100% breathable air. The current tools for the job, he suggests, are not fit for purpose, offering the examples that the sampling pipe of the 4 x gas detector cannot reach all the areas required while the ventilating fan supplied is a "piddling toy". A technologically innovative product, he suggests, is needed. It is beyond my pay grade to know whether this will make a difference, but seafarers should not be anywhere near spaces that cannot be made safe for them to enter.

Paperwork, tick boxes, procedures and regulations are the best we can do at present. Is there more that can be done in training? You all know, from your first day at sea, that you shouldn't step in a bight of rope, walk under a swinging load, or sit on the rail. But is it sufficiently ingrained into the seafarers' psyche that death lurks in any enclosed space? I only ask.

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 incident, accident and near-miss reports.

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' reporting 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 sounds like you, please contact us to discuss this opportunity at mail@chirp.co.uk

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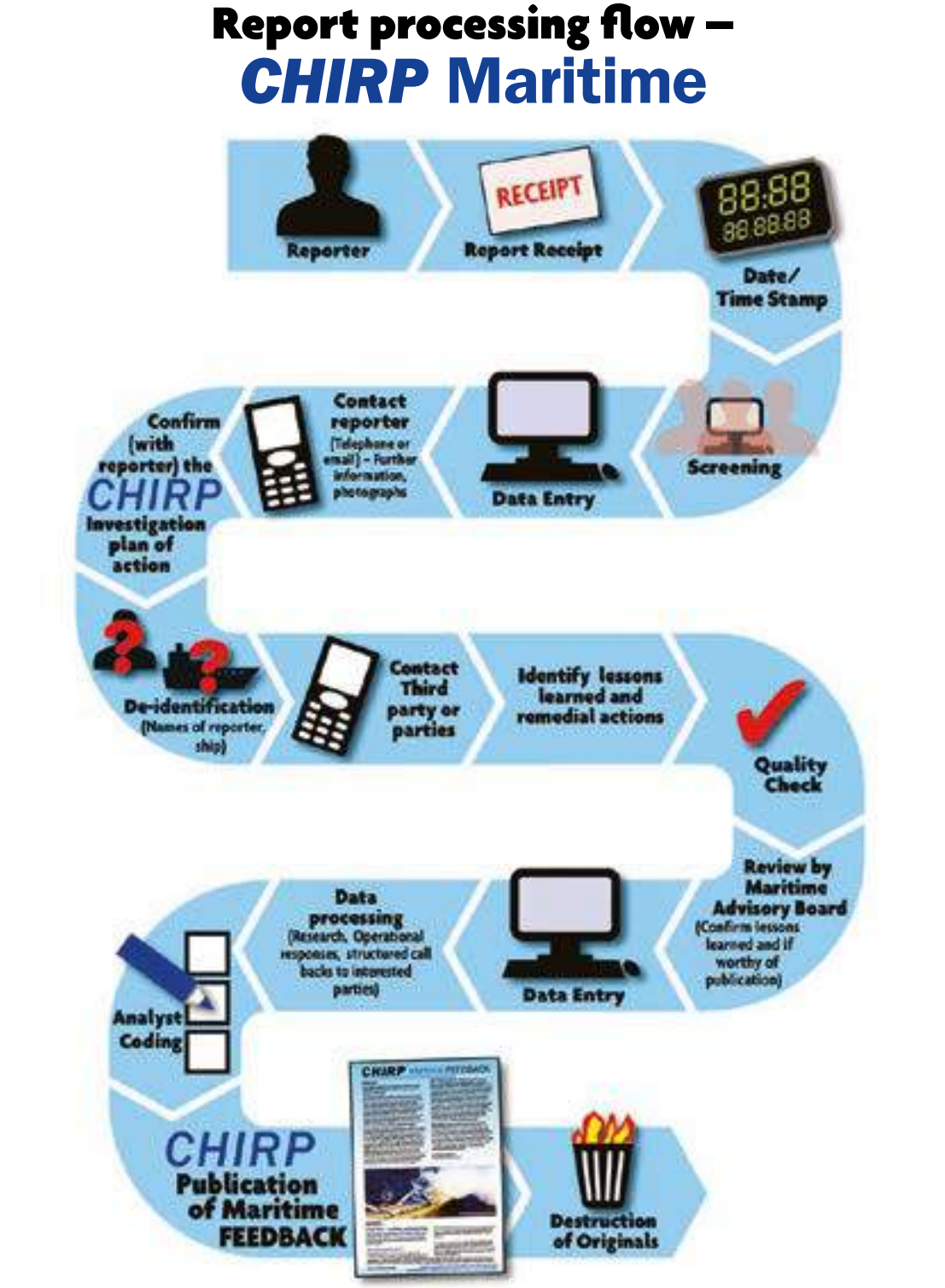
10. Appendices

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:
How the CHIRP reporting process protects your identity



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

Appendix III: **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 2022

Appendix IV: **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

We've made some changes!

Simplicity saves lives, so we've made it easier to submit reports and read our safety newsletters via our updated website and new app

Find out more...

- Visit our new website!
- Download our app!
- Follow us on social media!

YOU REPORT IT WE HELP SORT IT

CHIRP

Confidential Human Factors Incident Reporting Programme

You can report on the go using our App, **scan the QR codes to download**

www.chirp.co.uk

Apple:

Android:

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

Telephone: +44 (0) 1252 378947

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.

www.chirpmaritime.org