CHIRP Maritime

The Maritime Confidential Hazardous Incident Reporting Programme

2017

Annual Digest of Reports, Insight Articles and Video Broadcasts
Welcome to the second annual review of CHIRP Maritime reports, covering all the cases we published during 2017 and a number of in-depth articles specially commissioned to highlight important safety topics. The response to the first Annual Digest was extremely positive, and we were especially honoured when the Secretary General of the International Maritime Organization decided to bring it to the attention of all member states – thus ensuring us a truly global audience.

2017 was a memorable year in many ways, and perhaps the highlight was the announcement that CHIRP Maritime had won the prestigious ‘Safety Service of the Year’ category at the 2017 Safety at Sea Awards. All our sponsors and reporters can take pride in the fact that their generosity and commitment to safety has been recognised in such a significant fashion.

This year also saw the first foreign-language version of Maritime FEEDBACK, when Wallem Shipmanagement and Dalian Maritime University generously helped us produce 1,000 copies of a Potunghua edition. This has now been joined by a Tagalog version kindly sponsored by the Britannia Steam Ship Insurance Association. 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.

Speaking of sponsorship, our first Annual Digest was funded by a generous donation from the Sir John Fisher Foundation. They got us off to a flying start, but this year we had to find the money ourselves in a very difficult economic environment. It seemed unlikely we would be able to secure a single sponsor, so we contacted dozens of organisations to ask for smaller donations and their response was magnificent. They are too numerous to mention here, but we list them all at the end of the Digest and are extremely grateful for their generosity.

It is important to state, as always, that CHIRP Maritime is run by a very small group of incredibly hard-working people, none of whom is employed full time. John Rose and Ian Shields, ably supported by Stephanie Dykes, produce all the newsletters, videos and podcasts and work tirelessly to keep us in the forefront of maritime safety. They are guided by a Maritime Advisory Board of distinguished professional men and women who together have over 700 years of experience in shipping and safety, and volunteer their time to help us to focus on what is important. They also contribute many of the Insight articles which appear in the Annual Digest.

On a more personal note, readers may have noticed that Stephanie changed her name in 2017. I am delighted, on behalf of all of us, to congratulate her on her marriage and wish her every happiness in the future.

Another significant change is that Captain John Rose MNM, our Director, Maritime has decided to step down after four busy and successful years at the helm. He has been instrumental in transforming CHIRP Maritime into a much more active and effective organisation, and we owe him a tremendous debt of gratitude. The Trustees are fortunate to have recruited Captain Jeffrey Parfitt FNI to succeed John, and they are already working together ahead of the handover in January 2018. Jeff is an experienced mariner who has served in different sectors of the industry, particularly in the offshore market. He also worked for several years as a confidential investigator, so he brings a very useful set of skills to CHIRP Maritime, and we look forward to working with him in the years ahead. You will find more details about Jeff and the rest of the team in the appendices.

Once again, the year produced a vast array of different reports which demonstrate how important it is for CHIRP Maritime to continue to publicise the dangers in our industry. Together with the Nautical Institute’s MARS programme, we reach hundreds of thousands of seafarers and we know they read our reports. In an era when young seafarers may not always have more experienced colleagues to guide and monitor them at all times, we offer a means for them to learn from the mistakes of others and absorb the lessons which may help them to avoid making the same mistakes.

Our desire to help people learn from the mistakes of others has recently been further enhanced by our creation of a database of maritime accident investigation reports, near miss reports and safety alerts issued by a selection of government maritime agencies and shipping industry sources around the world. This was a task of Herculean proportions, undertaken by Ian Shields over many months, and we owe him an enormous debt of gratitude. The searchable database is now available on our website and we recommend it as a source of in-depth knowledge about marine accidents. Meanwhile, if you are aware of any reporting centres we have not included, please let us know.

Everyone who works at sea deserves to return safely to their family at the end of their tour of duty. This should be the ambition of every ship manager, every administrator and everyone else who supervises the business of shipping, but there is still a long way to go. The reports in these pages demonstrate all too often that not everyone has adopted the IMO credo that seafarers’ lives matter.

Fortunately, our reporters and sponsors take a more enlightened view. The generosity of all our sponsors is acknowledged in our publications, and we could not function without them, but our reporters remain anonymous for obvious
reasons. I can tell you that we increasingly receive reports from shipping companies and ship managers, who submit their in-house accounts of accidents and near misses so others can learn from them. This is a generous and caring policy which indicates there are still good employers in the industry. On the other hand, many of our reports come from individuals who are obviously not working for such decent people. These individuals often suffer terrible hardships and risk losing their livelihood by reporting to us, but they do it anyway and we salute them.

In the first Annual Digest I noted an increasing number of reports from the leisure and yachting sectors, and this trend continues. We also seem to be receiving more reports from the fishing industry, although the numbers remain quite low. We would like to receive more submissions from them, and from container ships, dry bulk carriers, passenger vessels, port operators and the offshore industry. So if you work in those sectors, please consider reporting your accidents and near misses – you might save lives!

There are several ways you can submit a report, and they are described within these pages. We make it as simple as possible, and confidentiality is assured, so please think about it.

Once again we have divided the Digest into themed sections to assist readers to find the topics which most interest them, but many of the reports could have been assigned to more than one section, so we urge you to study them all.

For more detailed and focused searches, we recommend the searchable database on our website www.chirpmaritime.org.

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

Our final section on the Human Element contains some very interesting observations by Ian Shields as a result of his detailed collection and analysis of safety data, and a reminder of the ‘Deadly Dozen’ causes of accidents which are all-too-often written off simply as human error.

The appendices contain some very important documents, including the latest flow chart describing what happens when a report is submitted to CHIRP. We include it to demonstrate that we make every effort to maintain the anonymity of our reporters while we process a report. To date, we have never revealed the identity of anyone who contacted us, and you will see the steps we take to ensure this continues.

Finally, each copy of the Annual Review comes with a wafer flash drive. On this you will find a pdf version of this Digest and copies of 12 short videos based upon some of the reports we have received. Also, in a MS Excel work book, 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 videos cover:
1. BA compressor – union coupling failure.
2. Uncontrolled release of a blocked pipe.
3. Close encounter crossing a traffic separation scheme.
4. Hazards of pilot boarding.
5. A safe means of access – at ALL times.
6. Simply unsafe practices
7. Safety when handling tugs.
8. Damage to an anchor windlass hydraulic motor.
9. Let’s hear it for best practice.
10. Attempted armed robbery.
11. Issues relating to pilot boarding.
12. The Deadly Dozen.

Once again, we hope you will find the Annual Review and the videos helpful, but please let us know. Your comments are important, and will help ensure CHIRP Maritime continues to provide the information you need to make our industry safer.

Bon voyage!

Editor: Captain Alan Loynd
FNI FITA MCI Arb 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.
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In 2016 the International Maritime Pilots Association (IMPA) initiated a safety campaign related to pilot ladders and associated equipment. CHIRP Maritime supported this campaign and received many reports as a result. Several of the reports are included in this section, and they cover a wide range of potential hazards.

We learn about ships where the design of the pilot boarding arrangements does not meet the safety requirements, and there are other reports which indicate that some crew members do not understand the requirements, or choose to ignore them.

The use of ships’ mooring ropes as tug lines is discussed, and it is worth repeating that this is a very bad practice. Modern tugs are more powerful and more manoeuvrable than ever before, and they should only use lines which are specifically designed to handle the forces generated.

Some reports also cover language and communications. In many ports around the world the operating language is not English, and the pilot communicates with tugs, linesmen etc., in the local language. Bridge teams need to ensure they know what instructions are being given. Pilots also need to make certain their instructions are clearly understood, particularly when delivered over the radio to several different recipients. The result of somebody missing just one instruction from the pilot can be disastrous.

Two particular themes emerge, in my opinion. First is the abominable quality of some ship design. When seafarers make a mistake they are often punished, but perhaps it is time that naval architects suffered the same fate. Secondly, it seems some seafarers still do not understand how to rig safe and proper pilot boarding arrangements. With the number of excellent guides and posters available, there is no excuse for some of the horrors we describe below.

On a brighter note, the response of some of the parties we contacted in relation to these reports was excellent, so our reporters have made a difference and we salute them.

The section concludes with an Insight article about rescue and emergency care when a person falls into the water. It contains much valuable advice for all seafarers.
The hazards of pilot boarding

Throughout 2016, the International Maritime Pilots’ Association (IMPA) held a safety campaign focused upon the standard of pilot ladders and associated equipment. CHIRP supported this campaign and received many reports on the subject, several of which are highlighted below.

**Outline:** The first report describes issues concerning pilot access near the non-parallel ends of a ship, and use of a retractable platform.

**What the reporter told us**

This vessel, like her sister ships, has a pilot boarding point located too far aft. Access is by means of a side door with a platform and pilot ladder. The position of the access point becomes dangerous at shallow drafts because it is directly over a non-parallel hull area on the aft quarter (see photograph below). This is particularly dangerous because it affects the safe performance of the pilot boat, especially in a swell, bad weather, or when the vessel is turning. Furthermore, the platform used in the arrangement also makes it dangerous at deeper drafts because its height is less than 5 metres above the water line. The danger is greater when the ladder is rigged FORWARD of the platform.

The pilot transfer operation should be carefully planned depending on the vessel’s draft, and the vessel should not alter course whilst the pilot transfer is in progress and until the pilot boat is clear of the vessel’s side. At deeper drafts, it may be necessary to remove the platform so as not to obstruct the pilot boat.

**What the Third Party told us**

Our investigations yielded the following results:

- in way of the pilot door the vertical part of the hull starts at a draught of 9.60 metres;
- 10 metres further aft the vertical part of the hull starts at a draught of 12.40 metres;
- the position of the pilot ladder and with it the position of the foldable embarkation platform is dictated by the structural conditions of the vessel; there is a lashing bridge right ahead and a lifeboat right astern of the reel with the ladder, so it cannot be relocated;
- obviously, the location of the pilot door itself is also dictated by structural factors and cannot be changed;
- there is no other location where a pilot ladder could be rigged that would meet the requirements of SOLAS V/23 and IMO Resolution A.1045(27);

Based on the above facts it is obvious that a certain risk cannot be excluded, and the pilot boat might get into trouble with the non-parallel part of the hull especially at shallow draughts and/or in adverse weather conditions. Likewise, it is obvious that little can be done in regard to the location of the pilot ladder and/or the pilot door without major structural alterations to the ship, the cost of which is prohibitive.

We have therefore concentrated on improving the existing arrangement to ensure maximum safety for pilots and pilot boats and have issued instructions concerning the embarkation/disembarkation of pilots.

These are, in particular:

- the embarkation platform is foldable and is in fact used or not used in close collaboration between the vessel and pilot boat depending on the individual situation; the vessels use a table that shows the clearance of the pilot door and platform from the water line in relation to the vessel’s draught, which allows the Master to inform the pilot boat precisely about the clearance available and eliminates “guestimates”;
- in cases where the embarkation platform is folded away and not used, an additional removable handhold stanchion was fabricated and is used to allow the pilot a safe transfer from the ladder into the ship (see photograph below), and
- vessels were instructed to carefully plan the pilot transfer in close collaboration with the pilot boat and not to alter course during pilot transfer or while the pilot boat is alongside the vessel.

We are confident that these measures will further enhance the safety of all parties involved.

**CHIRP Comment**

The Maritime Advisory Board commented upon the quality of the report and the response from the managers, which point to an active learning environment regarding these new builds. The Board agreed that structural modifications were unrealistic (although it was noted that some existing vessels were not constructed in line with the original pilot boarding regulations which included the “mid half length” parallel body requirement), and specifically noted that regarding modifications some quality control would be necessary for the additional handhold stanchion. This should involve the modification being inspected and certified by Class to ensure that it is safe to use.

Not explicitly mentioned by the reporter, but inferred, is that an approach from astern by a pilot boat may give the Coxswain some problems when trying to come alongside a flare, rather than the flat side of the vessel. Additionally, again inferred, the line of sight to the platform is reduced if the platform is placed abaft the ladder and this may cause the pilot boat superstructure and mast to come too close to the platform for comfort. The Coxswain may be unable to see exactly how much available room he has when manoeuvring the pilot boat.

For the future, the Board noted that a particular challenge will be ensuring that, at the design stage of a vessel, all the latest IMO regulations encompassed within SOLAS Chapter V Regulation 23 are incorporated. This takes on a greater importance as most companies, when purchasing a new build, accept the shipyard standard and are becoming less involved in the design and construction. It should be noted that since July 2012, pilot ladders are an integral part of the Life Saving Appliances certification within a Safety Equipment Certificate.
MV xxx kept a course of 320º which resulted in passing the outbound vessel port to port. The pilot boarding operation was attempted 2.5 miles from the port entrance, at 00:20 hours, at a boarding speed of 8 knots, with some swell because not enough lee was provided. Furthermore, the combination arrangement for boarding (not requested) was dangerous, with the vessel’s accommodation ladder less than 3 metres above the surface of the water. With a 1.5 metre swell coming from aft and the pilot boat’s handrail 2.6 metres above the water, the boarding was done in very poor conditions and the pilot boat’s performance was restricted by the lower platform of the accommodation ladder. There was a moment, when the pilot was on the ladder and the pilot boat deck was above him, forcing the coxswain to put the engine full astern to avoid a probable serious incident.

These vessels are well known for their non-compliant arrangements (see photographs), although there has been some improvement due to our continuous complaints. This near miss resulted from a combination of unsuitable equipment, a disregard of recent SOLAS regulations and an alarming lack of common sense.

Pilot boarding information is given to vessels over VHF prior to arrival and should be revised. It should include an instruction that SOLAS-compliant boarding arrangements are required.

What the Third Party told us
I think this case is not as straight forward as the informant would like to make it.

It is obvious that the required heading was not achieved by the vessel as requested by the pilot, yet the pilot still boarded the vessel in the prevailing sea/swell conditions thus jeopardizing the safety of both the pilot and pilot boat. It would have been prudent for the pilot boat to communicate with the vessel and achieve the desired heading to eliminate the risk caused by the reduced freeboard.

It is easy to ‘blame’ the technical installation, but in my view there was a serious lack of safety aptitude on the part of the pilot who, despite identifying the risk, proceeded with the boarding.

The pilot boat should have mutually agreed with the vessel that it would wait until the desired heading was achieved for safe boarding of the pilot.

I’m sure you are aware that the new SOLAS amendments for pilot transfer arrangements entered into force on 1 July 2012, and one of the items states that “The lower platform of the accommodation ladder should be in a horizontal position and secured to the ship’s side when in use. The lower platform should be a minimum of 5 metres above the sea level.” However, the above amendment does not apply to MV xxx as she was built in 2007.

As per the extract from SOLAS Ch-5, Regulation 23, 1.4 – “Equipment and arrangements installed on or after 1 July
2012, which are a replacement of equipment and arrangements provided on ships before 1 July 2012, shall, in so far as is reasonable and practicable, comply with the requirements of this regulation”.

MV xxx cannot meet the 5 metres height objective of the new SOLAS regulation between drafts of 11.35 metres and 12.45 metres (i.e. heavily loaded). Even if the vessel achieves a platform height of 5 metres, the hazardous condition will depend on the size of the pilot boat (which can range from a small launch to a very large harbor tug).

Our crews on this series of vessels are aware of the challenges at heavy load (deep draft) and are requested to work with the pilots to ensure safe boarding.

Hope the above satisfactorily addresses the raised concern.

**CHIRP Comment**

The Maritime Advisory Board, whilst noting some of the similarities with the first report in terms of draft and access via accommodation ladder, focused their attention on the stated “poor conditions” for boarding. It was observed that the standard green to green passing was changed to red to red, although it was agreed that this could be perfectly acceptable depending upon the onward movements of the inbound and outbound vessels. The Board specifically commented that in any pilot boarding, notwithstanding any advice or request from the pilot, the pilot boat or the local Vessel Traffic Service, the Master of vessel holds the sole responsibility for the safe navigation of his/her vessel and this should include consideration of an abort, (which should form a part of the passage planning process). Similarly, a pilot should not feel pressured to board and should abort a boarding when conditions are considered too hazardous.

A new build passenger vessel with non-compliant SOLAS boarding arrangements

**OUTLINE:** The final report in this section outlines how the latest SOLAS pilot arrangements as per IMO Assembly Resolution 1045(27) – see the comment under the first report - were not incorporated into a new build.

**What the reporter told us**

Due to her recent construction (2015) one might think safety features would be carefully addressed, but a raised belt along her side makes the usually hazardous pilot transfer operation even more dangerous. As far as I know “IMPA Required Arrangements for Pilot” demand at least 6 metres of unobstructed ship side at the pilot access point, yet on this ship there is a gap in the belt no longer than 1.5 metres. In cases of swell and/or bad weather the belt can significantly affect the pilot boat performance and increase the risk. This is a design issue.

**CHIRP Comment**

CHIRP made several attempts to contact the third party ship manager, who declined to respond. The Maritime Advisory Board agreed that the boarding arrangements were non-compliant to the latest SOLAS amendments. They noted that the 6 metres clearance was designed to give a pilot boat sufficient scope to come alongside and drop back. In this case the pilot boat could easily ride up under the “belt” in inclement weather conditions, and since there is no flexibility for movement of the pilot ladder, this creates a very hazardous condition.

**Safety when handling tugs**

**OUTLINE:** CHIRP has received a number of reports relating to communication and procedures when handling tugs and during mooring operations. Two high risk incidents are detailed below.

**What the reporter told us (1)**

The assisting tugs in this East African port utilize vessel-provided lines when docking and undocking. The docking pilots routinely ask for the best line and then wait while the tugs make fast. Communication with the tugs – when making fast, letting go or working the vessel – is generally conducted in Swahili. While making fast, particularly on departure, the tugs take a heavy strain on the line as it is paid out to them, and there is much screaming from the tug for “Slack, slack!” The vessel will be instructed to make fast the line while the tug is still moving away from the vessel, and there is still a heavy strain on the line. This type of evolution puts crew members involved at risk of serious injury.

While this situation was last observed on 28 December 2016, it has been witnessed by the reporter for at least the past 7 years.
The reporter advised the following lessons have been learned:
1. Request pilots to converse in English, or confirm their orders to the tugs in English as soon as they are given, so the bridge team can maintain awareness.
2. Closely monitor the evolution when making tugs fast. The Chief Officer or Master should monitor the process and bring any unsafe actions to the pilot’s attention.
3. Pilots in this port do not appear cognizant of the effect of reduced manning on the speed of mooring evolutions. With only three crew forward and three aft, multiple tasks (i.e., heaving in mooring lines and making fast the tug) cannot be completed at the same time.
4. Deck officers on the bow and stern have been instructed to put the eye at the bitter end of the tug line on a bitt to ensure the tug does not pull the entire line off the vessel, as has happened in the past.
5. Crew on the bow and stern are instructed to stand clear of the line as it is being paid out, and maintain control of the line by having at least one round turn on a bitt.
6. Crew are instructed that, if excessive force is put on the line by a tug, they must get clear and take cover. Tug lines have parted in this port in the past when sudden loads were placed on them.

**What the Third Party told us (1)**

CHIRP wrote to the Director General of the port in question and also the Port Manager. There was no response and the matter was followed up, but still without a response, which from a government department is most disappointing.

**What the reporter told us (2)**

Vessel commenced unmooring operations from berth No 2 of the terminal at 05:24 hrs / lt.

Following the unmooring plan agreed with the pilot during the Master/Pilot exchange process, headlines and stern lines were released first, and then the breast lines.

During the last stages of unmooring the pilot ordered the tug skippers to pull the vessel away from the dock without first releasing the spring lines. During the pulling operation, the forward spring mooring tail parted.

![Parted mooring tail following recovery of mooring line](image)

The investigation noted that:
- Tug lines have often parted in this port in the past when sudden loads were placed on them.
- Effective communication is essential in this respect.
- Tug lines have often parted in the past when sudden loads were placed on them.

**CHIRP Comment**

Having discussed these reports, the Maritime Advisory Board recommends the use of best and now common practice whereby only the use of tugs lines is permitted – a system utilised in the vast majority of ports. The Board emphasised that handling lines with tugs involves risk which can be mitigated with proper planning and that specific guidance is needed for ships crews when ships lines have to be used for tug operations. This includes:

- The need for a comprehensive exchange of information between the Master and Pilot before securing tugs, including when and how tugs will take/release the lines.
- Similarly, the personnel involved in handling the line(s) need to be properly briefed.
- Mooring crews should put the eye of the bitter end of the tug line on a bollard, and then ensure the tug does not pull the entire line off the vessel in an uncontrolled manner. Effective communication is essential in this respect.
- Mooring crews should be instructed to stand clear of the line as it is being paid out and maintain control of the line by at least one round turn on a bollard.
- Mooring crews should be instructed that once the tug is fast they must keep well clear; and if excessive force is put on the line by a tug, they must take cover. Tug lines have often parted in the past when sudden loads were placed on them.

Although the port is not named in the report it is known, and there is absolutely no tidal or other reason for the tugs to start pulling off before all lines are sighted and clear. Thus, this case would appear to be about communication, complacency, and (possibly) time pressure. It is absolutely essential that relevant personnel are clear of tugs’ lines prior to the tugs pulling/pushing, so effective communication between the Pilot/Master/Bridge Team and the mooring stations is vital.

Effective communication is vital throughout all mooring and tug handling operations. Where English is not the common language then pilots communicating in their native tongue to the tugs is advisable, but the context of the discussion must be reported to the Master and thence to the mooring stations, preferably before the instruction is given.
More issues related to pilot boarding

OUTLINE: CHIRP continues to receive plenty of thought-provoking reports related to pilot boarding, and the following two reports are indicative of the problems being faced. In the first report, a new build vessel was not constructed in compliance with SOLAS, and in the second the pilot ladder was simply dangerous.

What the Reporter told us (1)
The attached picture is of a new build container ship 333m x 48m, constructed at a shipyard in the Far East. She arrived in Port “A” fully loaded, but when she sailed in light condition the pilot could not disembark because of the cut-away at the quarter. In light condition, the last metre of the ladder was not flush with the side of the hull and the pilot boat would have been forced to operate under the counter. The vessel was requested to ballast the ship down to enable the pilot to disembark safely.

For a new build vessel, this is obviously a design issue and CHIRP is requested to contact ship managers, the shipyard of build, and the vessel’s Classification Society for comment.

The pilot door not lying within the parallel mid-body in light condition.

What the Third Party told us (1)
CHIRP wrote the DPA of the company in question, and also to the General Manager of the shipyard. Approaches to the local office of the vessel’s Classification Society received no response, and the shipyard declined to reply. The Company, however, responded with a thorough appraisal as follows;

This is the first of a group of 5 new built vessels under our management. The fifth and final vessel will be delivered to us within the next few weeks. The current pilot boarding arrangement is definitely a design failure that was not recognized before and during the building phase. We only became aware that at certain loading conditions the lower part of the pilot ladder would be left aft of the parallel body, imposing obvious hazards, after we took delivery of the vessel.

It goes without saying that, following a risk assessment and having also consulted the Classification Society and the designers, we took immediate measures to remedy this shortcoming. For the last vessel to be delivered, we altered the design and effected immediate structural modifications. For the four vessels already delivered to us and currently in service, we will alter the boarding arrangement to a combination ladder, using the accommodation ladder and a suitable pilot ladder, so that it will comply with SOLAS Regulation V/23 and IMO Resolution A.1045(27) requirements.

To resolve the issue we discussed possible alternatives with the shipbuilder and agreed to modify the vessels by adding a secondary means for pilot boarding. This involves installation of an additional pilot ladder to be used in conjunction with the existing accommodation ladder. The main features of the modification are;

- The secondary means of pilot transfer shall be used in case of draughts lighter than 11.609 metres. For drafts deeper than 11.609 metres, the existing primary pilot ladder with pilot door will be used, which is approved by the International Marine Pilots Association, (IMPA), and the Panama Canal Authorities;
- The additional pilot ladder will be fitted in way of Frame 81+600, by means of suitable eye plates (not a reel). This is within the parallel mid-body of the ship and within the midship half-length of the ship;
- The additional pilot ladder will be secured to the ship’s hull by means of Class-approved securing fittings, (magnetic and detachable type), and all steps shall rest firmly against the ship’s side;
- The additional pilot ladder shall be transported from its stowage position and shall be launched by means of suitable davits and messenger ropes; and
- The modification described above will be implemented on the last sister vessel before her departure from the building yard, while the previous sister vessels have already been, or will be, supplied with the required equipment and materials that will enable the crew onboard to carry out and complete the modification work.

Our next sister vessel to call at Port A, also on her maiden voyage, will be the xxx. Since this will be her first port, we have arranged for the vessel to arrive at the pilot embarkation point with a draft such that the existing pilot ladder will be safely resting against the side. At her next port, the pilot embarkation point will be changed. The vessel’s Classification Society will be called in to verify, document and approve the new arrangement.

CHIRP Comment
The Maritime Advisory Board discussed the excellent response from the shipping company, commenting that they instructed the shipyard building their new ships to change the design and thereby remove the design fault once it was discovered.

A comment was made on the potential problems that can be caused by ballast water management and the ship’s crew trying to minimise the changing of ballast at sea, sailing with
minimum ballast on a light draft and the possible impact on the positioning of the pilot access points.

It was also mentioned that this report highlights failings within the actual design and approval Quality Assurance process by the yard, Class and Flag State. In this respect, the International Marine Pilots Association,(IMPA), gives Guidance For Naval Architects which is a useful resource to help ensure that this type of incident does not occur.

**What the Reporter told us (1):**

Manropes were secured to handrails rather than strong points on deck as required by SOLAS. This ship may well be in compliance as built, but looking at the rails I would not be happy for them to be protecting me from plummeting to my death. They were quite bent out of shape.

**Non-compliant arrangement – manrope is not secured to a strong point**

**What the Reporter told us (2):**

This vessel has an unusual arrangement for securing the manropes, using a lug on the side of the non-standard stanchions. As the manropes were only held by a half-hitch, they could possibly come free in certain circumstances. These lugs were very low rather than at the top of stanchions. This arrangement required the pilot to descend the ladder a few steps before being able to get hold of the manropes.

I pointed out to the master that this arrangement was not compliant, but appreciated that he had inherited this. Simply fitting a loop at the top would make them compliant.

**CHIRP Comment**

Having discussed this report the Maritime Advisory Board agreed that the description of the ladder made it extremely hazardous and that it did not comply with SOLAS V Regulation 23, a section of which is shown below.

### 2. General

2.1 All arrangements used for pilot transfer shall efficiently fulfil their purpose of enabling pilots to embark and disembark safely. The appliances shall be kept clean, properly maintained and stowed and shall be regularly inspected to ensure that they are safe to use. They shall be used solely for the embarkation and disembarkation of personnel.

2.2 The rigging of the pilot transfer arrangements and the embarkation of a pilot shall be supervised by a responsible officer having means of communication with the navigation bridge who shall also arrange for the escort of the pilot by a safe route to and from the navigation bridge. Personnel engaged in rigging and operating any mechanical equipment shall be instructed in the safe procedures to be adopted and the equipment shall be tested prior to use.

In addition, the Board commented that from the description given, the man ropes would appear to have been rigged upside down. If so, this raises the question of who is checking the safe rigging of the pilot ladder before use? The regulations are clear, and any contravention simply endangers life.

It should be noted that all references in these two reports, SOLAS V Regulation 23, IMO Resolution A.1045(27), Guidance For Naval Architects, and IMPA Boarding Arrangements are available on the CHIRP Maritime website on the Publications page.

It is also appropriate to remind readers that such contraventions should be reported as soon as possible to Port State inspectors to enable appropriate action to be taken. The United Kingdom Marine Pilots Association, (UKMPA), have a facility on their web site to report non-compliance. This may be adapted for use by anyone.

The above article was published in MFB48
Pilot arrival and berthing mishaps

OUTLINE: CHIRP has received several reports relating to port arrival and berthing. The following reports cover communication failings, maintenance issues, and operational concerns.

What the Reporter told us (1):
The ship arrived early at the pilot station but continued to proceed inside pilotage limits. When outbound in the pilot boat I saw the vessel was ahead of time, so called and told them not to proceed inside the pilot station and if necessary take a round turn until I arrived. The vessel took no action and continued inside the limit. Only after repeated calls and explanations did the vessel go around to allow me to board in the correct position.

We do not send out written instructions about not proceeding inside the boarding ground via the agents, as this may not be actioned upon receipt. Our harbour radio (VTS) instructs vessels not to approach the boarding station until contacted by the pilot. We do not talk to the ship until we have the vessel in sight visually.

I’m sure that, with hindsight, I could have communicated better but it is clear that there was a lack of understanding about what was being requested. Once I got to the bridge the captain immediately asked why he needed to go around. Having explained, and established myself on the bridge, I was very conscious to establish a good rapport with the bridge team, since an overly critical pilot can create a barrier between himself and the master/bridge team. Whilst encouraging some small-talk to soften any tension, I was also able to get a better sense for the captain’s level of English, which was moderate at best. It was confirmed he had never been to this port before.

CHIRP Comment
The Maritime Advisory Board emphasised the need for good communications between the port authorities, vessel and pilot. In general, the reasons for not proceeding inside port/pilot limits might be;

- Any incident inside pilot/port limits might have legal ramifications
- That the pilot needs time to familiarise himself with specific bridge equipment and also to conduct a thorough master–pilot information exchange;
- The pilot and master need to satisfy themselves that the vessels equipment is all in good order for the transit;
- Time may be required, for example to line up for a leads approach, and
- The vessel may not be aware of any other ship movements in the vicinity which may or may not have priority.

What the Reporter told us (2):
Sailed a car carrier this evening and noted a few issues for consideration.

- Bow thruster not available due to auxiliary engine issue. Master stated bow thruster could not be used without risk
of blacking out the vessel. This was only mentioned when the pilot arrived on the bridge for departure. I called for a second tug.

- Unmooring was slow due to winch pumps requiring changing over during the operations, both forward and aft. I recall this from previous operations with this vessel.
- Elevator not working, fourteen decks from accommodation level to pilot embarkation deck, resulting in a slower than expected transit time through the vessel.
- Ships VHF radio communications broken at times, could be a handset issue?

**CHIRP Comment**

The Maritime Advisory Board commented that many pilots do have the option to delay sailing, take the ship to anchor until faults are rectified, and to inform Port State inspectors (although the power to do so is unfortunately not universal). In this case there are several issues, all indicative of poor mooring equipment design, work preparation and maintenance failings – overall a non-effective safety management system. This is unfortunately not uncommon. Ship’s personnel often live and work with deficient equipment for such a long time that it becomes the standard, and is not regarded as being deficient.

**What the Reporter told us (3):**

Whilst berthing the vessel a tug order was missed resulting in heavy contact with the berth. It appears that as an order was given to each tug in quick succession, the order to the forward tug may have been blocked by a response from the aft tug. This resulted in the tug continuing to push after the order was given to stop. There was no damage because the rubber fenders absorbed the load adequately. As the shoulder landed first there was no damage, however if it had been the aft tug continuing to push there could have been damage to the quarter with this type of vessel.

**CHIRP Comment**

The Maritime Advisory Board commented that a vessel’s speed must be fully under control when approaching a berth. The problem in this case was the rapid succession of orders given to the tugs. Any instruction to a tug should be considered before being transmitted. The view of the tugmasters and their means of communication is an additional consideration. A publication giving guidance on “Standard Pilot Orders for Tugs” by The International Tugmasters Association specifically discusses intervals between pilot orders for tugs and this becomes increasingly important when more than two tugs are utilised. The whole issue of tug orders and language is the subject of ongoing debate globally.

**What the Reporter told us (4):**

On approach to the port whilst under pilotage, a vessel experienced a blackout approximately two miles NE of the inlet leading to the final port approach. The main engine stopped, although steering and emergency electrical power was maintained. The vessel was proceeding inward bound with a speed of 5 knots. Both anchors were cleared away ready for use. The generators were restarted after 2 minutes, and all electrical power and systems brought back online. Main engine and bow thruster were tested at this time. In consultation with the master, it was agreed to resume the approach. The master advised the pilot that the reason for the blackout was the starting of an additional generator. The vessel then proceeded to berth without further incident.

**CHIRP Comment**

The Maritime Advisory Board mentioned the following lessons to prevent reoccurrence;

- Prior to standby it should be ensured that adequate electrical power is available with additional plant engaged as necessary before the pilot boarding ground is reached, to cover all anticipated operations e.g. electro hydraulic winches, bow thruster, lighting, main engine.
- Anchors should have been cleared beforehand - vessel only two miles off the beach.
- Are the pre-arrival checks appropriate – are they implemented correctly, who checks, and are they confirmed by the company? If the answer is in the negative, managers should then ask, why? (Potential management failings)
- Some companies conduct machinery drills, which are useful for training staff to respond to such incidents.
- The incident identifies potential causal factors including but not limited to;
  - Human Factors – Complacency, Local Practices, Pressure, Fatigue, Situation Awareness.

The above article was published in MFB49

**Advisory Board Insight: Small craft man overboard and subsequent treatment**

It’s maybe not really a subject you may want to consider as you step aboard your craft, but in the highly unlikely event of finding yourself in the water, it would be nice to think your crew could rescue you and then make sure you recover from the experience.

For recovery operations on larger ships, IMO provides guidance in MSC1/Circ1182 “Guide to recovery techniques”, but for small craft, despite the greater likelihood of a person falling overboard, this is often a subject that skippers fail to consider. Operators of small craft, including mooring and leisure craft, should plan for and then exercise a situation where a person falls overboard. Equally important, they should pay special attention to the crew’s training for subsequent action and care.

**Recovery of the person overboard**

First consider the freeboard of your boat – you will soon realise that trying to get a person out of the water is not as simple as it looks. The best method of recovery for low
The effects are documented and sadly highlighted in some recent tragedies.

Standard HSE or STCW Elementary First Aid courses are designed to enable crews to look after the patient until an ambulance arrives. They rely on crews’ recall of course content from many years before, and also on practical skills that were taught but may never have been practised. Standard first aid courses and their associated equipment cannot guarantee survival of the casualty while at sea.

UK Search and Rescue organisations realised this and have radically altered their training in the last 10 years. Casualty care courses coupled with treatment check cards have become the norm. The treatment check cards guide casualty-carers through the required treatment that should be considered, thereby removing reliance on memory in the heat of an incident.

First Aid training should move towards an Immediate Emergency Care course, taught with checkcards and using the equipment and methods similar to those adopted by Search and Rescue responders. This will produce a commonality of approach and equipment, promoting effective treatment until handover can be arranged. This can only benefit the patient.

One example of such a course is described at https://www.saviourmedical.com/ukmpa-maritime-iec-course

Skippers should plan and exercise to deal with man overboard situations and subsequent treatment – it may save your life!

Now the casualty is onboard – have you thought about what to do next?

Crews are working in areas where they are unlikely to have medical assistance or an ambulance for at least the first twenty minutes following illness or injury. This delay puts considerable pressure on crews, because in addition to recovering someone from the water, a rescue involves prevention of death from major loss of blood or asphyxiation, which can occur in as little as three minutes.

Current thinking is often overly-focused on how to prevent hypothermia. Research has shown that it takes at least thirty minutes of immersion in Northern European waters for crewmembers to even start to become seriously hypothermic, and endurance in these waters is usually measured in hours before the victim succumbs to a hypothermic death. Casualties recovered before that time are just simply ‘cold’. However, physiological reactions to cold-water, particularly cold water shock, play a major part in immersion related deaths after an unplanned entry into the water! Cold water shock, which is completely different from hypothermia, kills over half of all UK water victims, and does so in the first 3 minutes of immersion. While this sounds dramatic,
2. Safe Access

Safe access is a topic which should be of concern to everyone, not just the pilot, yet the reports in this section indicate there are still many lessons to be learned.

We are told about a gangway spreader which was home-made and unsuitable, and the ship was lucky the pilot did not refuse to board. Such botched arrangements cannot be justified, and may cause delays to the vessel even if they do not injure anyone.

There is also a report about a ship trying to transfer personnel to a helicopter and a launch at the same time, even though it was impossible to ensure optimum conditions for both. A proper risk assessment would have highlighted the dangers, but was not carried out.

We learn about an accommodation ladder wire which parted although it had only been in service for 30 months, and the portable gangway ladder on a newly-built vessel which simply did not fit! There is also an accommodation ladder which became submerged – raising questions not only about corrosion but also from the perspective of the ISPS Code.

The last report concerns a rather frightening bridge wing platform which presented a serious tripping hazard, especially at night, and combined with a very low bulwark to create the risk of falling from a great height – dangerous enough at sea, but surely fatal in port.
As part of the counter-measures, we have similarly cautioned the ship's crew against using the crew-made spreader which is not type-approved and told them to always ensure the safety of personnel boarding the ship using the ship's gangway.

**CHIRP Comment**

The Maritime Advisory Board, whilst understanding the need to test engines prior to departure, and following the rationale of protecting an accommodation ladder from damage, commented that only certified equipment should be used at all times and then discussed the more generic problem of the use of accommodation ladders at berths. It was noted that “swinging out” an accommodation ladder is not an infrequent event and is often seen at container berths where large fenders protect the face of the berth creating a large gap between the ship and jetty hard standing. This adaptation could place undue stress upon the upper platform swivel, since it is now doing something that it was not designed to do. Brow ladders or clip on ladders as shown below provide a safer alternative to swinging and have the flexibility of placement at a point convenient to vessel and jetty. The design is certainly safer than the other example shown below!! It is incumbent upon a vessel to provide a safe means of access whilst alongside.

![Gangway supported by suspected home-made spreader.](image)

**What the Third Party told us**

The Operators received the following from the vessel:

“Prior to boarding the pilot at xxx as per our SHQEM procedure we have to test all navigational equipment including main engine prior to departure. Whilst the vessel was berthed at the wharf, the gangway had to be pulled away from ships side to about 3 metres from the wharf fender, so the crew had to suspend the gangway from the port side provisions crane in order not to drag and swing the gangway instantly to the ships side, which would have happened using the normal lifting arrangement, which is not an approved type. We had not detached the ships provision spreader after ME testing, leaving the pilot to notice it prior to embarkation.

Root Cause - Ships provision crane was using a ‘jury rigged’ lifting spreader in conjunction with the normal accommodation ladder winch arrangement.

Probable effect of the deficiency is to the crew, ship and environment if not rectified, delay to vessel if the pilot refused to board, or AMSA detention due to non-approved pilot boarding arrangement.

The ship's purpose in using the crew-made spreader is only for support in emergency cases when we require to lift the gangway instantly without damaging the ships side. However, due to the incident at xxx, we have promised AMSA not to use the spreader anymore since, in their opinion, it is not an approved type.”

**A SAFE Means of Access**

**OUTLINE: CHIRP** has received several reports related to means of access – wire failures, falling overboard and design issues are all discussed below.

**What the Reporter told us (1)**

A vessel was simultaneously engaged in a helicopter operation to disembark a pilot, and a launch service operation to disembark a cargo surveyor via the amidships accommodation ladder. While the boat approached the cargo surveyor, together with the pumpman who went down to assist, stood near the lower platform of the ladder. The vessel was underway at the time and the ladder faced aft. With the prevailing sea and swell, the launch was pitching heavily
and decided to manoeuvre astern to approach the ladder. The launch struck the lower platform of the accommodation ladder heavily, breaking the ladder wire. The cargo surveyor and pumpman fell overboard, and were rescued from the water by the launch. They were extremely lucky to avoid any injury.

What went wrong?
- There was inadequate situational awareness – the vessel was doing two operations simultaneously. In the first operation, a pilot was being disembarked by helicopter and in the second a cargo surveyor was leaving from the accommodation ladder via a launch.
- The vessel had adjusted course to keep the wind on her bow as per the helicopter’s requirement. As the helicopter had not arrived, it was decided to disembark the surveyor first by launch. However, with the prevailing course of the vessel the launch did not have a good lee from sea and swell, causing excessive pitching, and with her astern manoeuvre she had inadequate control.
- There was an inadequate on-site risk assessment and inadequate Personal Protective Equipment (PPE). Both men went down the ladder and stood near the lower platform instead of waiting at the top, despite the unsafe approach of the launch in the prevailing circumstances. A safety harness was not used before going over the side onto the accommodation ladder.
- The disembarkation procedure was inadequate. Only the accommodation ladder was used for disembarking the surveyor instead of using a combination, i.e. pilot ladder rigged together with the accommodation ladder. The use of just the accommodation ladder posed a hazard for the safe approach of the boat, while the vessel was underway at sea.

CHIRP Comment
Having discussed this report, the Maritime Advisory Board commented that, in addition to what went wrong above, when a ship is conducting simultaneous operations both should be subject to risk assessment. The results of each assessment should be compared, since the results of one may have an impact on the work of the other. In this case, the requirement for the vessel to steer in a certain direction for the helicopter, as per the ICS Guide to Helicopter / Ship Operations 4th Edition, meant that the lee was inadequate to support a safe launch disembarkation. An intervention on safety grounds by any crew member might have prevented the incident, as would the rigging of a combination ladder.

CHIRP also notes that there is a need for personnel to have received basic training in the use and hazards of different types of ladder prior to being faced with such operations. In addition, whilst rigging a ladder should involve a safety harness, the use of a harness at the boarding platform is inappropriate and potentially dangerous. Wearing a lifejacket, however, is a MUST!

There are far too many cases where this type of incident, coupled with a lack of any flotation aid, has had a far more serious outcome. Whilst the MAIB lifejacket review recommends legislation that all fishermen must wear lifejackets, the safety lessons identified in the review can apply to the whole of the maritime sector.

What the Reporter told us (2)
Having completed mooring operations, and with the vessel safely berthed, the crew commenced to deploy the starboard accommodation ladder. The ladder was moved outboard via its winch from the stowed position. When the crew started lowering the ladder by winch, the wire rope parted at a distance of about 1.8 metres from the permanent connection of the ladder davit. As a result, the ladder dropped freely into the sea. It remained connected to the vessel by the two bolts/pins, with the lower platform in an almost vertical position. There was no personnel injury. The accommodation ladder was recovered and the wire end for ended. It was two and half years old. Replacement wires were ordered for both ladders on board.

CHIRP Comment
The Maritime Advisory Board noted that the regulations regarding the construction, maintenance, inspection and survey of accommodation ladders and gangways are governed by SOLAS II-1 Regulation 3.9. The associated guidelines for these requirements are detailed in MSC.1 Circ1331.

Inspections should be recorded in the ship’s Planned Maintenance System (PMS), with individual check lists for inspection of the wires and checking ‘pinch points’ where the wires turn around the sheaves in the stowed position. The PMS should include all maintenance as recommended by the manufacturer. It was also highlighted that in this case there was a danger that a shock load had been placed upon the bolts/pins in the platform due to the failure of the wire and that they should be thoroughly inspected prior to the ladder being brought back into service. In addition, the West of England P&I Club – Gangways and Accommodation Ladders give some useful advice.

What the Reporter told us (3)
On a newly built vessel, mooring had been completed and the ship’s gangway was being rigged to provide access to the shore. Whilst rigging, it was found that the ship’s portable ladder, (bulwark ladder), did not fit properly on the ships side railings so it did not provide safe access to the vessel. Given the potential for personnel injury, it was obvious that the portable ladder was incorrectly supplied by the shipyard.

The means of access to a ship should be safe, and may consist of an appropriate gangway or accommodation ladder with a properly secured safety net fitted. Particular attention to safe access should be given where there is a large height difference between the point of access to the ship and the jetty. When terminal access facilities are not available and a ship’s gangway / ladder is used, there should be an adequate landing area on the berth so as to provide the gangway or accommodation ladder with a sufficient clear run of space to maintain safe and convenient access to the ship at all states of tide and changes in the ship’s freeboard.

CHIRP Comment
This report reveals there are still newly built ships using poor design features that have not been challenged by ship owners and those approving plans e.g. Classification Societies. Who had oversight of equipment supply in the yard? Was it inspected and rigged before hand-over? Clearly not!
It is highlighted that the danger as reported is at the interface between the bulwark and the ladder, and that personnel must be able to safely transition between the two.

The above article was published in MFB48

**Article. 09**

**Keeping an effective gangway watch – ISPS Code violation**

**OUTLINE:** A report from a company where a ship’s accommodation ladder submerged when left unattended. Officials trying to board were not impressed.

**What the Reporter told us:**
A vessel was starboard side alongside in port and had completed loading operations. The crew were busy preparing for a draft survey, cleaning hatch coamings and making other departure preparations. With no other available manpower, the duty AB on gangway watch left his station to attend to ship’s moorings and did not heave the accommodation ladder prior to leaving the site. When the Draft Surveyor tried to board the vessel from the sea side accommodation ladder (port side), he found that it was immersed in the water.

Gangways and accommodation ladders are to be attended/monitored by a watchkeeper at all times. Should the watchkeeper need to attend another job, he should inform the officer of watch and be relieved appropriately. The accommodation ladder should not be left lowered close to the water when unattended. Additional crew should be called if required.

In this case, the AB should have heaved up the accommodation ladder well above water when leaving the site, since no one else was available to help.

**CHIRP Comment**
The Maritime Advisory Board commented that this was primarily a potential ISPS Code violation as opposed to a safety issue. Apart from any possible mechanical failure, the ladder must have become immersed earlier during the loading and had not been effectively tended. At some point the ladder would have been in a position for anybody to board, without the knowledge of the crew. Many ports are extremely strict, and may issue fines for the poor control of ship’s access. It is also highlighted that salt water immersion may result in accelerated corrosion of the equipment.

The above article was published in MFB48

**Article. 10**

**Watch Your Step!! Poorly designed bridge wing platform**

**OUTLINE:** Poor design - a tripping hazard with the potential for a fatal fall from height.

**What the Reporter told us:**
I piloted a vessel into port this morning. As I walked out to the bridge wing in the dark I was confronted by a platform approximately 200mm off the deck - despite the yellow paint on the edge it was almost invisible. Once on the platform I had the coaming of the bridge at mid-thigh level as opposed to hip level. Being some 26m above the wharf, this was quite unnerving.

Upon stepping off and proceeding to the bridge during berthing my foot slipped off the outboard edge. This was due to the fact that there was a gap off approximately 200mm between the platform and the solid upright part of the bridge wing.

I am not sure why the ship was built with this platform - the only thing it appears to do is make it easier for a person to fall off the bridge wing.

The reporter passed the incident to Port State Control who visited the vessel to follow up and conduct a scheduled inspection. They commented that, remarkably, this ship is some 13 years old yet the matter has never been raised.

The International Convention on Load Lines 1966, Regulation 25(2) Protection of Crew states that a minimum bulwark height of 1000mm from the deck is required. With the addition of the deck platform the height was reduced to about 880mm which does not comply with this regulation. The vessel’s classification society also stipulate that for bridge wings, freeboard decks and superstructure decks, the minimum height of bulwarks must be 1000mm.

A deficiency was raised with a direction to comply with the regulation as soon as practicable. Until then a risk assessment must be completed with appropriate measures taken to ensure there is no risk of falling or tripping hazard to any persons occupying the area. The company’s port captain, on board at the time, agreed to follow up accordingly.

**CHIRP Comment**
The Maritime Advisory Board commented that this was primarily a potential ISPS Code violation as opposed to a safety issue. Apart from any possible mechanical failure, the ladder must have become immersed earlier during the loading and had not been effectively tended. At some point the ladder would have been in a position for anybody to board, without the knowledge of the crew. Many ports are extremely strict, and may issue fines for the poor control of ship’s access. It is also highlighted that salt water immersion may result in accelerated corrosion of the equipment.

The above article was published in MFB48
We have a wide variety of reports in this section, as always, and we start with a series of fuel oil leaks. The causes of the leaks varied from an improperly torqued securing nut to a damaged sealing surface and the wrong type of gasket – all could have been prevented, and it is fortunate that no serious fires resulted. These reports certainly underline the need for constant vigilance and illustrate the fact that alert crews can often correct a problem before it turns into a disaster.

This is followed by two equipment failures for which we can blame a manufacturer and some shipyard workers. In the first case, a CO2 system remote control cabinet was so flimsy it simply fell off the bulkhead, and in the second a radar antenna fell off in bad weather. Once again, nobody was hurt, but both incidents could have had fatal consequences.

We also consider a case of engine room ratings being forced to work alone in the UMS machinery spaces at night, in a report which demonstrates the MLC Convention is not yet being rigorously observed by all ships, and we have two more cases of hazards involving incinerators. Finally, we describe a fire in a battery locker caused by an unsecured battery.

Our Insight article at the end of the section is probably one of the most important we have published, since it deals with the safety of lifeboat falls. Readers will be aware that there have been numerous very serious accidents, and a number of fatalities caused by broken lifeboat falls. The article, written by experts, should be read by everyone on board, and the suggestions should be incorporated into the planned maintenance systems of every ship. This really is an article that could save your life.
Hazards associated with fuel oil leakage

OUTLINE: CHIRP has received several near miss reports relating to fuel oil leakage and the following examples demonstrate the high risk of a fire due to human errors.

What the Reporter told us (1)
A Company reports that recently the number of fuel oil leakages from main engine fuel oil high pressure pipes has been increasing. Fuel oil leaks from high pressure pipes carry a risk of fire in the engine room. Most of the incidents were caused by human errors, such as overconfidence and carelessness. Some examples are as follows:

Case 1: While the vessel was underway, a slight fuel oil leak was observed at the connection between No.6 cylinder fuel oil pump of the main engine and its high pressure pipe. Immediately, the vessel stopped her main engine and replaced the high pressure pipe. Upon investigation, it was found that the coupling nut had become loose. The cause of this incident was inappropriate torque management of the coupling nut.

Case 2: Whilst underway, the crew discovered a fuel oil leak between No.8 unit fuel oil high pressure pipe connection of the main engine and the injection control unit. The vessel stopped her main engine and replaced the fuel oil high pressure pipe. On further investigation, the sealing surface of the removed fuel oil high pressure pipe showed slight press marks.

To help eradicate fuel oil leaks from the main engine fuel oil high pressure pipes, the following key actions for fitting and unfitting the fuel oil high pressure pipes should be followed:

- Close Inspection: seating surface/screw parts of the pipe at both ends and their mating parts should be inspected and cleaned carefully. For close connection, the fuel oil high pressure pipe should be removed completely when it is dismantled for maintenance, such as during fuel valve replacement, etc.
- Proper reconditioning: if any damage to the seat surface is observed, the relevant seat surface is to be ground by the special tool on board. Also, the lapping special tool must NOT be deformed or damaged.
- Proper tightening: the fuel oil high pressure pipe should be tightened to the proper torque in accordance with the manufacturer’s instructions.

What the Reporter told us (2)
During daily inspection, the 3rd engineer noticed that fuel oil was present inside the Purifier Room, the source being from the fuel oil heater of No 1 auxiliary boiler. The engineer isolated the heater, drained the piping of No 1 boiler, and put No.2 auxiliary boiler fuel oil heater into service.

Investigating the cause of the defect, it was found that the leakage occurred due to the poor condition of a gasket, which was replaced with a spare. The damaged gasket was found to be of the ordinary type and not the spiral high temperature gasket which is used for high temperature piping systems. The investigation also noted that the last visual inspection of the system was conducted the evening before, in accordance with the UMS check list, and no problems were identified. Following the incident, a thorough inspection of the piping system was carried out. No defects or leaks were identified and the piping was found in good condition. It was concluded that inadequate inventory management of the vessel’s spare parts was a potential factor, and there was improper planning during the fitting of the original gasket. It was highlighted that:

- Machinery spaces, and especially purifier rooms, are very fire-prone areas. Therefore, it is essential that these spaces are inspected carefully during all daily and UMS inspections.
- Maintenance of critical systems such as the fuel system should be properly planned and executed, ensuring that the spare parts used are fit for purpose.
- Effective inventory management, proper tagging and control of spare parts onboard and proper checking of the condition and suitability of spare parts prior to use are essential safety issues.
- Fuel oil high pressure piping systems should be fitted with spare parts/consumables appropriate for the high temperatures involved.

CHIRP Comment
Having discussed the reports, the Maritime Advisory Board agreed that fuel oil systems are high risk, and that particular attention should be paid during maintenance. The correct identification of gaskets is essential for high pressure/temperature systems. The Board also stressed the need for careful oversight during maintenance or repairs. When a defect regarding an incorrect type of gasket/joint being fitted has been identified at one location in the high temperature pipework, it would be a good risk control measure to open up the remaining similar joints in the pipework, to ensure that correct spiral-wound gaskets/joints have been fitted.

The 1998 HMAS Westralia fire with subsequent fatalities caused by fuel leakage from non-genuine flexible pipes was referenced. In addition, a first response to fuel fires should be foam blanket cover. It was also highlighted that low pressure piping does not require shielding, so if a leak occurs the consequences could be severe.
From the investigation that was carried out, the following should be noted:

- The vessel reported that inspections and tests of the CO2 fixed system were carried out regularly. Damage to the support brackets for the cabinet had not been noted during inspections.
- The cabinet was constructed of plastic. It was concluded that the incident was caused due to wear and tear of the wall mountings of the CO2 pilot cabinet box.
- All fleet vessels were instructed to thoroughly inspect their remote CO2 cabinets and revert with findings.

**CHIRP Comment**

CHIRP occasionally receives CO2 related near misses – Maritime FEEDBACK 44 reported upon the accidental release caused by brittle O-rings, and an article relating to misuse of locking pins was published in Maritime FEEDBACK 17. MAIB has an incident report (number 23-2012) where pilot valves were not isolated during servicing, and the system activated. The USCG described an accidental CO2 release when the CO2 release valves were mistaken for quick closing valves and the system was activated by mistake. USCG Safety Alert 15-2014 refers.

This incident could have resulted in multiple casualties if the pilot bottles have been triggered when the control box failed. How secure is your remote release cabinet? Do not let the something like this happen to you. For CO2 system manufacturers – is your cabinet robust enough to withstand the vibrations experienced on a vessel?

The above article was published in MFB 47

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**Article. 13**

**Look out above!**

A ship manager has reported an incident to a radar antenna as follows:

While the vessel was at sea, heavy adverse weather conditions were experienced, with 9-10 Beaufort and wind speed more than 45 knots. The Master reduced speed in order to minimize the weather impact. Suddenly the S-Band radar antenna became detached from its base and landed on the masthead platform. The antenna was damaged and could not be repaired by the crew. The cause of the failure was determined to be improper installation of the S-Band Antenna by shipyard personnel. The antenna should have been mounted on the foundation plate (base) with eight bolts rated M12 but was actually secured with four bolts of M10, which were not adequate to withstand the applied wind forces.

This incident underlines the need for thorough inspection of all equipment, systems and arrangements on new vessels during their first period of operation. These inspections should verify that all equipment, systems and machinery comply with the manufacturer’s specifications and industry standards and do not present any safety risks. Any defect or malfunction or low standard item should be reported to the company so they can issue a guarantee claim to the ship builder.

The above article was published in MFB 47
MLC Issues – UMS Operations and abuse of authority

OUTLINE: A report alleging that single persons were working in the engine room at night when in UMS mode. Also, personnel issues said to include abuse of authority.

What the Reporter told us:
I have a concern related to the Unmanned Machinery Spaces (UMS) operations on board our vessel. When we are sailing, our duty rotation on watch is four hours on and four hours off for three Motormen. When the vessel goes UMS, the 2nd Engineer gives us job orders but we are alone in the engine room at night, and this is unsafe for us. The problem is what if something unexpected happens to us? Furthermore, the 2nd Engineer is not good in the way he approaches his men - he gets angry if his job order is questioned, and he pushes us to make overtime after our watch and remain for another two hours duty. This is abuse of his authority and it has been going on since I joined the vessel.

What the Third Party told us
The reporter requested details of the local ITF office, which were given. CHIRP was also aware of the involvement of the International Seafarers Welfare and Assistance Network through their SeafarerHelp.org helpline.

CHIRP contacted the DPA of the company in question and got a response stating that this would be investigated. However, subsequent attempts to engage with the DPA over several months did not get any response. The advice from the Maritime Advisory Board was to inform the vessel’s Flag State of the matter. CHIRP wrote to the Flag State giving the report as detailed above. The Flag State have responded to CHIRP stating that the Administration takes any violations of MLC 2006 very seriously, and that the report will be investigated with the ISM Managers of the vessel.

CHIRP Comment
If anyone is working alone in the engine room the UMS Patrolman alarm should be in use, and/or the bridge should be contacted at regular intervals. MAIB report 17-2016 relating to an engine room fire on board Arco Avon highlights the dangers. Four on, four off, does not comply with the Hours of Rest Regulations, and is an MLC 2006 violation.

Vacuum packed

WHilst commissioning an incinerator, six people were trapped inside the incinerator room due to the strong vacuum (negative pressure) in the room.

The incident happened when the air supply damper was closed and the incinerator combustion air fan drew exhaust from the room, creating a vacuum inside. Smoke filled the room due to a burner seal failure. The door to the room was held shut due to differential pressure, trapping the personnel inside. This near miss could have resulted in a fatality.

Differential pressures can occur as a result of improper operation of machinery room dampers, mechanical ventilation, or an AC unit. If these ventilation systems and dampers are not operated correctly it could result in unsafe conditions like those described above. Other near misses reported include three medical related finger injuries due to differential pressures. Not understanding the dangers of differential pressures can also cause machinery and equipment damage, serious injury and fatality.

It is important to remember that good seamanship means to always:
- Ensure that ventilation & dampers are controlled as intended for normal operations and maintained properly;
- Ensure vents/dampers are open before starting mechanical ventilation;
- Look for signs of excessive differential pressure and investigate the reason, and
- Maintain a slight positive pressure inside the accommodation, especially during cargo handling.

Do not:
- Close vent flaps / dampers against forced ventilation except in emergency, and
- Deviate from normal ventilation practice without carefully assessing the risks.

The above article was published in MFB48
Battery fire

In the early hours of the morning during a period of adverse weather the fire alarm in the vessel’s battery locker was activated. The crew mustered and a fire team assembled. Upon investigation it was discovered that there was a small flame and sparks being emitted from a spare battery that was stored in the battery locker on the top shelf.

The battery had been delivered during a previous port call and stored within the battery locker. Unfortunately, it had been placed on a storage shelf with no attempt to secure it in place.

During a period of heavy weather, the battery tipped onto its side and slid against the steel lining of the bulkhead. As the battery terminals were not covered, this caused the battery to short and led to it overheating.

Once the battery had reached ignition temperature the casing melted, setting off the fire alarm.

Corrective Action

- All batteries, including spares, must be secured in place to prevent movement
- All spare batteries should have the terminals covered with insulating material to prevent accidental shorting

Damaged battery after the fire.

The above article was published in MFB48

Advisory Board Insight:
Lifeboat Falls

The maritime industry continues to report a high number of accidents involving lifeboats, particularly at drills and when launching boats. Failures have been attributed to both the poor design of hooks and the failure of wires. Many of these incidents have resulted in severe injuries or fatalities. It is fair to say then, that despite the amended regulations and guidance from IMO, including support from the Industry Lifeboat Group, (ILG), a great deal of work needs to be done to prevent reoccurrence of the incidents.

Wire Ropes

Looking at wires first, the current SOLAS requirement is for wires used as falls to be changed out every five years. This is an arbitrary period intended to coincide with docking intervals. It should be noted that in a shore-side environment such as crane operations, a five year change out would be considered unacceptable.

In addition, Regulation 20 of SOLAS III no longer requires wires to be end-for-ended. In an amendment, the end-for-ending has been replaced by an inspection regime to identify deterioration. This means however that the same sector of wire rope could be positioned over the davit and fall block sheaves for the entire five years of service of the wire rope. In the light of recent reports of accidents involving wire rope falls, this policy has to be questioned.
Another factor is the type of wire in use. Rope constructed with an Independent Wire Rope Core (IWRC) has greater tensile strength than a fibre core rope of the same diameter, but it is also more resistant to bending and lacks a reservoir for lubricant. Pressure lubrication is most effective with IWRC wire ropes but may introduce further environmental sensitivities. It is noted that a number of failures have involved IWRC when pressure lubrication has not been available on board the ship.

Wire Rope: Inspections and Failures

Inspection regimes for galvanised steel wire ropes have time and time again been proved inconsistent in providing an effective means of judging the safe condition of every wire. Wire failures are almost inevitably preceded by a satisfactory inspection report. This is so when the inspection has been apparently thorough and carried out by a trained and skilled crew.

The reason is that internal corrosion is almost impossible to ascertain along the full length of the wire without impractical and destructive opening of the lay. Even external corrosion is challenging to identify where the wire has been previously greased. Grease on top of rust hides it very well.

Five year end-for-ending does not make wear and corrosion consistent over length and offers no guarantee of longevity. Owners and Masters may well wish to consider the following practical steps to assist in preventing failures:

- Consider a maximum life span of a galvanised steel wire rope at sea to be limited to two years. Date of fitting, due date of disposal and three month reordering notices are much easier to track and assist in establishing a reliable maintenance regime. Examination of incidents suggests that corrosion failures occur on wire which has been in service longer than two years. Corrosion failures are therefore preventable. Also consider that the actual cost of galvanised steel wire rope is often significantly less than anticipated. This is especially so with an owner’s advanced central ordering at known predictable order dates, where access to competitive suppliers and low cost sea freight to the ship are easily managed.

- Ensure the length of the wire ordered has sufficient spare length so that annual cropping of one metre of length is possible. Lifeboat falls need sufficient length for the lifeboat to be lowered to the water in the ship’s lightest condition with adverse heel of 20 degrees and also still retain at least a minimum of three safe turns on the drum - and preferably much more. If there are plenty of spare turns on the drum at the longest lowering position then there is room to crop.

- By cropping one metre off the end of the wire at the drum end on an annual basis the points of wear and highest corrosion around sheaves and saddles will move. The opened lay (over or around turns where corrosion first starts deep in the lay), closes back up and is then more resistant to the elements. It is these opened lays in difficult to inspect locations where the corrosion is fatal. Periodic inspection of the adjusted wire may not be effective because the lay has then closed and buried the corrosion within. The older the wire, the more this is hidden from view during every inspection.

- In special cases, cropping both ends by one metre may be preferable. Remember the intent is to move hidden areas around pinch points where the lay will have been opened. Managing hard ferruled eye ends may need to be considered.

The message is clear – the frequency and severity of incidents shows that the regulatory five year life cycle is inherently flawed. Consideration should be given to renewing competitively – why not do it every two years and order in advance with extra length in order to be able to crop annually? Some forward thinking ship operators do indeed crop falls at regular intervals, and renew at intervals well inside the five year cycle.

Davits

One method of easing the stresses around a sheave is in the process of securing the lifeboat. The boat is hoisted to the limit switch cut out (or just prior to the blocks if there are no limit switches). The boat is manually wound up to the blocks and then the gripes are secured, which on many designs also engages a securing arrangement for the davit arm itself. Finally the brake is released, easing the fall blocks on to horns at the davit head, which eases tension in the wire and alleviates crushing pressure on the wire at the sheave. This should ensure that the boat’s weight is taken by the davits with no weight on the wire. For this to be effective the davits must be fitted with horns to support the fall blocks. The alternative is for the weight of the boat to be constantly supported by the wire during which time it will also be exposed to vibration from the ship’s propulsion and movement in a seaway, all of which contributes to fatigue.

Operation

A state of ‘relaxation’ of the fall wires is often not fully achieved. It is a failing associated with many modern davit designs. The modern tendency is to use rigging screws to terminate the inboard end of a fall at each davit arm This arrangement requires a cumbersome adjustment of the rigging screw by crewmembers to correct any mismatch between the two davits that may occur during hoisting. Mismatch may occur due to wires not stowing on drums tightly enough before the full weight of the lifeboat is taken. Older designs of davits tended to join the inboard standing ends of the two falls by leading them through friction inducing fairleads. Correction of mismatch was then enabled by the sliding of the conjoined falls through the friction fairleads until both davit arms were fully home. Only when davits are both
fully home can the falls be relaxed after gripes are secured and the fall blocks lowered onto the horns at each davit head. The mismatch referred to can occur because the two wire fall ropes are stored on the two hauling drums but they are often coiled in opposite senses. One will be wound onto the drum right handed, while the other will be left handed but the normal convention dictates that both ropes are right handed. Any trained seafarer should be able to identify that the left handed coiling will oppose the stowage and will tend to open each turn of the coil by its internal anti-rotational properties when there is little or no load (at the point where the boat is still afloat prior to being lifted). This in turn will induce gaps in one of the storage layers into which “wedging” of subsequent layers can occur. The end result is the davits reaching their inboard stowage points at slightly different positions, one of them stopping short when the other is “close up”.

Wire falls failures may also occur when the davits touch the stands on the main deck during lowering. This initial swing-out phase has a tendency to induce extreme oscillations in the boat if the operation is not conducted continuously. Manufacturers often recommend that the brake is lifted completely clear in order to avoid interim braking that causes the oscillation. The only braking that may occur during this phase therefore is applied by the centrifugal brake, which is designed to limit the rate at which the boat descends to the water. On the initial swing-out this brake will not engage until the full descent rate has been achieved, which in turn means that the davits will contact the deck chocks at full lowering descent rate, or a speed close to it. This in turn imposes a sudden impact as the function of the fall wire is transferred from luffing the davit to lowering the boat. One investigation of deformed lifting rings measured the dynamic shock load in excess of 1.3g at this stage of the lowering operation, it was found that negative acceleration was able to reach on a gravity davit and boat system with an accelerometer. The only braking that may occur during this phase is “close up”.

**Limit Switches**

The limit switches referred to in the ‘Davits’ paragraph above are often magnetically activated proximity switches. Older designs of davit would have been fitted with mechanical switches which could be manually overridden at the beginning of the hoisting operation. The magnetic type, however, are often activated by a plate attached to the davit arm which cannot be operated independently of the davit. This in turn prevents it from being tested when the boat is at a safe height close to the water. In effect there can be no test for such a design of switch. The operator must hope it will operate as the davit ships home or he/she must cease the operation of hoisting upon their own judgement. The operation becomes subject to an untested single point of failure if the operator is slow in their reaction. These limit switches could have activation plates mounted on arms that swing independently of the davit but are brought home by the davit at the final section of the hoist. The independence of the arm supporting the activation plate however would enable a similar manual test at the water’s edge as is possible with the older type of mechanical switch. If activation plates are fixed to the davit arms it should be possible to modify the arrangement and introduce an independent arm to support the plate, but any such modification must inevitably be approved by or on behalf of the flag administration.

**Hooks**

Hook failures have attracted much attention in recent years following an unacceptably large number of incidents, many of which resulted in both fatalities and life-changing injuries. The focus of attention fell on on-load release hooks, which were the normal cause of such catastrophic events. The Industry Lifeboat Group (ILG) was formed over ten years ago and was supported by all the main shipping company organisations, all the seafarer organisations and all the principal P&I organisations. This group, which represents competent industry operational experience, campaigned for a review of on-load hooks but also introduced the concept of the Fall Preventer Device (FPD) as a safety back up, at least during drills. IMO issued a number of lifeboat safety circulars but perhaps the most significant was MSC Circular 1327 in June 2009, which outlined guidelines for fitting FPDs.

Subsequently the IMO Maritime Safety Committee (MSC) revised the requirements for on-load hooks. A new paragraph 5 in SOLAS Regulation III/1 came into force on 1 January 2013. It required on-load release hooks to meet a new standard, which was aimed at achieving designs that do not open inadvertently, a difficult standard to achieve, but many manufacturers have now introduced revised or new designs that are identified as meeting this standard. The changeover for all ships should be completed by 1st July 2019 and until then, FPDs are recommended for drills. Hook integrity may have improved but there is still a human element involved in their resetting. See below.

It should be noted that boats have a centre of gravity biased towards the stern to induce a slight stern trim to improve manoeuvrability. This could result in the load on the after falling being taken before that of the forward fall. The load on the after fall will, because of the centre of gravity bias, be constantly greater than the forward fall. A large proportion of lifeboat suspension accidents initiate at the after fall. It is
In September 2017, BIMCO reissued their pamphlet “Avoid Lifeboat Accidents” as a free resource. Amongst other things it features a detailed guide relating to the use of FPD’s, and is recommended reading to complement this paper.

**Summary**

Many incident reports tend to blame the crew for a lack of greasing or maintenance, and attribute the cause directly to human error or simply focus upon the wire/hook failure. This is unfortunate since it diverts attention away from serious design issues that will, if left in place, continue to maim and kill until the true root causes are recognised and acted upon.

It is noted that most failures occur during recovery of boats and it is generally accepted that incorrect re-setting of hooks is a common cause of such failures. Seafarers will know that even in the smallest of dock waves it is difficult and often hazardous to effect such resets and reconnection to the falls. It is therefore imperative that FPDs are attached before the hoist continues from a safe distance just above the water. Once safely stowed all hooks can be checked for correct re-setting. Even if the new pattern of hooks are fitted, masters may feel that it is still safer to incorporate the back-up of the FPDs. It is still possible to re-set even the new designs incorrectly and the in-water position is far from the ideal environment to effect this important operation. It should be remembered that the lifeboat is primarily designed for escape but during drills the recovery is an additional activity that is not covered in detail in SOLAS regulations. It is for the master to operate the system effectively and safely. He/she has the responsibility. He/she also has the authority to enforce any additional measures considered necessary at the scene. Whilst it may be acceptable to reduce the connection of the lifeboat to a single action of disconnection in an emergency, this level of exposure to risk would normally be considered unacceptable, even reckless, in routine operations. Even though the possibility of inadvertent opening is supposedly reduced in the new pattern hooks, why rely on the single connection? The pair of hooks jointly make up a single suspension system; they cannot support the boat in individual isolation. A second level of safety is provided by FPDs, but providing an alternative load path or pins or similar method of securing the release mechanism closed would be a wise precaution during drills, especially for recovery - which is a routine, not emergency, operation.
4. COLREGS AND NAVIGATION – VARIOUS

It seems fairly certain that we will shortly see the appearance of unmanned autonomous vessels, and these will no doubt be programmed to observe the collision regulations. I wonder how they will deal with some of the vessels featured in this section, which do not appear to treat COLREGS with the respect they deserve?

We start with a case where a VLCC was following a deep water route and approaching an area where caution was required, but was hampered by an overtaking container ship and eventually forced to stop engines. This is followed by an unusual example of what can happen when NAVAREA warnings are ignored, but it is a strong reminder of why the warnings should always be given careful attention.

A report about fishing vessels contravening Rule 10 makes the point that these miscreants should be reported to the relevant authorities so that action can be taken, but we also feature a case where the fishing boat appears to have been the innocent party and was almost hit by a ro-ro vessel. This case also touches upon the use of VHF in collision avoidance.

We finish with a report about misleading lights on a passenger vessel, which reminds us that navigation lights must always be clearly visible and not capable of being confused with any other lights. It also reminds us to make a careful plot in any situation which might involve risk of collision, and to use ALL available means to determine what is happening around us.

The Insight article in this section is about ECDIS. We are still seeing numerous accident investigation reports which mention improper use of ECDIS, so we urge you to study the article carefully and incorporate the lessons into your own passage planning.
When not to overtake

OUTLINE: An overtaking situation where a VLCC approaching the Malacca Straits Deep Water Route had to slow down to allow another vessel to overtake prior to entering the Deep Water Route.

What the reporter told us

Our vessel was approaching the One Fathom Bank “goalposts” from the northwest at our planned safe speed. Being a laden VLCC we were following the Deep Water Route and were a little surprised to observe the container vessel xxx, draft 12metres approaching from astern and travelling considerably faster. Our pilot contacted him to confirm his intention to overtake, which he proceeded to do down our port side. Our vessel’s engine had to be stopped for some time to allow him to get past and clear prior to our transit of the restricted area at the “goalposts”. This was far from ideal on the final approach to a notoriously hazardous area. The lessons learned from the reporter were for ships “to keep clear of the deep-water route if not obliged to use it”.

What the Third Party told us

We share the common interest in safe navigation and your mail and report is received with thanks. We have taken the time to do an investigation and unfortunately found that the VLCC did have a valid point. We have in our SMS procedures a chapter pertaining to transit of the Malacca Strait and the need for safe speed.

1. We have re-emphasized the need to consider safe speed as well as “not to impose any risk on others, especially deep draught vessels”. Regardless of TSS rules, COLREGS Rule 13 is also to be complied with.
2. We have issued a knowledge-sharing circular to our managed vessels emphasizing what is already stated in our procedures.

We regret the situation and hope that by addressing and re-emphasizing this on an individual vessel level as well as to the fleet as a whole, we will avoid similar situations in the future.

CHIRP Comment

In addition to the remedial actions taken by the Third Party in this case, the Maritime Advisory Board mentioned the following:

- Upon occasion, laden VLCC’s may have to stage a carefully-timed transit due to draft and tidal restrictions – in such cases the timing of approach to the Deep-Water Route may be critical.
- The 2017 edition of the “Passage Planning Guide – Straits of Malacca and Singapore (SOMS)” has recently been published by the Witherby Publishing Group.
- Safe passage – The Straits of Malacca and Singapore (BIMCO and the SOMS Co-operative mechanism 2014) may be consulted for general advice.

The above article was published in MFB46

NAVAREA warnings are issued for a reason

OUTLINE: A report from a management company, describing how an important NAVAREA warning was overlooked and led to a near miss.

What the Reporter told us:

Recently, we received a near miss report in which parts of a booster rocket launched from xxx fell near a vessel due to the failure of the bridge team to note a navigation warning regarding the area and the risk of falling debris.

A NAVAREA message about the launching of a rocket, including the area at risk from falling debris, was issued by a national coast guard. However, the Master and duty officer overlooked it and did not plot the risk area on the chart or ECDIS. The vessel entered a hazardous area with considerable risk to the ship’s safety, resulting in a serious near miss in which the vessel came close to being hit by falling debris from the booster rocket.

CHIRP Comment

The Maritime Advisory Board agreed with the lessons learned. All Navigation Area warnings, NAVTEX transmissions and Enhanced Group Call (EGC) messages, should be checked and acted upon where necessary. A procedure should be in place on the bridge to ensure that this is done. Chart Management Systems routinely provide a system which can be used.
Fishing Vessels and Traffic Separation Schemes

OUTLINE: A report of fishing vessels contravening Rule 10 in the vicinity of the Foxtrot 3 buoy in the Dover Straits.

What the Reporter told us
At least five fishing vessels were noted to be contravening Rule 10 in the English Channel. The vessels were in radar range of Dover Coast Guard / CROSS Gris Nez Traffic, but none of the fishing vessels were called by either station. I have observed this numerous times, and have seen many vessels get into difficult situations with fishing boats behaving in this way. At no point were any fishing vessels spoken to by either observing station during the course of my four hour watch.

The reporter additionally stated the belief that more awareness from Coast Stations and a stronger stance on COLREGS in places such as the English Channel is required, to ensure that there are no collisions caused by the behaviour of these fishing vessels.

The National Federation of Fishermen’s Organisations advised that the lack of enforcement in the TSS on the French side and even for foreign fishing vessels in the UK side is well known. It is typical for Dover to contact vessels to give them a warning and the UK fishing vessels tend to react immediately but vessels of other nationalities tend to disregard the warnings. This is an observation rather than a criticism, but without an even-handed approach towards all vessels it is only encouraging the good vessels to do bad. It is also highlighted that sometimes tidal streams can affect the speed or drift of fishing vessels and they may not realise they are already within the TSS. They should monitor their position regularly.

CHIRP Comment
Having discussed the report, the Maritime Advisory Board commented that there is obviously an issue to be resolved, and took the unusual step of agreeing that the location of the report be identified in order for the safety lessons to be promulgated accurately.

Another factor for readers to be aware of is the widespread use of rotating amber lights by fishermen in addition to the lights required by COLREGS. This is often confusing and leads to vessels giving way when they may not be required to do so – hence their popularity with fishing vessels.

Should you find yourself in a position where fishermen are contravening Rule 10 in the Dover Straits, then CHIRP advice is to report this to Dover Coast Guard / CROSS Gris Nez as appropriate in order for them to create a hazardous incident report and launch an investigation.

The above article was published in MFB48

Close Call Fishing Vessel and a RoRo

OUTLINE: A report outlining a near miss in the Mediterranean Sea that almost resulted in a collision.

What the Reporter told us:
Whilst on watch during the night I heard an Italian fishing boat several times calling a ro-ro ferry on VHF channel 16, asking her to keep clear of him as he was trawling and displaying the required navigation and fishing lights. Italian was the language in use. The fisherman also provided his position and said he had been flashing a light for the last five minutes. As he did not receive any answer from the ro-ro ship, and considering that the vessel had not altered course and speed at all, he had to take evasive action and
stopped his boat, ending up just 10 metres from the passing cargo ship. The fisherman contacted the nearest local Italian coastguard station shortly afterwards to report the near miss, and he was told that an investigation would be conducted upon his return to port the following day.

It’s really shocking to still hear such conversations on VHF. In this case the lack of a proper lookout could have resulted in a collision – the actions of the fishing boat skipper prevented it.

**What the Third Party told us:**

**CHIRP** wrote to the ISM Managers of the vessel but they declined to respond.

**CHIRP Comment**
The Maritime Advisory Board commented that with the exception that the use of VHF should not be used for collision avoidance, the fishing vessel’s actions were appropriate when raising awareness of the risk of collision. Additionally, whilst it is pleasing that the Italian coastguard undertook to follow up, it is disappointing that the Company in question did not respond, indicating a poor company management safety culture.

The above article was published in MFB49

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**Navigation lights – can you see them?**

**OUTLINE:** An encounter between a yacht and a large passenger vessel, where navigation lights were difficult to distinguish amongst other deck lights.

**What the Reporter told us:**

My yacht was sailing cross channel in a southerly direction. I saw the lights of another vessel off my starboard bow. At some distance, I made out what I thought was a green light and believed that the other vessel was a cross channel ferry heading north, well clear of my vessel. As we closed, it became clear that what I had thought was a green light was in fact blue, but another green light became visible, so I continued to believe this was a ferry heading north and clear of my vessel. However, the relative tracks didn’t seem to make sense if I was seeing a starboard navigation light. Eventually, the vessel crossed my track about a mile ahead – it was a cruise liner going from west to east. I should, therefore, have been able to see the port navigation light but, even with hindsight, I could not convince myself there was a red light in amongst the multitude of other lights visible on the cruise liner. This is a common issue with cruise liners – and this one is no worse than some others.

On this occasion, there was no harm as the other vessel was a safe distance ahead and we were the stand-on vessel. However, because we only saw what seemed to be a green navigation light and, therefore, misinterpreted the situation, had my vessel been under power, we would not have known that we were the give way vessel until very much closer, and then only because the track wasn’t making sense, not because we identified the red port navigation light.

The Collision Regulations specify the minimum visibility of navigation lights. However, the impact of other bright lights simply obscuring the navigation lights, (as was the case when the vessel was 1 mile ahead), or being positively misleading (as was the case initially when the only coloured lights I could see were green), is not appreciated. Vessels should ensure that their navigation lights are bright enough to be seen against the background of all their other lights, and avoid using coloured deck lights where this can cause confusion.

Very bright deck working lights obscuring navigation lights are often an issue on fishing boats as well.

**CHIRP Comment**
The Maritime Advisory Board highlighted that navigation light visibility – irrespective of other lighting – must comply with COLREGS Annex 1. In addition, they queried why classification societies permit these designs where visibility is obscured. Technology exists whereby deck lighting may be adequately shaded – permitting safe movement on board yet not obscuring regulatory lights. The quality of light bulbs used is another possible consideration. Take LED for example – are approved suppliers holding the introduction of these back due to a lack of any requirement in COLREGS?

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Pilots in this port can use a PPU, (Portable Piloting Unit), to compare the error between the vessel’s actual position and that being displayed on ECDIS which in this case, had no radar overlay. It was determined that the ECDIS display gave more range to a target ahead than that observed by radar.

As pilot, my biggest concern was to prove the error to all the officers including the Master. It went a bit like, “Captain what is the relative bearing to ‘A’ Beacon?” He gave his answer and I followed up with, “No Captain it is abeam on the port side – Please look out of the window.” It was at this point he realised that there was an issue. In my opinion, the Captain believed that the ECDIS could not be wrong…

The above article was published in MFB49
The Master was requested to investigate the fault and to advise the pilotage authority at the next port of call (in the same country), as to whether the error had been rectified. The Master did not advise the next port, but information was forwarded with the following advice:

1. With the vessel stationary, no apparent error was observed.
2. The faster the ship went, the larger the error.
3. It was determined that the error originated from the main GPS receiver.

The pilot at the second port confirmed items 1 and 2 above, and determined the error to be approximately 200 metres at 12 knots, which would take 32 seconds to transit. If a turn had been delayed by 32 seconds at the first port, the result would have put the vessel aground! I therefore question the value of ECDIS in its current form:

- It is too easy for a watchkeeper to operate it on the wrong scale.
- It is too easy to acknowledge alarms without checking to see what they are.
- Any bridge equipment which takes its input from another source, (GPS, speed log, etc.) requires frequent verification that the data input is correct. (It might be true to suggest that this has not been fully embraced by the maritime sector, and this is not solely limited to ECDIS).

Associated ECDIS problems include, but are not limited to:

- A lack of standardisation of ECDIS displays and the method of presenting the information.
- Far too many non-essential alarms.
- Differing requirements for training regarding on board familiarisation and type specific training.

**CHIRP Comment**

ECDIS may be regarded as a significant safety tool, providing real-time position awareness to the bridge team using the inputs of log, gyro and GNSS. However, like all computer systems, the effectiveness of its output is directly related to the quality of the inputs.

**CHIRP** sought advice from INTERTANKO who have been preparing ECDIS Guidelines. Their advice is that the concept of ECDIS positioning is considerably different from traditional navigation. Historically, position fixing was based upon a time interval which in turn was governed by the simple fact that the vessel must not stand into danger in the interval between positions. ECDIS however, gives you a “real time” position, but only if the information inputs are correct. Therefore, they need to be verified at regular intervals.

INTERTANKO advise that the verification process should consist of all of the components of an ECDIS unit as follows:

- Hardware – i.e. the actual ECDIS unit itself.
- Software – i.e. the operating system, and ECDIS presentation software.
- Data – i.e. log, gyro, radar / ENC overlays, their corrections and GNSS signal.

On this basis, the recommendation is that ECDIS is verified once every watch when deep sea or in open waters. This is reduced to at least hourly when in coastal waters or port approaches, and during anchoring and berthing operations.

Looking elsewhere, we note the MAIB has recently investigated several grounding incidents in which the ECDIS configuration and utilisation was a contributory factor. In their report 22/2017 on the grounding of the MUROS, they state:

> There is increasing evidence to suggest that first generation ECDIS systems were designed primarily to comply with the performance standards required by the IMO, as these systems became a mandatory requirement on ships, with insufficient attention being given to the needs of the end user. As a consequence, ECDIS systems are often not intuitive to use and lack the functionality needed to accommodate accurate passage planning in confined waters. This situation has led to seafarers using ECDIS in ways which are at variance with the instructions and guidance provided by the manufacturers and/or expected by regulators.

In collaboration with the Danish Maritime Accident Investigation Board, the MAIB is now conducting a safety study, “designed to more fully understand why operators are not using ECDIS as envisaged by regulators and the system manufacturers”. The overarching objective is to provide comprehensive data that can be used to improve the functionality of future ECDIS systems by encouraging the greater use of operator experience and human centred design principles.

**CHIRP** is aware of ECDIS problems due to display screens being too small, resulting in too much information on a cluttered screen and alarm fatigue. In some cases navigators are missing the ease of use of a paper chart. Don’t be lulled into a false sense of security regarding the accuracy of the electronic charts. Like all computer systems, the effectiveness of its output is directly related to the quality of the inputs. The ECDIS image is not infallible; in some cases there are ECDIS charts which have been drawn by hand, using a computer pen tracing information off paper charts.

While accident investigators may cite human error as the underlying cause of ECDIS-assisted groundings, **CHIRP** believes there are typically three distinct areas where the root cause of the accident may lie:

1. **Pre-programmed grounding:** Failure to fully appraise the route and other navigation information before creating a passage plan, or planning a voyage without paying close attention to the potential risks due to depth of water and other hazards. This will only serve to ground the vessel where planned!

2. **Absence of cross-check procedures:** It is essential the ENC’s are correctly interpreted and interrogated during the voyage, while regularly monitoring the vessel’s position and potential dangers. The use of radar overlay is a simple and effective means of checking the validity of the ship’s position.

3. **Error management and reversionary procedures:** If a position error is suspected, then reversionary procedures should be used to “drive” the ECDIS manually - exactly as one would fix using Dead Reckoning and Estimated Position techniques on a paper chart.

**CHIRP** also believes that, associated with the above, there is a case for the designers of ECDIS to consider human factors. It should not be possible at the voyage planning stage
to create a voyage unless a draft, an under keel clearance, and a safety contour have been entered. Additionally a zero entry should automatically be rejected and require an entry to be made.

There are textbooks describing ECDIS in detail, and the use of best practice and training. It is not for CHIRP to replace these guidelines, but for those readers seeking guidance the following points should be considered:

**ECDIS Planning Checks**

- Chart display / Symbology settings.
- Safety Contour setting, safety depth (ship’s draft + squat).
- Shallow contour setting, (the next contour shallower than the safety contour).
- Deep Contour (normally twice the vessel’s draft and indicates areas where squat may be experienced).
- Underwater obstruction/Isolated dangers - (these change depending on the safety contour).
- Appropriate Cross-track distances.
- Turn settings.
- Chart accuracy (CATZOC).
- Tidal streams / currents.
- Notes / Critical points.
- Parallel Index lines.
- Navigational warnings.
- T&P Notices to Mariners.
- Contingency plans.
- Visual and electronic route check.
- Voyage plan must be approved by the Master.
- Loaded / plotted on a backup system.

**ECDIS – OOW Checks**

**Alarms:**
Audible alarm working.
Safety alarms enabled.

**Safety Contour:**
Draught + Safety – Height of Tide.
Defaults to next deepest contour.
DO NOT CROSS without very careful checking.

**Guard-zone / Plan Ahead:**
Size / shape appropriate to the speed and location.

**Display:**
Chart display / symbology settings.
Display at correct scale for chart (SCAMIN – Scale minimum).

**Other:**
Route and associated voyage planning notes are loaded into the system.
Backup systems are ready for immediate use.

Last but not least – **LOOK OUT OF THE BRIDGE WINDOW!!**
5. PASSENGER SHIPS, FERRIES

The crew of any vessel which carries passengers has an extra duty of care towards the landlubbers who briefly venture into our watery world, yet the reports in this section illustrate that there are still ships where the crew do not pay enough attention to their own safety, and ignore dangers to their passengers.

We start with a case where a yacht was almost swamped by a passing pilot boat which contravened the local speed limit, although it is reassuring to note the good response from the local authorities.

This is followed by a report about an apparent lack of basic safety awareness by the crew of a ferry and a jetty operator. The report contains a link to the PLA Code of Practice for Passenger Vessels 2016, and this is a document which should be carefully studied by anyone who ever carries passengers.

We also read about some unsafe practices on a cruise ship, including crew members working at height without using personal protective equipment, and we encounter a ferry where no safety briefing was given and where the gangway was potentially dangerous.

Perhaps one disappointing aspect of this section is that most reports do not come from people working aboard passenger ships and ferries, but have been sent to us by third party observers who witnessed the situation and were concerned enough to file a report. We hope to receive more reports from people within the sector in future.

There is no Insight article in this section, because we suggest you read the PLA Code of Practice – an excellent guide to safe operations, with advice which can be applied anywhere in the world.
Wake wash – almost thrown overboard

OUTLINE: An inward bound yacht was almost swamped at a narrow harbour entrance by the wake from another vessel.

What the reporter told us
My 31 feet long yacht was proceeding under engine into the small boat channel at xx harbour entrance. There was approximately 2.5 knots of ebb tide against us as we neared the entrance. Our speed over the ground at the time was 3.5 knots. There were no boats coming out of the harbour through the small boat channel, but there was a small yacht (approximately 26 feet long) ahead of us. We had been sailing close to this vessel for some time and it was observed to be single-handed. At the time of the incident, the other yacht was approximately 25 metres ahead of us. There was no commercial traffic in the entrance either inbound or outbound.

As we entered the small boat channel, a pilot launch approached us on our port quarter, i.e. between us and the western shore, at high speed. The launch had her bows up in a semi-planing attitude and I estimate her speed at 15-18 knots. The launch proceeded to overtake us about one third of the way into the channel, without slowing down. Her wake, when it hit us, knocked us over to starboard by at least 50 degrees. My yacht recovered but rolled to port and then starboard three of four times before regaining equilibrium.

At the time I first heard and then saw the pilot launch, my crew was on the starboard side deck adjacent to the main hatch, returning to the cockpit. I shouted a warning a second or two before the wake hit us. He reported afterwards that he only just stopped himself being thrown overboard. At the time, both my crew and I were wearing life jackets but were not hooked on, it being a calm day. I was at the helm.

After the pilot launch passed us, it was seen to slow down to displacement speed and turn to port into the xx marina vicinity. Unfortunately, we were unable to see the launch’s number, which is displayed on the hull at the bow.

I believe that the pilot vessel in this instance was exceeding the harbour speed limit of 10 knots. I also suggest that, in choosing to overtake us on our port side, the pilot vessel could have caused another serious incident if an outbound vessel had appeared from the xx area and entered the channel. Had the wake which hit us also hit the small yacht ahead of us, there could have been even more dire consequences.

What the Third Party told us
CHIRP contacted the local Harbour Master who advised that the incident was indeed acted upon. The pilot boat speed was deemed to be excessive so operators were informed and remedial action agreed. The harbour has speed controls, with the speed referred to being speed through the water. The Harbour Master also mentioned that the harbour does have wash regulations in addition to speed controls. It was deemed that these were also breached on this occasion and remedial action was agreed with the operators.

CHIRP queried the approach of the yacht under a strong ebb. The Harbour Master did not offer advice but stated that the harbour is open 24/7 and the timing of approach is up to individual skippers.

CHIRP Comment
The Maritime Advisory Board, having discussed the report, commented upon the danger from the wash of high-speed craft, observance of good seamanlike practices, and the need for compliance with harbour bye laws at all times. Both CHIRP and the MAIB have historical wake wash near misses and incidents that may be referenced on their respective web sites.

The above article was published in MFB46

Ship non-compliance with basic safety precautions

OUTLINE: A report of observations noted on a river ferry highlighting an amazing lack of awareness of self-preservation and professionalism.

What the reporter told us
I was waiting on the pontoon jetty at point A to board ‘xxx’ as a passenger for the trip to Point B. The vessel is operated by ‘yyy’ and is stated to have a carrying capacity of 250 passengers. Immediately before stepping onto the pontoon at Point A, a crew member donned an inflatable life jacket but did not buckle it. He was wearing flip flops. I think, but I am not sure, that the person wearing flip flops may have been the skipper.

The vessel subsequently berthed again at Point A, then at Point C and Point B. At these last two jetties, a different crew member donned a life jacket but did not buckle it.

Non-compliance with these basic requirements gave the impression of a lack of a safety culture and a lack of supervision by the management to ensure compliance.

I would be happy for you to pass these general observations to the company and to the PLA with the suggestion that they check for themselves the standard of compliance.

What the Third Party told us
The Company in question declined to respond, however the Port of London Authority replied as follows: “We take items like this very seriously and I will be speaking to the operator about this issue. I will also bring the matter to the attention of the pier owner who has a duty under the license to protect, promote and improve on services. Not wearing appropriate footwear or a lifejacket are against any operator’s license for working from the pier.

We have made extensive efforts to improve the safety culture of older operators and this is reflected in our Code of Practice which all passenger boat operators have signed up
Painting aloft – how secure is your ladder and what are the consequences of you falling?

I hope that you are able to share the above and perhaps direct operators from other areas to this guidance - you will see that it is endorsed by all relevant marine bodies*.

**CHIRP Comment**

*CHIRP* was disappointed not to receive a response from the operators, but the Maritime Advisory Board are pleased to support the advice given in the Port of London Authority Passenger Vessel Operations Code of Practice for the Tidal Thames and would note that much of the content is applicable both nationally and internationally with respect to safe operations.

The above article was published in MFB 46

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**Passenger vessel safety**

**OUTLINE:** *CHIRP* has received several reports regarding both domestic and international passenger vessels outlining failings in safety management.

**What the Reporter told us (1):**

I was on a cruise earlier this year. As an ex-mariner I was shocked by the occasional unseamanlike behaviour of the deck crew. The following was noted - small things possibly, but indicative of the culture on board. I contacted the ship managers but their response was less than helpful so I wrote to the company. Their comments are in italics.

- Mooring crew left a stairwell gate swinging even though it had a securing device. The next six crew-members who went through that gate left it open, swinging gently. They all knew the vessel was proceeding to sea.
- Personnel painting cable runs in the deck-head. On one occasion a safety harness was worn but was not used, the second time, (see photo), a safety harness was not worn. The photograph shows the crew member up a ladder and being supported below by another crew member. Whilst the Code of Safe Working Practices does allow for this control measure to be used, this is still 'working at height'. The Code lists the control measures that should be in place and the approved onboard risk assessment allows for ladder use in such a reduced height task such as this. Note the ladder is supported below. In this instance the practicality of securing a safety harness in a confined place such as this would have likely been more hazardous than the fall.
- I watched an AB sharpening his scraper with a disc grinder. The disc was facing upwards and turning whilst he laid the scraper on it. Guests were walking past while this was going on but rather than go down to a workshop, put the scraper in a vice and do it properly, he put himself and passengers at risk. This was likely very isolated and will be brought up at toolbox talks with the deck crew to ensure power tools are used safely.

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**What the Reporter told us (2):**

Whilst moored and carrying out administrative tasks on the bridge, I noticed a crew member on the ferry docked nearby, working (painting) on a scaffolding at approximately three to four metres above the deck, without wearing any PPE at all (no safety harness, helmet, safety goggles or gloves). Not only this, but when the scaffolding was moved a few metres by other crew members, the worker stayed on top of it holding onto the rails. A shocking sight indeed!

**CHIRP Comment**

The Maritime Advisory Board commented that in both reports the hazards do not appear to have been managed, indicating a poor level of safety culture and leadership. It was questioned whether the “two metre rule” is detracting from the use of a permit to work (which should take into account the specific location of the work, and potential hazards). COSWP Chapters 8, 11, 17 refer. MAIB have investigated several fatalities caused by falls from height, whilst MARS and *CHIRP* both have reports related to working aloft, so the issue still requires close attention.

**What the Reporter told us (3):**

On passage between the mainland and an island aboard a domestic passenger vessel, no safety briefing was provided although the public-address system was used by tour guides to broadcast information of general interest in five languages. Time on passage was approximately 50 minutes. On the return passage on a similar company vessel, no safety briefing was provided.

The only exit marked with an “EXIT” sign on the middle deck was at the aft end. Doors located towards the bow on this deck were not marked and were not seen to be used. The deck plan of this vessel, according to the company website, depicts these doors as being capable of use, each opening onto an exterior passage.

Railings on the gangway, once lowered to enable passengers to board and to disembark, left a significant gap to the fixed railings at the stern of the vessel. When schoolchildren were seen to walk across this area, a crew member standing on the deck extended an arm to ensure that there was no gap between the rails, but this protection was not provided for adult passengers.

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The above article was published in MFB 46
The mooring eye, placed over fittings on the quay, had a hook attached that might be viewed as a trip hazard for passengers waiting their turn to board.

It is suggested that the company’s Safety Management System might usefully consider:

- Requiring safety briefings to be broadcast on all passages.
- Reviewing the emergency exit plan for all vessels to ensure that doors capable and intended to be used for this purpose are marked with “EXIT” signs.
- Devising an effective means of bridging gaps between the gangway and fixed rails - a barrier that can simply and quickly be put into place and removed - to prevent passengers and crew from falling through these gaps with the associated risks of injury and/or drowning. Crew members were observed not to be wearing life jackets.
- Reviewing their policy for ensuring that methods employed to moor company vessels do not create trip hazards.

**CHIRP Comment**

Having established that the vessels had no IMO number, CHIRP concluded that they fell under domestic legislation. CHIRP wrote to both the vessel managers and flag state but neither responded, which is indicative of safety management and cultural failings at a local and national level – the perfectly reasonable concerns of the reporter could easily be addressed if they chose to do so.

The above article was published in MFB49
6. LEISURE AND YACHTING

Despite its title, this section contains many lessons which will be of value to all seafarers, so we urge you all to read it.

We begin with a remarkable story of survival, and a reporter who remembered the safety lessons he or she had learned 30 years earlier. This undoubtedly saved the reporter’s life, and illustrates the benefits of keeping calm and thinking through the problems, however desperate the situation. There is also an interesting comment received from somebody who read the report.

We also feature a report about the dangers of a failed propeller shaft seal, and remind our readers that no piece of equipment is completely ‘maintenance free’ whatever the manufacturer tells you. All fittings, particular those which penetrate the hull, must be inspected regularly.

There is an interesting discussion about the proper mounting of radar reflectors, and a steamy description of one person’s attempt to remove a tiller bar which had corroded.

Finally, we have a description of a rescue which went wrong. A yacht was in trouble an asked a RIB for assistance, but the RIB capsized and the yacht went aground. The discussion of the case contains valuable advice about the proper use of a ‘kill cord’, the importance of knowing how to contact local rescue services, and the dangers of cold shock.

The Insight article concerns misuse of VHF radios. This is a perennial topic and many seafarers still do not use VHF in the proper manner, so we urge you to read it and learn from the experts.
Trapped in an overturned dinghy, personal survival training

OUTLINE: An account of a capsize, the use of a lifejacket, and the reporter’s reaction to cold. Recollection of drills and training undertaken 30 years ago saved the reporter’s life.

What the reporter told us
The lifejacket was an afterthought. The visitor motored his way up the river and I’d waved him over towards a vacant mooring nearby. Sat in my cockpit sipping coffee in the morning sunlight, I’d watched him, solo, make two failed attempts to hook the pickup. There was no wind, a slack tide, but even stopped alongside he seemed unable to manage. He was clearly very tired. I called that I’d row across and help pass a line, and pulled my dinghy up alongside. My old lifejacket lay on the cockpit seat so, rather than step on it – and remembering the promise to my wife – I slipped it on and fastened the clips.

The dinghy, a tippy plywood pram I’d borrowed, had lifting strops attached to the floor and my outboard clamped on the transom. That was awkward to start and stop, so I disentangled the oars and rowed across the few yards.

The visiting boat was stationary alongside an orange mooring buoy. Calling to her skipper to arrange a line, I started to row around the bow. There was a loud engine-roar and I looked up to see her bows surging towards me. She struck hard amidships, the dinghy reared up, and I was pitched headlong into the water.

As I went down, fragments of old training kicked in. Thinking ‘Cold Shock Reflex’ I clamped a hand firmly over mouth and nostrils, while tugging on the 10-year-old lifejacket’s pull cord.

A reassuring loud hiss, and I bobbed up quickly, but beneath the now-inverted dinghy. “Assess!” spoke a voice in my head. I really do need some help now.” At that, a couple of dinghies manned by friends from other boats arrived. The cold seeping through, I stepped my weight up onto the next rung.

Relieved, but now really feeling the cold seeping through, I pointed to a fabric satchel dangling there. I pulled the handle and a little rope ladder tumbled down. I was able to hook a point to it, and stood up on the rung, and I clung to that. Suddenly aware the engine was still running and of the proximity of the prop, I found myself screaming at him “Neutral! Neutral!” while drawing my legs up tight.

I couldn’t get a foot onto the ladder, but my new-found friend pointed to a fabric satchel dangling there. I pulled the handle and a little rope ladder tumbled down. I was able to hook a foot into this, and stood up on the rung, shoulders clear. Relieved, but now really feeling the cold seeping through, I stepped my weight up onto the next rung.

“Bang!” went the plastic securing clips. “Splash!” went I, back down into the river.

“This boat’s out to get me,” I thought as I dog-paddled clear. “I really do need some help now.” At that, a couple of dinghies manned by friends from other boats arrived. The cold now seriously limiting me, I could only cling hook-fingered onto the transom of one, but it was just a couple of minutes to the club pontoon and the safety ladder. And nearly an hour later I was ashore, near the club pontoon and the safety ladder. And nearly an hour standing under a hot shower until the shaking stopped.

Reflections
1. Dinghy means lifejacket, every time. It’s no good in the locker.
3. Things happen fast. A small investment in survival training pays off. Even an occasional session of ‘What If ?’
4. Rain your hands. Close your eyes, don your lifejacket, find the pull cord. Where’s the sprayhood?
5. Cold Shock Reflex kills. Learn how to combat it.
7. Examine critically all parts of your safety gear. Is it really up to the job? Don’t assume – check.

*Cultural references – Douglas Adams and Schulz

CHIRP Comment
The Maritime Advisory Board mentioned that this was an excellent report and noted the importance of training and risk awareness, which saved the reporter’s life even though the drills the reporter undertook were 30 years ago.
We draw your attention to the “Respect the water campaign”. If you fall into the water do you know what to do? Try taking the online the challenge at www.respectthewater.com

In addition, reference is made to the knowledge and advice section of the RYA web site, http://www.rya.org.uk/knowledge-advice/Pages/hub.aspx

The above article was published in MFB 46 & 47

**Water ingress – look after your seals**

**OUTLINE**: An account of the failure of a small vessel’s propeller shaft seal. It is not a ‘fit and forget’ piece of equipment.

**What the reporter told us**

The yacht had sheltered in xxx harbour the previous evening – prior to resuming passage towards yyy. Owner started the engine and opened the floor hatch for visual inspection, but discovered about 1 metre of seawater in the engine space - rising above prop-shaft, gearbox, and accessories.

The engine-driven bilge pump failed to start (submerged electrics?). An initial swift inspection of hoses and clips revealed no failures. The owner started to rig a small, spare electrical bilge pump. I singled up mooring lines ready to slip and run aground alongside a nearby pier. VHF radio calls to the Harbour Master went unanswered, but a VHF call to the nearby MRCC requesting local assistance resulted in the swift arrival of an RNLI inshore rescue boat with 3 crew, who were exercising nearby and heard my call to MRCC. They swiftly produced a salvage pump which reduced the inflow sufficiently, then arranged a tow to a nearby boat-lift, which promptly lifted the boat out onto the hard.

Inspection by an engineer, confirmed by the insurers’ surveyor, revealed failure of the propeller shaft seal. The ‘rotor’ segment had become unsecured from the prop shaft and moved sufficiently to break the effective surface seal against water ingress.

That ‘rotor’ is secured by two pairs of grub screws, crucially dependent on proper torque for security. Queries to several senior yard engineers and an online search indicated this is a not-infrequent problem. Several working boats – including one licensed for passengers – were known to have suffered similar failures.

**Lessons Learned:**

1. Boats’ watertight integrity depends crucially on the proper fitting and maintenance of small grub screws. There is no effective means of inspection of proper fitting and function, other than disassembly and refitting with new parts.
2. Such shaft seals may be provided with bespoke locking collars (as provided by manufacturer xxx on their larger commercial shaft seals), or by fitting a pair of stainless steel jubilee clips onto the prop shaft, preventing movement of the ‘rotor’.
3. Flexible rubber bellows form part of the ‘stator’ structure and ought to be inspected for wear and/or replaced at intervals. Failures have been reported, with resultant down flooding. Few, if any, boat owners inspect these seals and fewer have a means of effecting temporary ‘get-you-home’ strapping.
4. The units (thousands in service) are marketed as ‘maintenance-free’. Only engineers who sail/live aboard confess to routine inspection. Other owners don’t. The manufacturer’s website recommends both inspection AND replacement at intervals.

**CHIRP Comment**

This type of seal is a precision bit of engineering and as such needs to be installed carefully and maintained. They are not ‘fit and forget’ pieces of equipment but will work well if the manufacturer’s instructions are followed. All boats that have an inboard engine coupled to a propeller by a propeller shaft will have a shaft seal of some sort and most will drip a little. The cheaper rubber hose types have a lip seal that relies on water for lubrication. If they dry out because they have not been ‘burped’ (letting trapped air out) they will fail pretty quickly!

A useful piece of advice for the small craft audience is to look after any through-hull fitting which might allow water to pass in and out of the hull – the list includes seacocks, breathers, some ventilation openings and stern glands. Safe practice includes knowing where they are, how they work and what maintenance they require. ALL require some degree of user maintenance if they are to work as expected.

The above article was published in MFB 46

**Radar reflector position – correction**

Dear CHIRP,

In the Video Broadcast bulletin No.1 you make the point that a yacht can be lost in the sea clutter and how an octahedral radar reflector at the top of a mast. Please note the reflector in the picture is incorrectly mounted and will not produce a strong return signal. Perhaps you could correct this in your next bulletin.

In response: CHIRP worked with the reporter to find definitive guidance to support the claim.

In 2007, the UK’s MAIB commissioned a report: “Performance Investigation of Marine Radar Reflectors on the Market”. They found that, in the upright position, the Radar Cross Section (RCS) performance peaks are very large for a small reflector, the drawback with this reflector mounted in this fashion is the very large nulls between the peaks and performance gets worse as the elevation angle is increased. In the ‘catch rain’ position, the RCS has lower peaks but is more balanced with azimuth angle variation and is more consistent over the elevation range. This opinion is supported by the Transport Canada publication “Radar Reflectors on Small Vessels” which states the axis of the reflector should
be tilted 45 degrees to obtain optimal reflection, and recommends that the preferred orientation of mounting should be clearly marked on the reflector.

**CHIRP Comment**

In addition to fitting a radar reflector, fitting a “transmit and receive” AIS system is a prudent course of action; especially if transiting busy shipping areas. In any event, small boaters should keep a very good lookout and not simply rely on equipment to ensure they will be seen – which, in all probability, they may not be in the sea clutter.

Remember the Mk I eyeball is still the best collision avoidance device!!!

The above article was published in MFB 46

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**Tiller full of surprises**

Dear CHIRP,

I read with interest the report in Maritime FEEDBACK 45 where the reporter applied heat to a blocked pipe in order to help release a blockage. The sudden release of the clogged material due to the residual pressure caused the blocked material to hit the bulkhead. This reminded me of an incident when I needed to release a tiller bar that was corroded to the rudder arm on a narrowboat. Unbeknown to anyone, the wooden handle at the other end of the tiller bar had somehow, over many years, allowed water to seep into the hollow tiller bar. Using a blow torch I applied heat to the seized joint and this unintentionally caused the residual water to heat up, expand into steam and eventually cause the handle to blow out of the end of the tube, immediately followed by hot water and steam causing burns to the hands and arm of my assistant.

**Reporters Lessons learned**

Whilst I have never encountered or heard of anything like this before, my message is always allow for the unexpected! We now always drill a hole in the bottom of the tube first to see if water is in the tube before heating, plus it ensures the pressure can’t increase.

The above article was published in MFB 46

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**Swamping of a RIB and subsequent beaching of a yacht**

**OUTLINE:** A yacht gets into trouble and requires assistance but it all goes wrong.

**What the Reporter told us:**

We recently experienced an incident involving a yacht and a rigid inflatable boat (RIB), from our club. A yacht had suffered engine problems while on passage. The skipper requested a tow from the mouth of the river to his berth at the yacht club. The club launched a RIB crewed and helmed by persons holding RYA Powerboat Level 2 and RYA Safety Boat certificates to perform the tow. A considerable swell in the entrance of the river had developed due to the ebbing tide against a southerly wind. This resulted in the RIB and the yacht being pulled apart and back together with quite some force. The RIB became swamped and subsequently capsized. The crew on the RIB entered the water, thus turning off the engine with the kill-cord. Following their training they climbed on top of the overturned vessel which was still tied alongside the yacht.

The helmsman of the yacht made a mayday call to the local coastguard and all persons were rescued from the RIB. The RIB’s anchor had deployed upon capsizing so once the crew had been rescued from the overturned vessel the yacht helmsman released the RIB. However, due to continued engine problems the skipper had difficulty in make headway against the ebbing tide and deployed the anchor. This subsequently dragged, resulting in the yacht being beached on the shore. Rescue was safely coordinated by the rescue services stationed locally.

All persons were given first aid for hypothermia, and subsequently returned to the yacht club, where first aid observations continued. All persons, although wet and in shock, have made a full recovery from the incident.

**CHIRP Comment**

The Maritime Advisory Board commented that this report demonstrates the value of reporting, and the need for clarification of who should report, to whom, and when. It is important to recognise when there is an emergency and how to act accordingly i.e. contacting the rescue organisations that exist worldwide. In this case, a position of relative safety rapidly became an emergency. The effective use of the “kill cord” undoubtedly shortened the rescue timespan, and is a very positive aspect of the report.

It was also noted that the reference to hypothermia may have been cold shock, which can necessitate separate treatment so expert assistance should always be sought.

The above article was published in MFB 49
**Insight Article: Misuse of VHF.**

**CHIRP** and MARS regularly record instances of VHF abuse in some shape or form – there are over 100 reports in our records. The misuse of VHF communications is well known. The problems and issues include:

- VHF assisted collisions.
- Jamming the airwaves with chatter and even music!
- Requirement to monitor more VHF channels than it is physically possible to do, creating:
  - Distraction.
  - Overflow of information.
  - Noise pollution.
- Language barriers or problems with fluency.
- Inadequate communications protocols.

Of course, it is not unusual to encounter a combination of all the above, rendering the VHF virtually useless and sometimes resulting in the lowering of the radio volume control in order to eradicate distraction! There are times when several channels have to be simultaneously monitored, but there may not be enough available VHF sets, and often the various stations transmit at different power levels resulting in the irritating receipt of signals of varying strengths.

In heavy traffic with multiple developing situations, such as when transiting the Singapore Straits, the monitoring of VTS stations and pilot frequencies, as well as listening out for close quarter traffic and navigation warnings are a priority. A vital communication can be hidden in the melee of multiple continuous VHF noise, received at different audible levels as a confused incomprehensible babble.

Within the wider context of keeping a safe navigational watch, which involves monitoring radar and ECDIS alarms, internal vessel alarms; and constant situational awareness inducing mental fatigue and anxiety; it is not surprising that incidents occur and the misuse of VHF is found to have played its part.

So what actions need to be taken to stop this abuse of VHF?

Government authorities, ship managers, captains and bridge OOWs need to comply with IMO recommendations. Primarily the responsibility lies with the individual and the onboard line management, who could be assisted by placing more emphasis during training at maritime academies on the use of VHF in relation to the International Regulations for the Prevention of Collision at Sea 1972, as amended (COLREGS).

**PROPER USE OF VHF AT SEA**

**IMO Assembly Resolution A.954 (23)**

1. Calling on channel 16 for purposes other than distress, urgency and very brief safety communications when another channel is available;
2. Communications not related to safety and navigation on port operation channels;
3. Non-essential transmissions, e.g. needless and superfluous signals and correspondence;
4. Transmitting without correct identification;
5. Occupation of one particular channel under poor conditions;
6. Use of offensive language.

**01.08 Communications with other ships**

**1.8.1** VHF channel 13 is designated by the Radio Regulations for bridge-to-bridge communications. The ship called may indicate another working channel on which further transmissions should take place. The calling ship should acknowledge acceptance before changing channels.

**1.8.2** The listening procedure outlined in paragraph 01.02 should be followed before communications are commenced on the chosen channel.

**IMO Standard Marine Communication Phrases**

**IMO Assembly Resolution A.918 (22)**

The IMO SMCP includes phrases that have been developed to cover the most important safety-related areas of verbal shore-to-ship (and vice-versa), ship-to-ship and on-board communications. The aim is to get around the problem of language barriers at sea and avoid misunderstandings which can cause accidents. However, the Resolution states the phrases are not intended to supplant or contradict COLREGS. In fact, there is no mention or guidance on standard marine communication phrases for avoiding collisions, so do not use the VHF for this purpose.

The use of VHF radio for collision avoidance is against standard industry best practice and advice. Also be aware that, despite English being the recognised marine language, it may not be the first, second or even the third language of your listener. In the event a call is made and acknowledged, the policy onboard should require the listener to repeat what they have heard and for the speaker to then acknowledge that what the listener has just repeated was correct. This is generally referred to as ‘Closed Loop Communication’.

For collision avoidance, it is better to make an early adjustment of course or speed than to spend too much time using VHF or AIS to help make an assessment. Confirm how much sea room you have. There is no need to be the stand on vessel from long range if you can take early action. Conversely, don’t leave it too late. You can take action by altering course and/or making engine movements.

If you are the stand on vessel and there is a lack of clear collision avoidance by the give way vessel, which is making you uncomfortable about the potential risk of collision, then do something! The COLREGS provide all the freedom you need.
This section begins with a report of a crew undertaking a potentially hazardous operation without using the appropriate personal protective equipment, in almost total contravention of the guidance contained in the Code of Safe Working Practices for Merchant Seafarers (COSWP). In the words of the Maritime Advisory Board they showed ‘complete lack of awareness of self-preservation’.

The COSWP has been around for many years, and there is no excuse for such a miserable approach to personal safety, but I wonder if the Code itself is partly to blame? When I first went to sea the Code was a small book written in simple language with lots of clear illustrations. It was easy to read and frequently consulted. The latest version is much more complicated, full of regulatory mumbo-jumbo, and is not a book I would ever willingly study. Perhaps modern crews, particularly those for whom the Code is written in a foreign language, cannot be motivated to consult it in the way we did in the past. ‘Keep it simple’ is generally good advice.

We also have a short report involving an officer who did not know the difference between the rendering point of a winch and the brake holding capacity – something which should have been covered in his familiarisation training when he joined the vessel.

Another report tells us what happened when an anchor winch failed while a ship was heaving aweigh in worsening weather. Fortunately there was a spare motor on board and the Master managed to hold the vessel using the engines whilst it was changed – an operation which took several hours. The report gives the impression that the crew were thoroughly professional and prevented a potentially serious situation from getting much worse. Nonetheless, there seems to be a lack of awareness in many quarters about anchoring, particularly the design parameters of the equipment and how it will withstand bad weather, so we include a number of links to useful articles, and we have devoted the Insight article in this section to the topic of anchoring. This is another extremely important article brimming with good advice, and I suspect even the most experienced seafarers will learn something of value when they read it.

The next report describes crew members working overside. They were wearing life jackets and using inertia-wire safety lines, but the life jackets were of an unsuitable design and there was no sensible place to attach the safety lines. Another case of poor design, this time coupled with the inappropriate selection of protective equipment.

Finally, we hear about a vessel unmooring, and what happened when the officer in charge was distracted from his duty of monitoring the whole operation. Fortunately, in this case there were no serious consequences, but it only takes a moment for a routine operation to go wrong if you let your attention wander.
Simply unsafe practices

OUTLINE: CHIRP has received several reports which demonstrate individuals continuing to take alarming risks and failing to consider “what if” something unexpected was to happen? We highlight two of these reports below.

What the reporter told us (1)
Sailor observed painting the anchor. The anchor was lowered part way out of the hawse pipe and a rope ladder lowered down to it, there was possibly a bosun’s chair, although this was unclear from the viewing angle. The sailor climbed down the rope ladder and began to work. He was wearing no hard-hat, no lifejacket and no harness. There were no man ropes trailing in the water, and no lifebuoy in case he fell in. The people involved should have followed the guidance given in the Code of Safe Working Practices for Merchant Seafarers – fully assess the risks, initiate a permit to work system, and carry out a tool box talk.

What the Third Party told us (1)
Thank you for your letter concerning this incident. We have once more reviewed our existing procedures with all crew involved, and emphasized that no deviation from our policies and procedures will be tolerated as safety is our top priority.

What the reporter told us (2)
Whilst waiting for a pilot to disembark from MV ‘xxx’, I noted a crew member on another ship alongside using a rope ladder without wearing a life jacket.

What the Third Party told us (2)
Attempts to contact the Third Party were not successful but CHIRP is aware that local Port Sate Control officials followed the matter up with the Third Party.

CHIRP Comment
Having discussed both reports the Maritime Advisory Board commented that they appeared to demonstrate a complete lack of awareness of self-preservation. The Board encourages seafarers to question whether they should be on a ship with this standard of safety culture. Seafarers need not do a full risk assessment for each job, but it is prudent to consider ‘what if’ something was to happen? What are the consequences? There may be a lack of SMS compliance, there may be a lack of adherence to the Code of Safe Working Practices for Merchant Seafarers 2015, and there may be a lack of effective supervision, but in the final analysis it is your life, and you have a family and loved ones back home waiting for you. Is it really worth the risk?

Damage to an anchor windlass hydraulic motor

OUTLINE: An unexpected windlass failure – things always go wrong at the most inconvenient time and place!

What the Reporter told us:
The vessel anchored off port at an open anchorage, with no navigational hazards in the vicinity, on 31 December. On 02 January, at about 02:00 hours, the weather started worsening with strong winds up to 30-35 knots, gusting to 40 knots, and heavy rain. The crew observed that the anchor chain started slipping continuously from the brake and through the chain stopper. The Master was called and the engine room was notified. At 02:30 hours the Master commenced heaving up the anchor. At about 02:40 hours, when the 4th chain shackle was on deck, the windlass control unit and hydraulic motor developed a leak. Simultaneously, the crew realised that the windlass motor had lost power and they could no longer heave up the anchor.

A spare motor was available onboard and the crew replaced the defective motor. The job was completed at 13.50 hours and the anchor was heaved up safely at 14.50 hours.

During the repairs, the Master used the engines and managed to maintain the vessel in a safe position.

From the investigation that was carried out, the following should be noted:
- The vessel was anchored in a water depth of 34 metres with 6 shackles in the water.
- The vessel was in normal ballast condition. The drafts were 6.0 m (F) and 8.0 m (A).
- The prevailing weather conditions during the incident were NW winds 30-35 knots with gusts up to 40 knots and the sea state was high, with swell up to 4 metres. The deterioration of the weather had been predicted and relevant weather forecasts, via NAVTEX and INM-C, were available onboard.
- The Officer of the Watch (OW) did not alert the master promptly when the weather started deteriorating. However, no instructions had been given on this issue in the Night Order Book or anywhere else.
- The windlass and anchor motor were in good operational condition prior to the incident. However, the ability of the windlass and the anchoring system to withstand the excessive loads/stresses that are applied in heavy weather was not assessed properly.
- The anchor chain stopper and its securing pin were damaged, most probably due to the high forces applied, leaving a gap which enabled the anchor chain to slip.

Winch brakes – will they hold?

Report
A ship’s officer was not aware of the difference between rendering point and designed brake holding capacity.
CHIRP Comment

CHIRP and the UK’s Marine Accident Investigation Branch (MAIB) have several cases of dragging anchors, the latest for CHIRP was published in Maritime FEEDBACK 45. MAIB report 28-2012 details an incident where windlass damage was the precursor to a series of incidents.

Mariners do not always appreciate the limitations of an anchor, even when they take into consideration the depth of water and amount of cable to be used. If winds of Force 6 are expected, the generic advice is for ships to heave anchor and go to safe waters or out to sea. Wind, wave and current limitations for an anchor system are given in the DNV-GL article highlighted below. Procedures and training should cover an understanding of the environmental and operational limitations of the anchoring equipment. Proper maintenance following manufacturer’s recommendations is essential. It is important to note that the wind speed limit should be greatly reduced as the wave height increases, because the anchor design assumes that anchoring takes place in sheltered waters. In addition, the effect of windage is much greater on a ballasted vessel, particularly larger vessels.

DNV-GL, The Swedish Club and GARD have published some excellent advice which may be found by on the DNV-GL website as ‘Most anchor losses are avoidable’. References within this article include an anchor loss video, ‘Anchor loss prevention’ which is well worth watching.

In addition, the Board highlighted the fact that there have been several cases of anchor windlass motor explosions, some causing serious injury. An article from the Maritime Accident Casebook further discusses these, Maritime Accident Casebook – exploding windlass refers.

The DNV-GL anchor loss article states that 34% of anchor losses are due to weather, 24% due to the winch or motor failures, and 21% due to operational procedures. The above links are well worth reviewing to ensure that you do not become another anchoring statistic.

All of the references mentioned above can be accessed from the publications page of the CHIRP MARITIME website https://chirpmaritime.org/publications

The above article was published in MFB47

Article. 37

An illusion of safety

OUTLINE: A report outlining dangers with inertia-wire rope safety lanyards when not used correctly.

What the Reporter told us:

Rigging the gangway, the crew were dutifully using inertia-wire rope safety lanyards clipped to the webbing straps of life jackets. There were a few issues of concern and I don’t believe they are unique to this vessel.

• The lifejacket was not of a type designed for fall arrest. (Lanyard clipped around strap and strap around torso).
• There was no energy absorbing lanyard in use.
• There was no obvious rescue means on hand at the top of the work area.
• The inertia-wire rope unit was not directly above the worker. Should they have fallen they would have suffered the pendulum effect. The wire was passing over a sharp coaming.
• The inertia unit was secured to handrails that were in poor condition.

There are many factors here, including the design of a gangway area that seems to have no regard for how to rig safely. The idea that someone is expected to walk down a gangway with no rails and then lift those rails into place shows that good human-centred design has a long way to go in our industry.

Further to this, if we can’t change the design we should at least consider how we make people safe carrying out this task? How do we get an unconscious person back to deck level when using a safety harness and stop them dying from suspension trauma?

Typical marine industry reaction will likely be more training for the seafarer to ensure he/she is blamed for what is, at root, a design issue not a behaviour/training issue.

Lifejacket with safety lanyard.

CHIRP Comment

The Maritime Advisory Board agreed with all aspects of this report. It is good example of Human Centred Design not being applied, forcing crews to work around the problem. Designers take note!
Unmooring

OUTLINE: Whilst unmooring, the forward breast lines were lowered by ships staff for release at the hook by the shore linesmen. The officer in charge (OIC), assuming that the ropes had been released, gave the signal to the winchman to heave the ropes home. The winch operator commenced heaving. The OIC realized, simultaneously with advice relayed via the pilot and master, that one of the mooring ropes had not released. He signalled to the winch operator to stop heaving, and to slacken the rope. The rope was then released by the linesmen and the unmooring operations continued. The pilot issued an incident report which was followed up by the company.

Extracts from the Company Report:
The company conducted a thorough investigation and analysis of the incident, focussed upon human factors rather than blame. The salient points are as follows;

- Mooring operations are covered by company’s Safety Management System, including work control manuals with specific reference to mooring. Procedures refer to appropriate industry publications, cover familiarization/training, job hazard analysis and proper operation/maintenance of equipment.
- The mooring team consisted of the OIC and four ratings. All personnel were experienced, considered fully competent for the mooring operation, and had completed familiarization training prior to taking up any mooring duties. They were familiar with the terminal, and the communication practices between the linesmen and the mooring stations.
- Prior to departure a tool box talk was given to all mooring party members and reported to the bridge. Similarly, the unmooring plan was agreed between master and pilot, then communicated to all involved.
- Communications were supervised by the bridge. Standard practice is that the OIC communicates directly with the shore linesmen and vice versa using visual signals. There is no bridge intervention unless further clarification or guidance is required.
- The linesmen unhook the lines once slacked by the vessel. The OIC and the winch operator stand close to each other, so that effective verbal communication can be maintained. During critical verification times, the OIC stands in a location which ensures that both the shore and ship’s teams can be seen. Following confirmation of release from the hooks, (by visual signal, which is acknowledged), the vessel heaves up the lines using the winches, initially at slow speed.
- This was effectively implemented whilst releasing the headlines. With the breast lines however, and at the critical point of release, the OIC was not standing at the proper location, and was not able to verify that all lines were released. Instead an assumption was made that the lines had been released, based upon the elapsed time from the last visual contact with the linesman. Although unintentional, this was a violation of standard practice. A further error was that the winch was operated at high speed, in contravention of standard practice. It was not clear why the winch operator acted that way.

Actions Taken

- A review of the unmooring Job Hazard Analysis shows that there is no direct reference to the need to communicate with shore staff to prevent this kind of incident. (Procedural improvement indicated).
- The OIC had become involved in the releasing/retrieval of the mooring ropes and had momentarily assisted the crew instead of overseeing the operation. (Lack of situation awareness).
- The lines of communication, for handling the breast lines, were insufficient as the OIC had not received a signal from the linesmen ashore to verify that all was clear and the mooring rope tails had been released from the hooks. Additionally, this had not been acknowledged, and the OIC was not in a position to determine that shore linesmen were in a position of safety away from the hooks. (Lack of proper communication and improper position for the operation).
- A human behavioural issue was identified in the unintentional risk taken by using time elapsed to infer critical information related to mooring operation. (Performance of a practice without risk appreciation).
- The near miss analysis to be discussed with the terminal operator to improve existing mooring practices.
- Just Culture process was applied with regard to the OIC, and will include a training session.
- A Fleet Circular issued, sharing the lessons learnt and requesting a mooring operation evaluation review to be discussed on board and shared across the fleet. The review to include a mooring operation hazard analysis to ensure the lessons learnt from this near miss are incorporated, for use in future toolbox talks.
- The lessons learned are to be included in Fleet Training Officer material for on-board training.

Conclusions

- No contributory causes of the error have been identified. Fatigue was determined not to be factor.

Advisory Board Insight: Anchoring and anchoring equipment

Introduction
Recent incidents reported to CHIRP have highlighted that a more informed use of anchoring equipment may lead to safer practices and outcomes. In addition, P+I Clubs and Classification Societies state that “Anchor losses and associated costs have been on the rise since 2012, but the large majority could have been prevented” (DNV-GL, GARD, and the Swedish Club 2016).

Guidance for best practice navigation in the vicinity of anchorages has been widely discussed in maritime industry circulars and papers. In this paper, CHIRP underlines the principles and best practices for anchoring and preserving equipment – this is supported by aspects of navigation practice that will ease the stresses on equipment to reduce failures.

Safe Anchorages
Safe anchorages are normally clearly marked on charts and most anchoring will preferably be done within them. This reduces the risk of fouling anchors on uncharted obstructions, and the nature of the sea bed normally makes for good holding ground. If choosing to anchor outside of a charted anchorage risks may well be greater and unknown.

Safe Swinging Distance
Safe anchorage location is best achieved by selecting the largest available distance from other anchored vessels or shore within the anchorage as your preferred location to anchor. If the anchorage has allocated designated locations within it, A1, A2 etc., often advised to you by port control in which to anchor your vessel, then even better. In this case, safe swinging distances from other vessels are assured, as long as you aim to locate your anchor in the centre of the allocated anchoring circle.

In the diagram above, LDL references the “Limiting Danger Line”, possibly more commonly referred to as a safety contour with ECDIS, or “no go area” when shaded on a traditional chart. The concept is further discussed in Figure 3.

Safe swinging distances are calculated from the length of cable paid out, plus the length of the vessel, with the minimum comfortable passing distance from another vessel added. It is important to allow for the fact that on change of tide or wind not all vessels will swing to their new heading at the same time or in the same direction of rotation. It is therefore quite possible that two vessels lying quite safe to their cables at the turn of the tide may well then find their sterns swinging towards each other - often quite quickly. This is the point at which a minimum safe passing distance must be assured by choice of initial anchoring location. In doing so this very worst case, with adverse timing and environmental influence, will still ensure that a safe distance is maintained. If the luxury of a comfortable safe swinging distance cannot be assured in the initial choice of anchoring location, consideration must be given to having the ship’s engines on standby for immediate use at the time of the turn of the tide or when any adverse influence such as weather is predicted. Having the ship’s engines ready for immediate manoeuvre will mean they are available to be used in an emergency to move your stern away from a swinging vessel coming into close proximity, or indeed if you have to weigh immediately. It should be noted that any anticipated engine shut down for maintenance at anchor, a common need during this normally quiet period, must only be considered if a safe anchor swinging distance is assured and the prevailing weather forecast is favourable. If not, the engines may well be needed quickly and they may not be ready until it is too late. A general safety allowance for larger vessels may be considered to be three cables. However, this is to be considered as a minimum and should be increased if there is to be a long duration of stay at anchorage, forecast of deteriorating weather, prolonged unavailability of engines, etc. Marking a safe swinging distance on the chart as a circle centred on the anchor position and not the vessel’s position will be a helpful indicator to judge safe proximities.

Anchoring Principles
Ships anchor to the weight of the catenary in the cable and not to the anchor, length of cable, brake, stopper or any other equipment. This is a point of principle in anchoring that needs to be well understood. Neglect of understanding of this essential principle underlies many failures of anchors, cables or windlass brakes. It is worth considering this carefully for a moment, since anchoring equipment failures may be avoided.
if this key principle is both clearly understood and taken into account with anchoring procedures. The catenary in the cable is that length of anchor cable that curves upwards in an arc from the seabed and includes where it comes up from the surface of the sea and into the hawse pipe. Ships are best anchored to a gentle curve in this cable so most of that catenary lies under the surface of the water. It is gravity acting vertically down on this length of catenary that anchors the vessel and nothing else. If the length of cable catenary paid out for anchoring is too short, this curve is too steep for gravity to act successfully upon it. When the strain on the cable is high the anchor will be raised from lying flat on the seabed and dragged in the direction of load. The vessel will drag her anchor down tide, wind or current. Even if a long length of cable is paid out, if that cable is under high load and straight from the hawse pipe to the sea this indicates that the limit of gravity on the catenary anchoring the vessel has now been exceeded. A straight lead, whatever the length of cable, indicates it is only the anchor that is now holding the vessel and it may already be dragging. Vibration in a straight cable may exist if the anchor is dragging. Generally a straight anchor cable lead indicates the need to pay out more cable so that a catenary curve is re-established and gravity is restored as the principle by which the vessel is anchored to her cable. A straight cable lead is also indicative that the cable is under excessive forces, which are outside of the design parameters, (see section on Technical Constraints).

A close anchor watch on both cable lead, weight, changes in weather and tide and of course position are basic principles that should be obvious. It must be stressed, however, that close monitoring at all times will give the earliest indication of any change of state and allow timely decisions to be made. This will avoid the inevitably poor outcomes if a close anchor watch is not maintained

**Length of Cable**

The length of cable needed to anchor a vessel varies according to the depth of water, the safe swinging radius needed from other vessels, length of stay, weather forecast and holding ground suitability. As a general rule for vessels anchoring in a depth of water comparable to the length of a single shackle of cable (20–25 metres of water), allow four shackles for the depth of water (4 shackles for a depth of 1 shackle). Then add an extra shackle to allow for moderate loading and catenary - one shackle length will be taken up from the gypsy to the waterline so that the 4 shackles are from the waterline to the anchor. Then consider adding an extra shackle to allow for deteriorating weather. The reader will see we arrive at 4+1+1= 6 shackles of cable for a water depth of 20–25 metres. Add another one shackle at a time for worsening factors such as long duration, holding ground warnings, history of strong squalls etc. Then consider the safe swinging distance and remember that more cable will require greater swinging distance.

The following rule of thumb formula for length of cable suited to depth of water, taken from the Admiralty Manual of Seamanship, may be helpful.

**Amount of cable required (in shackles)**

\[ = 1\frac{1}{2} \sqrt{\text{depth (in metres)}} \]

Caution must be taken when anchoring in greater depths of water than a shackle length. Deep water anchorages such as Fujairah in the United Arab Emirates may be 100 metres deep. Walking the anchor out in gear at depths above one shackle length is almost certainly necessary to avoid an anchor being carried away. Mariners should also be aware of the limitations on the strength of the windlass to recover an anchor and cable from such depths. Wear on the windlass motor over a period will certainly reduce the depths at which an anchor may be recovered. At all times vessels must be absolutely stopped for anchoring and weighing in deep water.

**Preparations for Anchoring**

In preparing for anchoring the master may decide to walk the anchor back to the water line. On large vessels in particular, which may be fitted with a large bulbous bow and may also have a flush-decked design limiting the clearance of the anchor from the bulb, there is distinct possibility of the anchor swinging into contact with the plating in way of the bulb. This may be further exacerbated by the vessel rolling into the trough as the way is taken off. On such vessels, it is good practice to lower the anchor to a position below the waterline and more level with the vessel’s keel. This is best done when most of the way is off the vessel to prevent hydrodynamic forces causing contact. Once in the lower position the anchor will be dampered in any swing by the water, and any contact with plating is likely to be by the chain and not by parts of the anchor. Penetration of the plating could go undetected, and subsequent flooding due to water ingress may result in internal and/or shell plating damage. In very large vessels carrying dense cargoes the resulting trim by the head could seriously threaten the vessel’s safety. On such vessels, it is a good policy to regularly inspect shell plating in way of fore peak tanks and anchor paths to detect indentations that could lead to cracking and later failure. Of course, full enclosed entry procedures should always be observed during such inspections.

**Letting go**

Letting go and free running of anchor cable on any but small vessels, is best limited to depths of water equivalent to one
shackle length or less. The weight and momentum of free running cable of any longer length will risk overloading both the centrifugal brake limiter (if fitted), and the band brake for stopping the movement. In depths over one shackle length, walking out the cable in gear to a position just above the sea bed may give a more controlled anchoring and save taxing the brake unduly. It should be noted that where an internal automatic centrifugal governor brake is fitted, it is this that controls the speed of letting go and not the application of the external band brake. When releasing the external brake, it must be fully opened for free running and then fully closed to stop the cable when the necessary amount has been let go. Under no circumstances should control of the speed be attempted by partial application of the band brake to slow the running out speed. This incorrect practice is known as “riding the brake”. The thin lining will rapidly overheat as it is not meant to be a friction brake like the governor. The lining will glaze smooth with the heat, may well catch fire and become completely glazed, will lose friction and be unable to stop the cable running out at all. The total loss of the cable and an unsafe uncontrolled release with a real danger to personnel will result. This is a fairly common dangerous occurrence when riding the brake is attempted. Be warned – “riding” any brake is poor practice and will lead to premature equipment failure

Brought up and anchored

Being successfully anchored to the catenary of the cable is known as being “brought up”. When the cable is paid out to bring the ship to anchor and the vessel moves aft to take the load, the cable will straighten and load with weight. The moment comes when this aft movement is then stopped and the cable is at its highest load. After this point, the vessel should then move ahead as the gravity acting upon the catenary of the cable is greater than the momentum of the ship moving astern, and the ship starts to move ahead under the force of this gravity. The load on the cable is noted as easing and a dip in the cable is observed. This is the moment of being safely anchored and “brought up”. Do note that if the load continues to be high with a straight un-dipped cable there is the possibility that the anchor is dragging and the ship will still be moving astern. The bridge will be able to monitor this by observing the speed over the ground and will also be able to detect whether or not the vessel has started to come ahead or is still moving astern and dragging anchor. There may be a period of stretching out any cable that lies piled up on the seabed. This period needs to be carefully observed, and patience is needed until the first signs of being “brought up” are noted with any stern way arrested. Only then is the anchoring complete.

Large Vessels

A different anchoring process applicable to large vessels is well worth noting. As the cable tension increases as the vessel is brought up, there is a transfer of energy created by the moving hull. This energy transfers through the anchor, the cable and the point on board the vessel where the windlass machinery is fixed. This peak of energy transfer can, in larger vessels, result in extreme forces at the windlass mountings. The momentum of a vessel of 200,000 tonnes displacement or more is not easily dispersed and damage can result. One solution known as Orthogonal Anchoring has been advocated by Capt. A. McDowall in his Nautical Institute Monograph, Anchoring Large Vessels: A New Approach, (ISBN 1870077563, 9781870077569). Briefly, and where there is room in the anchorage to do so, the technique involves positioning the vessel across the direction of travel imposed by external forces of tide, current or wind so that the cable runs out on the beam. Even without tide, current or wind a hard-over turn will impose a sideways momentum on the vessel that will enable the anchor to run out on the beam rather than being aligned with the keel. As the cable is moderately braked then stopped, the energy, instead of all being concentrated on the windlass mounts as the cable attempts to stop the way of the vessel over the ground, is absorbed by the turning moment that results in the vessel’s position becoming gradually aligned with the cable direction. As the hull aligns in this way, the peak of energy will have been dispersed in the force used to turn the hull. At this point, it may also be opportune to use an ahead movement to disperse any remaining momentum and bring the vessel to a complete stop over the ground.

Figure 4 – Example of Orthogonal Anchoring. (Illustration courtesy of D. Barber)

Completion of anchoring

Once anchoring is complete, the anchor may be secured by screwing down the band brake and lowering the guillotine over a flat cable link, or applying whatever patent stopper is fitted on your vessel. This may require the crew to clutch in a windlass motor to adjust the exact lay of the cable links. When secured, fit a small flag pole or marker to the top of the gypsy where the cable is visible from the bridge. Note that is essential that the vessel is properly brought up, and that there is no possibility of movement of the chain prior to setting a flag. Retro-reflective tape may be used for night marking. This ensures that the cable is easily observed from the bridge and that no movement under strain takes place unobserved. Some vessels commonly practice leaving a small gap between the cable vertical link and the guillotine to test if the band brake renders onto the guillotine (a form of brake test). Others prefer to rest the vertical link against the guillotine so that although the brake is still fully applied, the main weight is taken on the guillotine. Both practices have merits and disadvantages and it is a matter of choice and practice, but using them assures an independent means of securing the cable at all times.
Weakness of Equipment
Consider the weakest parts of the anchor equipment to be:
1. The windlass motor,
2. The brake,
3. The anchor.

A windlass is only rated to recover half the length of the total anchor cable vertically in deep water. In deeper water there is greater risk that an aging motor will not be able to recover the cable. When recovering the anchor cable, the windlass should only be used when the cable is “up and down”, meaning only the weight of the cable is acting upon it. Use the vessel’s engine to move the ship ahead, guided by reports from the forecastle of the lead of the cable, so that the cable is only recovered with its own weight on the motor. Do not heave a cable leading away from the ship as the windlass could become overloaded and stall, and may well be damaged by such overloading and then no longer be capable of heaving any cable at all. Good forecastle reporting of lead direction (by points on the bow) and loading (short, medium or long stay) are essential. Careful use of engines and rudder to keep the cable “up and down” minimises the loading on the weakest part of the equipment... the windlass motor. Effective communication with the bridge at all times is critical.

It must be stressed that there is a danger of overstressing hydraulic windlass motors, especially when trying to pick up anchors in heavy weather. Anchoring equipment is only warranted to Beaufort Force 6 which emphasises the need for masters to be proactive when the weather deteriorates, i.e. reduce strain on the anchor by sensible use of the engine(s) and pick up the anchor at an early stage before the weather deteriorates to a point where this becomes too difficult, especially when on a lee shore. There have been serious accidents when windlasses have exploded through overpressure when the hydraulic motor has acted like an over-pressured pump (there are usually no relief valves on the system).

In deteriorating environmental conditions the decision to weigh and recover anchor early is a critical one. Experience, judgement and anticipation are key. To postpone that decision and be forced to make it later in failing conditions significantly increases the risk of anchoring equipment failure.

Addition reference material may be found in the following publication – IACS Requirements concerning Mooring, Anchoring and Towing 2017 which consists of the following unified requirements:
- A1 Anchoring Equipment Corr.2 Mar 2017;
- A2 Shipboard fittings and supporting hull structures associated with towing and mooring on conventional ships Corr.2 Mar 2017; and

Securing for Sea
When securing the cable for sea, ensure the anchor is fully home and made fast with anchor lashings in good condition, strong enough for purpose, and made as tight as possible to keep that anchor from moving. A moving anchor in heavy seas is capable of fracturing the hull or, in extreme cases, punching a hole in the bow. In heavy weather, turn the ves-

Technical constraints
A consideration of the design technical constraints of anchoring equipment will be helpful. According to a DNV-GL article, “Most Anchor Losses Are Preventable” there is a general lack of awareness of the environmental loads for which anchoring equipment is designed. Class societies have unified rules for the design of anchoring equipment, but the rules are based only upon sheltered waters. Safety Management Systems often ignore this vital fact!

The maximum environmental loads are:
- Current velocity: maximum 2.5m/s or 5 knots
- Wind velocity: maximum 25m/s or 48 knots
- No waves (sheltered waters).

Investigations into the root causes for losses of anchors have shown that, in a majority of the cases, the environmental conditions exceeded those stated above. Many anchoring locations are outside sheltered waters and an equivalent environmental load for such areas is regarded as:
- Current velocity: maximum 1.5m/s or 3 knots
- Wind velocity: maximum 11m/s or 21 knots
- Significant wave height: maximum 2m.

In broad Beaufort wind scale terms it is generally accepted that anchoring limits are set at Force 6.

Conclusions
Key points that will prevent most anchoring equipment incidents are...
- Remember it is the catenary in the cable that anchors the ship.
- Pay out more cable to establish catenary often re-anchors a dragging vessel BUT...
- Always allow room for swinging towards other vessels. If adequate room is a concern then engines must be on immediate standby, (or alternative heave anchor and find a safer location).
- Never ride the band brake letting go. It WILL overheat and it will FAIL. Full off - Full on only.
- Nurture the windlass motor by only ever heaving in slack cable... It is the weakest link!
- Keep anchors tightly secured at sea especially in heavy weather and check securing daily.
- Always take account of the maximum environmental loads for the equipment as designated by Class.
This is a short but important section, and one which is likely to grow as mariners become more aware of the need for a clean, healthy workplace. Sadly, our reporters did not enjoy such clean and healthy conditions.

The first report describes our growing relationship with the International Seafarers Welfare and Assistance Network (ISWAN) and our growing links to the fishing industry, and explains why we are focusing on the increasing number of health-related incidents. We believe health and hygiene are legitimate topics for us to cover, and we look forward to receiving more of your reports in future.

The next report tells a particularly harrowing tale of an injured seafarer who did not receive proper medical treatment, repatriation or medical expenses. The case raises questions about minimum safe manning and general safety – the patient was eventually discharged in rough weather in a cargo net – and also appears to demonstrate his employers had no idea how P&I cover works.

Finally we hear about a member of the galley staff who suffered a hand infection caused by fungal bacteria. Treatment by the ship’s doctor was completely ineffective and led to long-term problems. We researched the topic and some valuable guidance is included.

The Insight article for this section concerns health, hygiene and well-being. It contains information about topics which most mariners rarely consider, despite the requirements of the new Maritime Labour Convention, so we urge you to read it and learn the lessons it imparts.
Health Matters!

The majority of reports coming to CHIRP Maritime, as well as most of the emphasis in our publications, have been on risks to vessels and to personal safety. Injury risks are featured, but shortcomings in the prevention or management of illness have rarely been covered.

Our close collaboration with the International Seafarers Welfare and Assistance Network (ISWAN) and our continued support for the fishing industry, indicate there is an increase in health related incident reports that CHIRP could usefully consider.

CHIRP now encourages reporters to contact us when they identify shortcomings in the management of work related health risks, especially where there is non-compliance with the health requirements and recommendations derived from ILO Maritime Labour Convention, 2006 (MLC), and the Work in Fishing Convention that will come into force from 16 November 2017.

We plan to feature articles and presentations to inform and encourage reporting of work related health risks and to include examples of non-compliance with health provisions listed in the Conventions. Reporters are invited to use the customary method of reporting to CHIRP.

The above article was published in MFB49

Abuse of MLC 2006

OUTLINE: An injury on board to a Second Engineer, where the Company did not assist with medical treatment, repatriation, or medical expenses.

What the Reporter told us:
I was sailing as a 2nd Engineer, and whilst the ship was getting ready to leave the anchorage and berth for cargo operations on 05th December at 0700 hours, I fell by accident and fractured my ankle. The Captain tried to send me to the local hospital, but the company rejected the request. I called the company superintendent, and was told, “It is not an argument of right and wrong. How can I get a relief 2nd Engineer to the vessel with such short notice?” Following cargo operations, the ship departed Port “A" South Korea on 05th December, and anchored off Port “B”, China on 06th December for 5 days. My ankle was still fractured though and it has not recovered yet.

I asked them to send me to the hospital, but the company said, “Don’t stir this up into a big thing. We will get you off when we arrive back in South Korea. There is going to be a major inspection. Stop making such a fuss and be quiet!”. We berthed at Port “B” on 12th December, where an inspection was conducted concurrently with the cargo operations. The inspection whilst I was injured is recorded in the log book.

For 10 days, from the day of the accident until we arrived back in South Korea on 14th December, I was not able to get any prescribed medicine, not even pain-relieving tablets.

The only thing that the company provided was a pain relief patch. I even passed out due to the pain during this period.

I asked the company whether the Korean Coast Guard could help in getting me off safely when we were about to anchor off Ulsan port, but this was rejected because they said it might increase insurance premiums. Eventually, on the evening of 14th December, I was disembarked by means of the provision net, (which is normally used for loading groceries etc.). At the time, there were strong winds and the sea was quite rough. Moreover, it was very dark and the ship was rolling because she was in ballast condition. As I was lifted by the crane, I sprained my ankle once again. As a seaman, I believe that was beyond the call of duty - it was very dangerous given the situation.

After I got off, I went to the Ulsan customs office, but nobody from our company came to assist, so I took a taxi to the hospital accident and emergency department. At the hospital, my ankle was swollen up so much they could not perform the operation I needed. It took a month to get the operation.

It was an occupational accident, but the company did not pay my salary or any medical expenses, so I reported it to the Korean Maritime and Port Administration. This did not resolve the problem so I presented a petition to a labour supervisor in the Regional Office of Maritime Affairs and Fisheries. The company urged me to drop charges against them. They said if I dropped the charges they would pay my salary. I answered, “Pay first, then I will drop the charges”. Finally, they deposited my money the day before the problem was due to be investigated. The Regional Office of Maritime Affairs and Fisheries regard the accident as an occupational injury, and said the company should take full responsibility for the matter since otherwise they would be neglecting their employee’s welfare.

I required a second operation, but the company stated that I could not get any operation without their confirmation. I trusted my doctor but the Company did not, so I suggested other medical centres for third party advice - those doctors stated that a second operation was appropriate. I am still under treatment which has now been going on for 35 months. I have had two operations on my ankle and still have a trapped spinal nerve.

The argument continues with the company. They have made it clear that getting an operation is out of the question. They never took the moral responsibility - I am only someone who got injured due to the nature of my job and it is not their problem.

I hope nobody else will have to go through what I had to go through. The company treats their crew in a very unfair manner even though we are their representatives on board. The first priority should be the safety of the crew - the MLC agreement says so.

CHIRP Comment
CHIRP does not know the name of the company, as it is the MLC principles that the reporter wishes to put before a wider audience. The Maritime Advisory Board commented that this report highlights the fact that commercial considerations have overridden safety and humanitarian concerns, particularly highlighting that:
Seafarers are advised that in cases like this, the ship owner's medical costs are covered by P&I Club insurance, so money should not be an issue.

Masters should send injured crew members to a shore doctor when in port and do not need company authorisation to do this.

At sea there are Radio Medical Services which can be utilised.

With respect to the Safe Manning Certificate, this allows for the vessel to sail short-handed for a limited period so long as Flag State are informed of the extenuating circumstances.

Finally it was noted that disembarking via a provisions crane that was not rated for personnel transfer was hazardous in the extreme, particularly when alternative means to disembark had been mentioned.

The above article was published in MFB47

**Hygiene – medical condition in the galley**

**OUTLINE: A report detailing a medical condition in the Catering Department that worsened, yet the patient was required to continue working in the galley.**

**What the Reporter told us:**

I have been working for a passenger vessel company, as a Commis de Cuisine since 2011. I joined my last ship on 20th September. While working on board my duty was in the cold galley night shift. In March, after six months on board, the fingers on both of my hands got infected with fungal bacteria. I went to the ships clinic and our doctor gave me antiseptic cream to apply to my hands and authorised me to return to work. A few days passed and I kept on applying the cream, but it did not work at all...

I complained to my Sous Chef, and asked my department head, the Executive Chef, to change my work place but they refused and instructed me to keep working. Three months passed and both my both hands and 6 fingernails became completely damaged with fungal bacteria. In June, the ship's doctor sent me to a shore clinic in Italy, and told me that I would not need to pay for any written prescription from the shore doctor because the Company would arrange it for me. After visiting the doctor in Italy eight days passed and the ships doctor still did not give me any kind of medicine. Finally, on 25th June the ships doctor decided to send me home on medical repatriation to receive medical treatment in my home town.

I have been on medical leave since 25th June undergoing treatment with two dermatologists here in India. Both hands have five fingernails which are completely damaged and the skin folds that frame and support the nails on three sides are critically damaged forever. This means I cannot work anymore as a food handler and my total career has been lost due to the negligence of a ships doctor and my supervisor. They never transferred me to a more suitable workplace, while the ship's doctor misdiagnosed my condition for four months.

The ship’s clinic and doctor failed to provide adequate medical treatment to me. I was suffering with a fungal infection but the doctor, my Sous Chef, and department head kept me working in the knowledge that I was a food handler - if any kind of cross contamination could happen to the food then this was both dangerous and hazardous with respect to the health and safety of passengers.

**What the Third Party told us**

**CHIRP** wrote to the managers of the vessel in question but they declined to respond.

**CHIRP Comment**

**CHIRP** sought expert advice, and asked if good hygiene practice in the cruise sector mean that the reporter should have been removed from food contact to reduce the risk of food contamination at an earlier stage? We were advised that approximately 25% of crew visits to cruise ship doctors concern skin conditions, and a large proportion of the people involved are food handlers. Most light or moderate skin conditions, even when they involve the hands, will be permitted in active food handlers, but it is now an absolute requirement that food handlers wear gloves – both to avoid contamination of the food and also to protect their own skin.

**CHIRP** was advised that fungal and bacterial infections are relatively rare on hands, and usually secondary to other conditions. Most common are wounds (injuries), or contact dermatitis. These are not contagious but can lead to secondary infections from bacteria or fungus. Gloves are to be used while working, but accumulation of moisture during the use of gloves may aggravate the conditions and promote infections. Most skin conditions that are limited to the hands will heal quickly with proper supportive care, (such as not using strong soaps or disinfectants, proper drying of hands, plus the use of moisturizers and mild topical steroids), and above all with proper follow-up and TIME!

Fungal infections can be made worse through overly eager hand sanitation; frequent washing, in particular with strong soaps or disinfectants, removes nature’s barrier protection, thus promoting fungal growth.

**CHIRP** suggests that the overall lesson is for all companies to ensure that they have robust procedures in place to ensure that recurrent medical conditions are thoroughly followed up. The management of such hand conditions in food workers, including communication between medical staff, the patient and his/her superiors should also be in place. This should improve management of the condition, and clarify what tasks should be avoided if possible and the likely recovery time.

The above article was published in MFB47
Article. 43

Advisory Board Insight: Good Food, Safe Food

Good food makes for a happy ship. But ‘good food’ has many meanings.

It has to satisfy, and personal and cultural preferences mean that choice needs to be offered. Even for one person there may be times when familiar ‘comfort food’ is called for, whilst there are others when taste buds are longing to be challenged with new sensations.

Good food is also the key to remaining healthy and to being in the right physical and mental state to perform the range of duties on board. This used to be seen simply in terms of a sufficient supply of energy for physically demanding jobs, but now that jobs are less physical, an oversupply of energy and consequent obesity is usually a far more serious problem than shortages and malnutrition. More is now known about the longer term effects of diet on health and good food can also be thought of as the diet that can best keep us safe from conditions such as heart disease and diabetes.

More immediately, good food means safe food that is free from any risk of infecting crew members with diseases, especially vomiting and diarrhoea – always unpleasant, sometimes dangerous and, if they affect several crew members, can be just as big a risk to the safe operation of a ship as any of the more traditional precursors of personal accident or vessel incident.

Well-trained ship’s cooks follow good food hygiene practices, and so have an essential role to play in reducing the risks of infection. This training covers the purchase of food - although good quality assurance can be a problem where stores are purchased through agents in countries with poor or corrupt food safety standards. Proper storage is crucial as foods such as raw meats and root vegetables are likely to be contaminated with bacteria, often including harmful ones. Preventive measures may include surface disinfection, storage at low temperatures and separation of foods such as uncooked meats from items that will be eaten without further cooking. Similar segregation is needed during food preparation. Arrangements for other crewmembers to access food need to be such that these principles are known, understood and followed. It is encouraging that many of these hygiene rules now form part of the Maritime Labour Convention.

Crewmembers themselves may be the source of infections that put others at risk. Casual food eaten while in port may not be prepared to the same standards as food on board, and thus people who have eaten ashore may bring infections back on board. Occasionally, food handlers and other crewmembers may be carriers of longer-term foodborne infections from their home countries. Where this is a risk, screening may be included in pre-embarkation medical exams. One golden rule for all, whether cooks or other crew members, is that if you are vomiting or have diarrhoea this is the time when you are most likely to put others at risk. Stay away from all food preparation for at least 48 hours after the last symptoms disappear, and practice even more scrupulous skin hygiene – a good two minute wash of hands before eating is always the ideal, but is mandatory in the presence of symptoms.

Some food related infections can spread rapidly. Norovirus has caused big problems in the cruise sector, but can equally well spread among crewmembers on any ship as it is so infectious. Isolation of people with symptoms in their cabins and cessation of any buffet-style eating are important controls. Remember that, if you have any cases on board, you are obliged to report them to the port health authorities in the next port. Also remember that tele-medical advisory services can give you practical advice, not only on the treatment of those with food poisoning, but on the preventative measures that you need to put in place.

You cannot have good food without good food hygiene. But even with good food hygiene good food requires well planned and generous purchasing policies, trained cooks, a choice of menus and informed seafarers who know what choices will best meet their needs for wellbeing and for continuing health.
This section clearly illustrates the diverse nature of the reports we receive, and there is something for everyone within these pages. We begin with an account of MAR-POL violations and apparently corrupt practices from a courageous reporter. To protect his or her identity we did not contact the shipping company but reported to the flag state, which agreed to investigate. It seems amazing that any company would tolerate discharges of oily residues in an anchorage, but that is apparently what happened.

We move on to an attempted armed robbery at sea, where two fishing vessels tried to distract the crew while two others approached the bow and put men aboard with knives. The alertness of the crew and their rapid response deterred the would-be pirates and the situation was successfully resolved. This type of robbery is common around the world, so there are lessons for all mariners.

Next we discuss a case where local fishermen needed our help when the authorities removed a night watchman from a port, making it unsafe for fishing boats to enter. We assisted them in getting the decision reversed, but it is a clear illustration of what can happen when economic considerations are allowed to compromise safety.

Economic considerations also compromised safety on a treasure-hunting vessel when live ammunition was brought up from a wartime wreck. We include some good advice from the Royal Navy ordnance disposal unit on what to do when munitions are inadvertently brought up from the sea bed.

One company sent us some examples of best practice, with photographs of some clever innovations aboard their ships, and this prompted a response from another reporter. If your ship has devised similar ways of enhancing safety, please let us know.

The Insight article in this section asks the question ‘best practice – is it worth it?’ I expect you can guess the answer, but the article is well worth reading and will reward careful study. It would also form the basis for an excellent discussion at your next safety meeting.
MARPOL violations and safety management failings

OUTLINE: A reporter has alleged serious violations of MARPOL and corrupt practices with serious safety management failings which CHIRP has passed to the flag state authority for investigation.

What the Reporter told us:
Since I joined the vessel I have observed several non-compliances with MARPOL regulations.
- After discharging vegetable oils, the vessel carried out tank cleaning and a mixture of noxious liquid substances and seawater was directly discharged to the sea using a cargo hose from the ship’s manifold. The last cargo was MARPOL II Category Y (pollution hazard) and even though the cargo was vegetable oil, it can still pollute the sea and the requirements of MARPOL Annex II were being violated. (Regulation 13 2.1.2 - the discharge must be made below the waterline through underwater outlets, whilst not exceeding the maximum rate for which the underwater discharge outlet is designed). This method of cleaning is being carried out every time the vessel conducts a tank cleaning operation.
- Just before arriving at an anchorage I saw an engineer discharging oily waste from the engine room directly into the sea without passing through the oily water separator.
- The vessel was at anchor and a newly promoted engineer and duty oiler discharged oily waste directly to sea as ordered by the Chief Engineer. They believed that they had no choice but to follow instructions or else they would be sent home. On that occasion, the company’s Marine Superintendent saw the incident and did nothing to stop it. He is the company representative but instead of following the rules he was tolerating wrongdoings.
- At a different anchorage, oily residues were once again discharged. I have some videos that will prove that MARPOL regulations were violated.

In addition, the reporter advised the following:
- A vetting inspection was carried out (which typically occurs every six months on tankers). I was with the vetting inspector and he noted many major and detainable deficiencies, for example:
  - High/Overfill tank alarms not working properly;
  - Fixed Gas Monitoring system not working;
  - Oil Discharge Monitoring Equipment not working – the inspector searched the equipment for a testing date but this was not available. In the Oil Record Book, it was recorded as being tested monthly, and
  - Personnel including engineers were not familiar with the operation of the monitoring equipment.

It was alleged that after the closing meeting following the inspection, the inspector’s remarks and findings were not acted upon. The reporter advised “They just said to us that the vessel passed the inspection”.

The ship has been in other ports where Port State Control carried out inspections and noted major deficiencies, but following the inspection someone (allegedly) paid the inspector in order to pass. Most of the time harbour pilots complain about the steering system of the vessel. On one occasion, we entered a river and the steering system failed - the vessel almost grounded in shallow water. The pilot wanted to report the incident to Port Control, but after the Master (allegedly) paid the pilot the vessel continued to the berth. They hide the truth - the ship has had problems with the steering gear for a long time. The vessel suddenly turns whilst in auto pilot and hand steering reportedly does not work properly. Once in a congested traffic area the vessel lost steering and nearly collided with other ships in the vicinity. Repairs were attempted but we noticed they were just experimenting by transferring the spare parts from steering system number 1 to number 2 and vice versa - we still have steering problems.

Another concern was the mooring winches which have two drums. On one of the winches one drum cannot be disengaged – it is very dangerous during mooring and unmooring operations, but has not been repaired. The company just said it is for dry-dock work, but the lives of the crew engaged in mooring operations are still in great danger. If an accident happens to the crew, they are just not concerned for our safety. We have also family waiting for us at home.

I believe that my vessel is not the only one that has problems and that there are many others out there. Most are afraid to report deficiencies or malpractice, which takes courage. I still believe that the priority must be the lives of persons working on board, because without seafarers there is no shipping industry”.

What the Third Party told us
As the report states, a company superintendent was in attendance in at least one instance, so the reporter asked CHIRP not to contact the Company. The reporter did, however, wish the report to be followed up and thus CHIRP contacted the vessel’s Flag State, which investigated the MARPOL allegations.

CHIRP Comment
The discussion of this report by the Maritime Advisory Board was wide ranging. It was agreed that there was potential for Port, Coastal and Flag State legal intervention, so all positions and geographical references have been removed from the report. The relevant Flag State has been informed and they have agreed to make their own investigation.

There are other details in the report given to CHIRP which are not specifically safety related, and CHIRP is aware of the involvement of both the International Seafarers Welfare and Assistance Network, (ISWAN), and the International Transport Workers Federation, (ITF).

The Board congratulated the reporter for his or her extremely brave action in submitting this report to CHIRP. Whatever the outcome of this harrowing case, it demonstrates that alleged illegal activity and serious management failings in safety and environmental issues will be acted upon by CHIRP and passed to appropriate authorities with a request for their further investigation.
However, it should be noted that CHIRP is not an organisation that can be used for ‘whistleblowing’ reporting; we cannot accept such reports as we can never satisfactorily deal with criminal acts that are knowingly and wilfully being committed by either shore or ship management.

The above article was published in MFB47

Article. 45

**Attempted Armed Robbery**

OUTLINE: A report where fishing vessels distract the crew at the stern of a vessel whilst others try to board from the bow.

**What the Reporter told us:**

This incident occurred whilst the vessel was drifting outside port limits off a port in Vietnam. The crew noticed four fishing boats approaching the vessel, two from astern and two from the port bow. The vessels approaching from astern asked the duty crew if we have any scrap items on board.

The Officer of the Watch believed that the two fishing boats astern were a distraction and the fishing boats forward might be suspicious. The Bosun was requested to check the forward end of the vessel carefully. Five pirates armed with knives boarded the vessel from the fishing boats on the bow, and tried to gain access to the forecastle by breaking the padlock. From a safe distance, the Bosun spotted the armed robbers and informed the bridge.

The Officer of the Watch activated the general alarm and informed the Master. Hearing the general alarm, the pirates fled, jumped overboard, boarded the fishing vessels and left the scene. The crew mustered in response to the general alarm and all personnel were accounted for. Investigation later revealed that nothing had been stolen.

Subsequently the Master informed the local VTS but received no response. In addition, the vessel informed IMB Kuala Lumpur, C.S.O, Alternative C.S.O, vessel’s operator, charterers and local agents. The incident will be discussed at the next Company HSE Committee meeting.

**CHIRP Comment**

The Maritime Advisory Board commented that this report reinforces the need for ships’ crews to ensure they have a security plan in place, and they each know their role as listed in the plan. The plan should not be generic but be tailored to suit the circumstances for the area of the world they are in. This could involve ISPS compliance, Best Management Practices, and intelligence-based reports of any security related activity that warrants defensive measures in a particular area. The incident as reported is similar to many attempted robberies in the Far East, but we have also seen similar reports coming from South America, the Caribbean, and East Africa.

The above article was published in MFB48

Article. 46

**Loss of night watchman in a harbour**

OUTLINE: A report of a Port Authority’s commercial decision which failed to address safety concerns.

**What the Reporter told us:**

I am contacting you over our Port Authority’s decision to stop the night watchman service for our port. The Authority decided it needed to save money in the harbour budget so it decided to discontinue the harbour night watchmen service, thus leaving the commercial harbour with no VHF coverage from the hours of 1700 hours to 0800 hours the following morning. This is a very important service, as it is a difficult harbour to enter with a long narrow channel then a ninety degree turn to port to gain entry - only one boat can enter the harbour at a time. One of the roles of the watchman is to catch a rope at the end of the harbour channel and place it upon a bollard to enable a vessel to effectively manoeuvre around the ninety-degree bend in the channel and into the harbour. Without this service, we fishermen feel it is too dangerous to jump from a moving boat onto a pier to put a rope onto a bollard. It is felt that jumping from a moving boat onto a pier risks serious injury or death if the person misjudges the jump or falls into the water.

I have met with the Authority and challenged this decision, but they feel jumping from a moving boat onto a pier does not involve a high risk.

Although they have signed up to the government’s Code for Port Management, they have not done any risk assessments relating to removing the harbour night watchmen. They have not revised their practices in respect of what I and many feel is a “change in harbour operations”.

I have asked the Authority why they have not revised their own port safety management code and their reply was they feel that not having night watchmen to operate the VHF and take our ropes does not constitute a change in harbour operations. The Authority does not have any mariners in the management team, yet they are risking mariners lives.

This is an accident waiting to happen, and it is sheer cost cutting which will put harbour users lives at risk. The Authority will be meeting on the 1st June 2017 to give their final decision.
Further dialogue
The following is a précis of many exchanges between the Reporter, CHIRP, and other parties;

- It was agreed that CHIRP contact the Port Authority with advice relating to the dangers of a leap ashore, proper risk assessment, and responsibilities for incidents.
- The reporter had written to local government officials who had responded by supporting him. A petition had attracted over 1000 signatures. These points would be addressed by CHIRP when writing to the Authority.
- Local and national fishery organisations were also involved with letters to the Authority.
- CHIRP wrote to the Authority who responded just prior to the meeting and stated that cover would be maintained with watchmen available around the clock. The reporter was advised of this and informed CHIRP that the cover would actually be one watchman for three ports – a fact that had not been properly addressed in the risk assessment.
- The reporter managed to speak at the Authority meeting, and the first decision taken was to dismiss the risk assessment (which was correct – it was poor as there were no proper mitigation measures put in place).

On the 08th June 2017, the Authority issued a press release stating that the decision to axe night watchmen had been cancelled. In addition, they undertook to look at port health and safety in conjunction with local users in future.

CHIRP Comment
The Maritime Advisory Board commented that the report is a fine example of CHIRP working with other bodies to raise awareness of the inappropriate use of risk assessments and the need for maritime professional input.

The above article was published in MFB49

Article. 48

Best Practice – Muster Stations

With reference to CHIRP issue No.47 Best Practice - Muster Stations, I attach a picture of my muster station with fixed hooks on the bulkhead to hang each individual's survival suit and lifejacket when they muster. This ensures each seaman collects his designated equipment in an abandon ship situation, bearing in mind that if the equipment was left on deck with the vessel rolling, it would surely get mixed up. We also re-assess the seating arrangements in the freefall lifeboat after each crew change as the joiners might not fit the designated seats of their predecessors. CHIRP note – lifejackets are not worn for freefall lifeboat launching due to the use of body seat belt straps, (hence the hooks for lifejackets in this case).

When I receive the Telegraph, I first look at the Health & Safety section to update my notice board. Your “Best Practice” section is now very interesting and we have already adopted the anchor chain suggestion.
an essential complement to IMO Conventions, Codes and Circulars and is intended to encourage self-regulation and promote continuous improvement to enhance the safety of merchant shipping and achieve incident free operations. Encouragingly, this sector of the shipping industry did not stop looking for improvement in best practice and TMSA it is now in its third edition.

OCIMF provides guidance that is accessible to everyone and yet we have not seen other sections of the shipping industry venturing to support, complement or offer improvements in best practice. It is time for dry bulk, containership, cruise ship and general cargo companies to make a belated contribution to the sharing and adoption of best practice.

Improvement can create best practices, but there are still too many incidents resulting in fatalities and serious injuries, with the causal factors being routinely attributed to human error. It is sad to see some sectors of our shipping industry stop their investigations at this stage. There is a very different culture in aviation, when an investigation only really starts once they have identified the Human Element. Despite the November 1999 IMO Assembly resolution A.884(21) “Amendments to the Code for the Investigation of Marine Casualties and Incidents”, where the Human Element is clearly described as having a number of factors that have a direct or indirect impact on human behaviour and the potential to perform tasks, maritime investigations, (both company and national), remain unwilling to truly address root cause and human factors. These factors are illustrated in the following diagram:

Do you see these factors taken into consideration when incidents and hazardous occurrences are investigated on your ship? Try using this diagram and then consider the Human Element’s Deadly Dozen (see Chapter 10 below) - the findings may surprise you and start you along the road to best practice.

Good communication is very essential when managing changes in attitude, particularly with respect to the safety culture onboard. The days when the ship’s crews would use
their spare time for making music, playing games and socialising together appear to be from a bygone era. Today people stay in their cabins with their computers, thereby creating a challenge for leaders who seek to foster a feeling of teamwork and being part of a company culture; especially if that company offers only single voyage contracts. Each ship manager should, as a minimum, appoint the same senior officers back to the same vessel. This must be the ultimate goal of crew planning in order to encourage a stronger commitment from senior officers for ‘their’ vessel.

Multi-cultural crews may be cheaper, but they pose an even greater challenge to successful human interaction. The quality of the work depends on the whole team, not just an individual, so investing time and encouraging a team culture is highly recommended. Shore-side personnel should not be automatically excluded from this team.

Making sure guidelines and manuals are applied in the work place will only work well if there is two-way communication between the ship and the shore staff. Over ten years ago CHIRP raised concern over the quality and content of ships’ operations and maintenance manuals, but there has been little improvement since then. All too often the shore-based staff that procure equipment do not ensure appropriate manuals accompany the product they have purchased, even though it would obviously contribute to best practice procedures.

Above all, the quality and safety of operations depends on crew awareness, which is kept on a high level by continuous training and a free flow of information. Nurturing a “no blame” or a “just” culture is to be encouraged, especially when pinpointing a near miss or hazardous occurrence then discussing how to avoid it the next time. Whilst it is mandatory in the ISM Code, there is often uncertainty about how best to conduct and then document risk assessments onboard, so clear direction by shore managers on this subject is very important.

Protection of the environment and occupational health are subjects equally important, and the role of CHIRP has been widened to include reports on these matters. The benefit lies not only in improving performance in these areas by raising awareness, but also because they can provide an indication of the level of compliance with the safety management system onboard.

Equipment and ship designers, need to adopt best practice by simply working as a team, and asking users of their equipment for their input, experience and their wisdom at the design stage. Ergonomics must be considered in the design of the work stations that seafarers are expected to use, especially in safety-critical operations. The design of equipment on the navigation bridge and in the engine control room all too often fall below users’ expectations when they start to operate the equipment. This should be disappointing for any ship owner, given the level of investment in crews and ships and the high value of the cargoes they transport around the globe. Best practice not only improves the quality of operations, safety, and protection of the environment, but also the financial health of a company.
We conclude with an in-depth look at the human element, and in particular the ‘Deadly Dozen’ method of analysing accidents and potential accidents aboard ship.

Ian Shields of CHIRP Maritime uses a number of short reports to demonstrate how the Deadly Dozen can help us understand the root causes of individual incidents, and we include the diagram again this year to remind readers how it is composed.

Ian then describes his causal analysis of our reports, and I can tell you he dedicated a great deal of time to producing something which can benefit everyone in our industry. We owe him an immense debt of gratitude.

Finally, the Insight article complements the theme of this section and is highly recommended. It is an in depth look at the human element and why it is so important that we go beyond simplistic explanations and reassess our approach to human factors.
The Human Element – still a long way to go

**CHIRP** has received many reports which may be categorised individually as minor near misses. Whilst the reporting of these shows that a behavioural-based safety programme is in place, it also shows that the Deadly Dozen has yet to be embraced (see page 73).

Several of these near miss “one liners” are detailed below. They all had remedial action applied, in the form of direct intervention.

- **A first trip deck hand’s first mooring experience had him actively tending moorings.** **CAPABILITY.** *(The inexperienced deck hand should have been mentored until he was deemed experienced enough to actively engage in mooring operations)*.
- **A bunker tank nearly overflowed when the engineer overseeing the operation left to answer an engine room alarm.** **DISTRACTIONS.** *(A dangerous oversight – proper planning would have freed up personnel in order to prevent this near miss)*.
- **A lower forepeak space required cleaning – during the planning the supervisor asked for everything to be made ready in half an hour and he would return at that point. When he returned personnel were already at work inside the compartment even though they had not received an Entry Permit.** **COMMUNICATIONS.** *(The supervisor had in fact tested the compartment and had gone off to write up the permit – the crew however misunderstood the correct procedure)*.
- **An oiler taking daily tank soundings walked under a crane that was in use for storing operations.** **SITUATIONAL AWARENESS and ALERTING.** *(The oiler could not have been aware of his surroundings or else he would not have stepped under a crane with a load. But who had the forethought to stop him?)*
- **Sunglasses were used instead of safety goggles during deck scaling maintenance.** **CULTURE, COMPLACENCY and LOCAL PRACTICES.** *(If “That’s the way we’ve always done it around here”, is the philosophy then the culture both on board and ashore needs to be modified to change how people think)*.
- **A supervisor became involved in a mooring operation.** *(The ship had undertaken several port calls in the previous few days, with associated cargo and administrative operations. Amongst other factors, **FATIGUE** could have been an issue. Tired people make mistakes and the supervisor should have restricted himself to supervision and NOT become involved in the actual work)*.

The above reports are encouraging and indicate that people are thinking about safety, but it is worth remembering that the Human Element can involve multiple factors. Take the first example of our deck hand getting involved with mooring - this points to a poor on-board safety culture, a lack of standard operational procedures, and a poor company culture within the Safety Management System. A proper risk assessment and toolbox talk would have prevented the deck hand from getting involved.

Some of the examples may sound very familiar from your own ship – if so, what are you doing to prevent it from happening in the first place? All of the above examples could have been prevented if the people on board, backed up by shore management, had a healthy **TEAMWORK** ethic which encourages people to challenge unsafe procedures where appropriate, and which involves proper planning and co-ordination of onboard activities. Good planning also reduces the danger of people being placed under too much **PRESSURE** since tasks are more evenly distributed.

For any “near misses” that you become aware of, try to decide which of the twelve aspects of the Deadly Dozen are most appropriate. There may be more than one, in fact there are often several categories. From a personal perspective, thinking about your surroundings or the tasks that you have been allocated helps you become more self-aware and able to see the dangers before they cause an accident. Why not discuss the near misses that you experience at your Safety Committee meetings and bring in the aspects of the Human Element? You might be surprised at the results.

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**CHIRP Maritime Causal Analysis**

**Introduction**

For every article that **CHIRP** publishes in its quarterly **FEEDBACK** magazines, and posts upon the Chirpmaritime.org web site, an analysis of the article is undertaken in order to identify the root cause(s) behind the incident. The analysis is based upon James Reason’s research which dates back to 1990 and his book Human Error. The underlying principle is described by the Swiss Cheese model which shows clearly the defences which have been missed in order for an incident to occur.

The latent failures are grouped into eleven categories; these are Communications, Defences, Design, Error Enforcing Conditions, Hardware, Housekeeping, Incompatible Goals, Maintenance Management, Organisation, Procedures and Training. James Reason further subdivided these “basic” failures based upon causal explanations for the failed defences. There are many of these for each basic category, and **CHIRP**
has identified three of the more common failed defences in order to produce their analysis. These are shown on graphs in the following sections, and terminology is further explained.

In addition, we analyse articles in order to identify Human Element issues – this uses the information from the MCA Guidance Notice MGN520 – The Deadly Dozen, and is categorised as follows; Alerting, Capability, Communications, Complacency, Culture, Distractions, Fatigue, Fit for Duty, Local Practices, Pressure, Situational Awareness, and Teamwork. This is further explained in Article 50 and in the human element analysis section later in the paper.

1. Communication – 198 (9%)
2. Design – 160 (7%)
3. Defences – 301 (14%)
4. Error enforcing conditions – 248 (11%)
5. Hardware – 133 (6%)
6. Housekeeping – 35 (2%)
7. Incompatible goals – 183 (8%)
8. Maintenance management – 153 (7%)
9. Organisation – 302 (14%)
10. Procedures – 278 (13%)
11. Training – 195 (9%)

**Figure 3 – Latent Failures – Basic Causal Factors**

The analysis has been produced in the form of a pie diagram, and shows the number of incidents for each category where a latent failure has been identified. The number is also shown as an overall percentage.

It should be noted at the outset that the analysis is only based upon the information received. In many cases there is insufficient data to truly identify the root causes behind a near miss, and thus the graph and those that follow, are simply a rough and ready indication of where the maritime sector is today. Also worthy of note is the fact that CHIRP conducted a similar exercise to that shown, but using only recent reports, (from 2014 onward). The graphs were almost identical which is indicative of the same age-old problems not being rectified.

It should perhaps not be surprising that Housekeeping produces a relatively low score – the maritime sector has concentrated on this for many years as a part of accident prevention. But look at some of the higher scores – Defences which have been breached, Organisational failures, and Procedures not being complied with. We should perhaps ask ourselves why this is so. Just to take organisation as an example, if we are really looking at a root cause the organisation being referred to is generally not shipboard organisation, but often commitment from the Company, and even organisational failings at the ship design and construction stage which might involve classification societies, flag, and naval architects. There is much to reflect upon in order to make permanent improvements in this respect. It should be understood that the analysis is based upon near miss reports – when the same rationale is applied to actual incidents then surely something should be done by the “powers that be” to address these failings – this includes organisations at company, national and international levels. And yet examination of the vast majority of accident reports worldwide suggests that the root cause is nowhere close to being properly identified. Until this mindset changes, seafarers’ lives will continue to be endangered, accidents will continue, and blame will be laid to rest upon shipboard procedures or non-compliance with the SMS.

The introduction mentioned that the basic latent failures were broken down into three sub categories for each latent failure. These are shown on the diagrams that follow and some significant data is shown which is worthy of note.

Let’s examine some of these failed defences in a little more detail.

**Communications** – By far the greatest communications failing has proven to be ambiguous or incorrect communications. In this age where multinational crews are the norm, language problems are not the real issue, and nor is communication overload. It is simple messaging, whether this be verbal or from over-complicated procedures. It shows that closed loop communications where a message is known to be clearly understood requires a lot more attention.

**Design** – Where design has been identified as a failed defence, it can be seen that there are a high number of latent failings due to a lack of standardisation, followed by a lack of indication of the condition of the equipment. We need look no further than quick release hooks on life saving appliances, and the high number of wire rope failures to show why this is so.
Defences – The following tends to show that we are all experts in writing procedures and instructions – following them is another matter entirely judging by the number of reports received where it was determined that one of the factors was insufficient awareness of risks. This is often attributed to an individual; the true root cause however lies with management, and not necessarily company management. In order for all to become aware, the causes need designing out and procedures need to be put in place which prevent defences from being breached.

Error Enforcing Conditions – The term error enforcing conditions simply means that no matter what the near miss was, it would have happened anyway due to external factors. Abuse or addiction is extremely rare with the near misses that have been reported. However external influences, primarily weather related, and human physical restraints, (it is not possible for a person to do the task without endangering himself), are both frequent root causes. For the former, proper planning and risk assessment can prevent the danger, while for the latter the problems need to be engineered out, preferably at the design stage.

Hardware – The largest number of reports where hardware is an issue comes down to the hardware not being suitable for purpose. For example, an uninsulated screwdriver is not fit for purpose for any type of electrical work. Another factor has been the condition of the equipment – wear and tear or corrosion. Wire is an obvious example, particularly when it is sheathed – don’t use it!
Incompatible Goals – The term “incompatible goals” simply refers to a conflict between two parties – they have different objectives. This might include a task being unable to be performed correctly without disobeying instructions in the Safety Management System. In the graph below, we see a large number of discrepancies between formal procedures, (the SMS), and what is actually carried out in practice at the work site. To a lesser extent there may well be financial constraints and time pressure – these are uncommon in near miss reports but would almost certainly be higher for any formal investigations of an incident.

Maintenance – For the near miss reports that CHIRP has received relating to maintenance, most relate to activities on the deck – more engineering reports would be extremely useful. Nevertheless, it would seem that the documentation (whether this be instructions or procedures) is in place - the main problem is planning and supervision. Once again this is often at a higher level than the on-board management.

Organisation – The breakdown of defences with organisation once again show us that tasks are usually properly assigned, or have procedures in place. The failings, however, are generally in the planning – this may be on board departmental or shore instruction, and has upon occasion been the organisation at a shipyard on new build tonnage. There is also a high level of incidence where the procedures and instructions are fine, but the execution of them is poor, resulting in a near miss.

Procedures – With Safety Management Systems having been in place for many years it is somewhat incongruous to find that we have to experience an incident or near miss in order to determine that procedures are difficult to find or are completely missing. There is, to a lesser extent, evidence to show that the scope is unclear – poorly written in other words, and there is often a lack of feedback as to the use of the procedures – i.e. “it is difficult to do this because...”
It is often found that near miss reports will contain several of these behavioural factors, since an incident is generally not attributable to single cause. Just to give a simple example – a cylinder is being replaced on the main engine. The job has been assessed, discussed, and planned. At the critical moment of lifting the cylinder with the main engine crane the operator becomes distracted and fails to check if the lifting clamps are properly secured. They are not, and this is discovered when the unit disengages from the clamps just after the lifting operation commences. There is an almighty thump but fortunately no damage. A human element analysis may well identify situational awareness as an issue, and distractions have already been mentioned. But what about teamwork? What about alerting – did anybody else intervene to stop the operation? In fact, many of the deadly dozen could be factors in this case depending upon the exact circumstances.

As with the causal analysis, CHIRP can only analyse the articles with the information that is available – we do not conduct full investigations which might lend themselves to a more thorough analysis and so the graphical representation is simply a rough and ready indication of human factors from reports received. Having said that, it is a fair indication of the various safety related behaviours that are impacting upon incidents and near misses.

There are a lot of lessons in the above graphs and with a little forethought many can easily be adopted in order to reduce the number of near misses and incidents that are currently being experienced in our industry.

The Human Element – analysis

The introduction mentioned that CHIRP also analyses articles for human factors. The graph below is a representation of the “Deadly Dozen” – these are the twelve areas where human behaviour impact upon safety. As referenced in MGN520, the Deadly Dozen has been around since 1993, with origins in the airline industry. If it is considered to be relatively new in the maritime sector, then this is simply evidence that we have a lot of catching up to do. It is also worthy of note that the airline industry does not commence an investigation until all human factors have been identified.

The graph shows some surprising results. The largest failing is a lack of situational awareness and then there is a fairly even spread between alerting, communication and culture, followed by teamwork, local practices and capability. However, there is very little on fatigue, and given the knowledge that fatigue is a very real issue, (see the Project MARTHA findings in CHIRP publications), it is perhaps surprising that it scores so low. It is entirely possible that, although fatigue would almost certainly be an issue when reporting an accident, it is not really considered for near misses. This is also true for the “fit for duty” and “distractions” categories.
It should be mentioned that, as with the latent failings, CHIRP compared all reports with those from 2014 onwards. The difference in the graphs was negligible and thus the same conclusions were reached – the maritime sector needs to address these issues to be able to move forward.

**Simple Root Cause Analysis**

Some of the latent failings may seem to be complex but there is a very simple method that anybody can use to drill down through any event, whether it be a near miss or serious incident, in order to determine the root cause of the event. The method is called “Five Whys”. Quite simply for any incident you take the starting point and ask what happened? To that answer you ask “Why?”. At this point there may be two or more reasons and so a small matrix begins to be built up. For the answer to each “Why” you ask “Why?” again. Some of the matrix may well end up as a dead end with no particular learnings, but the other parts of the matrix should be followed through. When you get to the fifth “Why?” you will be at or very close to the true root cause of the event, and be in a position to identify the causal factors and failed defences. Throughout the “Why” questions all aspects of the Deadly Dozen should be incorporated to ensure that all human factors are adequately addressed.

If the above is carried out correctly then it will almost certainly be found that the conclusions are not, “Non-compliance with company instructions or the SMS” or “Human Error”. Human error is not a root cause – the sequence of events that caused the human error will identify the true root cause. The old adage that “an accident on board a vessel has its roots in the company boardroom” is very true.

**Conclusions**

This paper certainly shows that there are many areas in which improvements can be made, but to do so requires commitment from all sectors of the maritime industry. In very general terms ships and their crews act responsibly but play with the cards that have been dealt to them. Thus, the areas where analysis such as the foregoing reveals a need for improvement starts with commitment in company boardrooms, at Flag State administration level, with classification societies and indeed at the naval architect’s drawing board. The analyses being discussed now can only bear fruit if future decision making takes note of the findings.

**MCA Insight Article – Why the Human Element?**

In their seminal 2010 work Gregory & Shanahan posed the question “where is safety – in people or in rules?” Whilst recognising that the traditional focus on rules and procedures seemed a reasonable way to improve safety, the crucial role of people was increasingly apparent. They contended that whilst rules have a significant role to play, real safety lay in the expertise, understanding, risk mitigation and decision making of operators at all organisational and regulatory levels. The more we learn about human behaviour, capability and performance the more their assertion proves to be true. This raises another question – “what do we do about it?”

**The Traditional Approach**

The maritime industry by nature is very technical, so it is natural to look for technical and procedural solutions to drive forward improvements in safety and operational performance. This approach has been applied for decades, probably much longer, and has been successful in improving standards. Firstly, the 20th century saw great technical advances in ships and ships’ equipment which led to far greater operational capability. This has picked up pace into the 21st century particularly with the digital age and modern electronic equipment. Secondly, the increasing complexity of operations gave rise to a commensurate increase in formalised operational procedures and management systems. However, accidents continued.

Throughout the 20th century the international seafaring community, through IMO, tried to address safety through developing a culture of compliance with prescriptive regulation, underpinned by effective enforcement supported by appropriate penalties for transgression, SOLAS, MARPOL, COLREGS and STCW being the instrumental Conventions. Whilst this approach had some success it was not a panacea, accidents continued, people were blamed, punished and careers ruined.

At the end of the 20th century a cultural shift towards self-regulation was developed, encapsulated in the ISM Code. This represented a step change, recognising that a one-size-fits-all prescriptive approach was neither effective nor possible. It enabled operators to assess and manage their own risks in the most effective way for their operation. Again, it has had some success, but accidents, including preventable accidents continue.

**The Common Factors**

These approaches to addressing safety share some common factors:

i. They are based upon a comprehensive set of rules, regulations and procedures. Compliance was supposed to ensure safety.

ii. They assume crews are fully trained and proficient in all respects.

iii. They assume the rules, regulations and procedures can be complied with at all times.

The focus is on the rules, regulations and procedures, not the human struggling to operate them, and that can be problematic. Not only is the crucial role of people often overlooked, they are also seen as the weak link in an otherwise supposedly sound system. They are seen as a source of error and something to be conveniently blamed when things go wrong. But this not a fair reflection of the real world and we are missing a crucial opportunity to identify safer and more effective ways of working through a better understanding of people.

**The Regulatory Environment**

Rules and regulations generally stem from two sources, either national or international regulation; or company based policies, procedures and management systems. This generates a mass of information for the seafarer to absorb, understand and follow. When things go wrong we very often see people blamed for failing to comply with a procedure, proce-
dures are dissected and any perceived weakness “fixed” by introducing yet another procedure. But accidents continue.

**The Human Factor**

It is impossible to write a set of procedures that covers every potential scenario or subtle variation in work demand, or enables crews to deal with the many novel situations that inevitably arise whilst simultaneously remaining complaint to the letter of the procedure. Gregory and Shanahan explain the concept of the world as a complex adaptive system where it is impossible to predict every possible state. In these situations, we need to rely on the expertise, understanding, risk mitigation and decision making of operators at the front line and recognition of this at all organisational and regulatory levels. And this involves competence, proficiency and trust. It also requires an understanding that things will, occasionally, go wrong despite the best intentions and efforts of operators. People do not go to work to have a “bad day”. Most of our efforts are focussed on doing things right. Most of the time things do go right despite the complexity and adversities of work. We should focus more on how humans constantly adapt to make sure things mostly do go right, and we need to be more understanding and more capable of intelligent, non-judgemental learning on those rare occasions when things sadly go wrong.

The MCA is very much aware of the pivotal role people play in safety, an awareness that underpins the thinking behind *The Human Element – a guide to human behaviour in the shipping industry* and *Being Human in safety critical organisations*. Industry has much to gain in operational and safety performance through focussing more intently on the human in the system. To achieve this, we need to develop and promulgate a better understanding of the mental and physical capability of human beings and how this translates into normal behaviour. Only then will we have a chance of developing procedures, practices and management systems that meet the needs of the operators and enable them to get the job done in a safe and efficient manner. This is the key – the procedures, practices, tools and equipment need to be developed with normal human capability at the forefront of thinking, and should not be something to which the human must adapt to make them work in less than optimal circumstances. As the saying goes, don’t man the armaments, arm the man!

**A Way Forward**

If we are going to arm the man effectively we need to re-assess our approach to human factors.

**Human Centred Design:** the concept and principles of human centred design are well known but are implemented with inconsistency, ranging from very effective to not at all. This is particularly true in the maritime industry where we seem to be playing catch-up with some other industries. Ships and ships’ equipment should as a matter of course be designed with the human operator in mind, taking full account of human physical and mental capabilities. The tools and equipment must support and enable effective and safe working, not be a barrier to doing so.

**Human Centred Procedures:** similarly, the way we ask crews to operate should take full account of the same human capabilities. Procedures should be centred upon the task as it is required to be done at the front line, not as imagined how it should be done in head office. But we must recognise that it is impossible to write procedures for every state or scenario. Operators need the capability, and authority, to deal with all situations in the most effective way, based upon the best principles of proficient seamanship rather than prescriptive micro-management. And whilst they should be responsible and accountable for their actions, undesirable outcomes do not necessarily attract culpability.

**Professionalism:** this is so much more than competence, and is critical to success. Maritime training traditionally focuses very much on technical skills and competence, perhaps to the omission of other professional qualities that bring success.

Mandatory in other industries, formalised training and education in human factors has so much to offer the industry yet we seem reticent to embrace the opportunities. This would be particularly beneficial in areas such as safe behaviour and performance, communication, learning, skill maintenance, and would help designer, operator and manager alike, leading to potential significant gains in operational and safety performance. And it goes without saying, this is even more beneficial during emergency and crisis situations.

For instance, a rudimentary understanding of the functioning of the eye and visual system can enable much more effective scanning and detection of potential problems before they arise. An understanding of the effects of poor light, or adverse motion on human perception and decision making may yet yield untold benefit.

For further information on human performance and limitations see Human Performance and Limitations for Mariners by The Nautical Institute, and for some performance influencing factors (e.g. the Deadly Dozen) see MGN 520M.

Similarly, a greater emphasis on nurturing non-technical skills, both operational and management, would provide a cohesive force on board to enable much more effective working relationships. The 2010 Manila amendments to STCW leadership and management requirements, and the UK’s Human Element Leadership and Management course are a step in the right direction, but so much more could be done to improve operational and safety performance through human factors – a potential consideration for future revisions to STCW perhaps? And this needs to extend ashore, for a common complaint from seafarers is the lack of understanding and cohesion between ship and the shore side company.

We need to move towards a state of more than simply proceduralised competence, but one of proficiency and expertise where most operators are capable of effectively dealing with the many novel and demanding situations they face in reality above and beyond anything capable of being captured in procedures or a safety management system. In essence, we need to build a strong capacity for individual and organisational resilience.

We should not ignore existing standards of training and competence, in particular the risk of skill fade, the need for regular refresher and re-qualification training, drills, familiar-
isation and the impact of automation. Skill fade is highly probable for activities we don’t use and practice regularly, particularly traditional seafaring skills in a modern technological world. This becomes high risk for emergency or safety critical activities at precisely the time we need slick, faultless operation and teamwork. These are the situations where we really need proficiency built upon effective human interaction.

Ideally, we will take more account of our continually advancing understanding of human factors and develop effective training interventions at all levels fit for the operational demands 21st Century shipping.

Seafarer Wellbeing: there are moral, legal and operational drivers for looking after seafarer wellbeing. Needless to say, a happy, healthy, well-motivated workforce is more likely to be a productive and safe one. Seafarer wellbeing is currently a hot topic and should be a joint responsibility between seafarer and company.

MCA is working with several partner organisations to address many of the wellbeing issues identified. There are many aspects of life aboard that can impact on a seafarer’s physical health, but we are becoming increasingly aware of the need to look after mental health which can have an equal, if not more devastating impact on seafarers and their families. While we recognise the need for ships to have good levels of habitability, diet and recreational activities, shore leave, living and working conditions (to MLC11 standards), the role of organisations in supporting crew through difficult times, particularly effective communications with the company and with friends and family, is increasingly apparent.

Fatigue: much work has been carried out into fatigue in recent years, most notably the EU funded HORIZON project[12]. MCA followed this with a couple of short term fatigue studies into the 8-hours on/8-hours off watchkeeping pattern[13] and a diverse theoretical study using mathematical modelling into a wide range of watchkeeping patterns[14] some of which are not currently permitted under STCW, but useful to study all the same.

The conclusion may seem obvious, but we need the scientific data to give objective credibility to the argument, common sense alone is not enough. It is clear that most watchkeeping patterns are not good for maintaining high levels of alertness, but some are worse than others. Initial research suggests some currently not permitted under STCW may be less fatiguing than permitted patterns, but more work is required to verify this. Further, long working hours with restricted rest, broken or poor quality sleep, and long tour lengths are detrimental to operational performance and possibly longer term seafarer wellbeing. A fatigued seafarer is much more likely to make a mistake, possibly a serious one. We need to base our practices on scientific evidence and accept that the problem exists and take effective action, within the possibilities of a 24/7 industry. MGN 505(M)[15] provides further advice and guidance on fatigue management.

Intelligent Use of Intelligence: accident and near miss reports provide valuable information for safety improvement but to achieve this we need to use the information intelligently. We need to get away from the fallacy that many near miss reports somehow equates to a dangerous operation – the reporters are almost certainly taking their responsibility for continuous improvement seriously. However, whilst incident and near miss reports provide metrics on the nature and frequency of accident and incidents, we need to drill down into “why” an incident occurred i.e. the human factors and organisational factors underlying the incident. As Dekker[16] explains, to gain any real benefit from a review of an incident we need to understand the mind of the operator at the time, not use the artificial benefit of hindsight to derive our own interpretation of events. This is where a greater understanding of human factors, particularly those that drive human behaviour and performance would help greatly, certainly in identifying issues after the event, but potentially before, thereby helping avoid the incident altogether. CHIRP[17], MARS[18] and company reports are all potentially highly valuable sources of information. But this does require training and proper understanding of human factors.

The Individual and the Organisation: “People make mistakes. Organisations make it possible for them to be really serious”.

Accident investigations have traditionally concluded “human error” as the cause. But is this a useful term? Does it help us identify why something went wrong? Does it help us prevent it happening again? Or does it just conveniently point the finger of blame at one or a few crew members?

We need to know not just what went wrong, but why it went wrong, how it went wrong and more relevantly how we can prevent recurrence. Front line crew operate within the context of the organisation, and the complex interaction of organisational issues are often implicated in accidents. The report into the Herald of Free Enterprise disaster in 1987 identified serious individual and organisational failings at many levels in the organisation[19]. The dramatic training film produced by Walport[20] illustrates clearly how a commercial decision taken at senior management level can have ramifications leading to the grounding of a vessel. It identifies interactions that may not be immediately obvious but can be identified through evaluating human factors. Rarely is a single individual culpable, we need to recognise this, remove the understandable emotion and look for a more just, fair and productive outcome. As they say, find causes not culprits.

However, for organisations to learn, the culture must be right. To learn, organisations need information, and that information must be provided by the front-line operators. But for that to happen, the operators must know that information they provide will be treated fairly, confidentially and with respect, and that it will be used for its intended purpose, i.e. making safety improvements. And this requires trust at all levels in the organisation.

The concept and principles of Just Culture are well known, if not particularly well implemented. This is not the right place to discuss Just Culture in depth, indeed it could be the subject of an article in its own right. However, suffice to say that a properly implemented Just Culture demonstrably improves operational performance and safety and develops organisational trust. Just Culture is enshrined in European
legislation in aviation and aircraft operators are required to demonstrate compliance within their management systems. We are a long way from this in the maritime industry.

Just Culture is not an end in itself, but it is a key factor in cultural development and is an underpinning component in developing High Reliability Organisations (HROs) where the impact of a safety failure could be catastrophic operationally, reputationally and financially. Hudson’s Just Culture Model and Baines Simmons FAIR2 are examples of principles and methodologies that help organisations assess and manage failures and lead towards continued improvement. Hudson & Parker’s safety culture ladder takes this concept further and shows how, through appropriate use of resources, effective process and cultural development, companies can aim to excel in safety performance. MCA’s HEAT tools provide self-assessment tools for ships and companies to assess their current level of safety culture and identify areas for improvement. Similar self-assessment tools are available from other organisations.

The role of the organisation cannot be overemphasised. Masters and their crew are well trained professionals who are capable of operating their vessels effectively. However, they cannot do it alone and the organisation needs to support its crew and vessels in routine operations, but more critically in times of adversity. Understanding the needs of the human from a human element perspective will enable a far more effective and pragmatic interaction.

Resources: Paying more attention to the human element will obviously have some resource implications regarding time, effort, training etc. and this must be recognised. However, this should be viewed in terms of investment rather than cost. The saying “if you think safety is expensive try having an accident” may be something of a cliché, but is fundamentally true”.

The maritime industry has made significant gains through technical advances. Human and organisational factors, whether through active or latent failures, still predominate accidents, and turning effective attention to the human element offers the best chance of making the further significant improvements in safety that we require.

Conclusions
This is an overview of just some of the many human element issues we face in safety critical organisations. Whilst not a magic carpet ride to an accident free future, serious consideration of the following may help.

Human Factors Training: develop formal human factors training for operational seafarers, appropriate shore side personnel, accident investigators, designers and regulators.

Technical training: don’t overlook existing technical and professional training, but recognise the risks of skill fade and associated operational problems that may occur as a result. Recognise that technology will go wrong.

Research: continue and expand the many strands of excellent scientific research into all aspects of human factors at sea.

Data: use data from accident investigations and near miss reports intelligently.

Cultural development: aim for continuous improvement in safety culture, acknowledge and use the many benefits of the Just Culture and Safety Culture Ladder concepts

Wellbeing: recognise there are moral, legal and operational grounds for ensuring the mental, emotional, social and physical wellbeing of seafarers. Recognise that fatigue can be a serious problem and take effective mitigating action.

Build resilience: crucially, accept the limitations of prescription and build individual and organisational resilience.

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The Deadly Dozen

FIT FOR DUTY
Are you REALLY fit to carry out your duties safely?
The combination of physical and mental state of people which enables them to carry out their duties competently and safely.

FATIGUE
Just tired OR dangerously fatigued?
A reduction in physical and/or mental capability as the result of physical, mental or emotional exertion which may impair nearly all physical abilities including: strength; speed; reaction time; co-ordination; decision making; or balance.

ALERTING
Do you REALLY speak up when you should?
Bringing concerns about actions, situations or behaviour to the attention of others in a timely, positive and effective way.

DISTRACTIONS
Multi-tasking OR dangerously distracted?
An event that interrupts your attention to a task.

COMMUNICATION
Do you REALLY understand each other?
Transmitting and receiving full and correct information ensuring sender AND receiver share the same understanding.

PRESSURE
Busy OR dangerously overloaded?
Real and perceived demands on people. Do you REALLY have the resources you need.

COMPLACENCY
Is everything REALLY OK?
A misplaced feeling of confidence that everything is OK

CAPABILITY
Is your crew REALLY capable?
The blend of knowledge, skills and attitude to enable effective, safe performance. Do they have tools and resources to perform competently?

TEAMWORK
Do you work REALLY well together?
Working together effectively towards a shared common goal.

LOCAL PRACTICES
Efficiency OR dangerous short cuts?
Behaviour and actions applied locally that differ from the official documented practices. Also known as procedural violations.

NB. Full definitions - see MCA Maritime Guidance Note MGN 520(M) issued December 2016.
# APPENDICES

## Appendix I: Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>Able seaman</td>
</tr>
<tr>
<td>AIS</td>
<td>Automatic identification system</td>
</tr>
<tr>
<td>ALARP</td>
<td>As Low as Reasonably Practical</td>
</tr>
<tr>
<td>AMSA</td>
<td>Australian Maritime Safety Authority</td>
</tr>
<tr>
<td>ARPA</td>
<td>Automatic Radar Plotting Aid</td>
</tr>
<tr>
<td>ASD</td>
<td>Azimuthing Stern Drive</td>
</tr>
<tr>
<td>BA</td>
<td>Breathing apparatus</td>
</tr>
<tr>
<td>BCD</td>
<td>Bow crossing distance</td>
</tr>
<tr>
<td>BIMCO</td>
<td>Baltic and International Maritime Council</td>
</tr>
<tr>
<td>CATZOC</td>
<td>Confidential Hazardous Incident Reporting Programme</td>
</tr>
<tr>
<td>CHIRP</td>
<td>CHIRP Confidential Hazardous Incident Reporting Programme</td>
</tr>
<tr>
<td>COLREGS</td>
<td>The International Regulations for Preventing Collisions at Sea</td>
</tr>
<tr>
<td>CO2</td>
<td>Carbon dioxide</td>
</tr>
<tr>
<td>CPA</td>
<td>Closest Point of Approach</td>
</tr>
<tr>
<td>CSO</td>
<td>Company Security Officer</td>
</tr>
<tr>
<td>DPA</td>
<td>Designated Person Ashore</td>
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<tr>
<td>ECDIS</td>
<td>Electronic chart data information system</td>
</tr>
<tr>
<td>EEBD</td>
<td>Emergency Escape Breathing Devices</td>
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<tr>
<td>EGC</td>
<td>Enhanced Group Call</td>
</tr>
<tr>
<td>ENC</td>
<td>Electronic navigation chart</td>
</tr>
<tr>
<td>ETA</td>
<td>Estimated time of arrival</td>
</tr>
<tr>
<td>FPD</td>
<td>Fall preventer device</td>
</tr>
<tr>
<td>GNSS</td>
<td>Global Navigation Satellite System</td>
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<tr>
<td>GMDSS</td>
<td>Global Maritime Distress and Safety System</td>
</tr>
<tr>
<td>GPS</td>
<td>Global Positioning System</td>
</tr>
<tr>
<td>HSE</td>
<td>Health, safety and environment</td>
</tr>
<tr>
<td>IACS</td>
<td>International Association of Classification Societies</td>
</tr>
<tr>
<td>ICS</td>
<td>International Chamber of Shipping</td>
</tr>
<tr>
<td>ILG</td>
<td>Industry Lifeboat Group</td>
</tr>
<tr>
<td>IMO</td>
<td>International Maritime Organization</td>
</tr>
<tr>
<td>IMPA</td>
<td>International Maritime Pilots Association</td>
</tr>
<tr>
<td>INM-C</td>
<td>Inmarsat-C</td>
</tr>
<tr>
<td>ISGOTT</td>
<td>International Safety Guide for Oil Tankers and Terminals</td>
</tr>
<tr>
<td>ISM</td>
<td>International Safety Management Code</td>
</tr>
<tr>
<td>ISPS</td>
<td>International Ship and Port Facility Security Code</td>
</tr>
<tr>
<td>ISWAN</td>
<td>International Seafarers Welfare and Assistance Network</td>
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<tr>
<td>ITF</td>
<td>International Transport Workers Federation</td>
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<tr>
<td>IWRC</td>
<td>Independent wire rope core</td>
</tr>
<tr>
<td>LDL</td>
<td>Limiting danger line</td>
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<tr>
<td>MAB</td>
<td>CHIRP Maritime Advisory Board</td>
</tr>
<tr>
<td>MAIB</td>
<td>Marine Accident Investigation Branch</td>
</tr>
<tr>
<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978</td>
</tr>
<tr>
<td>MARS</td>
<td>Marine Accident Reporting Programme</td>
</tr>
<tr>
<td>MCA</td>
<td>Maritime Coastguard Agency</td>
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<tr>
<td>MFB</td>
<td>Maritime FEEDBACK</td>
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<tr>
<td>MGN</td>
<td>Marine Guidance Note</td>
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<tr>
<td>MLC</td>
<td>Marine Labour Convention</td>
</tr>
<tr>
<td>MOD</td>
<td>Ministry of Defence (UK)</td>
</tr>
<tr>
<td>MRCC</td>
<td>Maritime Rescue Coordination Centre</td>
</tr>
<tr>
<td>MSC</td>
<td>Maritime Safety Committee (IMO)</td>
</tr>
<tr>
<td>NAVTEX</td>
<td>Navigational telex</td>
</tr>
<tr>
<td>NM</td>
<td>Nautical Mile</td>
</tr>
<tr>
<td>ntM</td>
<td>Notice to mariners</td>
</tr>
<tr>
<td>OCIMF</td>
<td>Oil Companies International Marine Forum</td>
</tr>
<tr>
<td>OIC</td>
<td>Officer in charge</td>
</tr>
<tr>
<td>OOW</td>
<td>Officer of the Watch</td>
</tr>
<tr>
<td>P&amp;I</td>
<td>Protection and Indemnity Insurance</td>
</tr>
<tr>
<td>PLA</td>
<td>Port of London Authority</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal protective equipment</td>
</tr>
<tr>
<td>PPU</td>
<td>Portable piloting unit</td>
</tr>
<tr>
<td>RCS</td>
<td>Radar cross section</td>
</tr>
<tr>
<td>RIB</td>
<td>Rigid Inflatable boat</td>
</tr>
<tr>
<td>RNLI</td>
<td>Royal National Lifeboat Institution (UK)</td>
</tr>
<tr>
<td>RORC</td>
<td>Royal Ocean Racing Club (UK)</td>
</tr>
<tr>
<td>RYA</td>
<td>Royal Yachting Association (UK)</td>
</tr>
<tr>
<td>SCAMIN</td>
<td>Scale minimum</td>
</tr>
<tr>
<td>SCBA</td>
<td>Self contained breathing apparatus</td>
</tr>
<tr>
<td>SHQEM</td>
<td>Safety, Health, Quality and Environmental Management</td>
</tr>
<tr>
<td>SMS</td>
<td>Safety Management System</td>
</tr>
<tr>
<td>SOLAS</td>
<td>International Convention for the Safety of Life at Sea (SOLAS), 1974</td>
</tr>
<tr>
<td>SOMS</td>
<td>Straits of Malacca and Singapore</td>
</tr>
<tr>
<td>STCW</td>
<td>International Convention on Standards of Training, Certification and Watchkeeping for Seafarers</td>
</tr>
<tr>
<td>TMSA</td>
<td>Tanker management and self assessment</td>
</tr>
<tr>
<td>TSS</td>
<td>Traffic Separation Scheme</td>
</tr>
<tr>
<td>UKMPA</td>
<td>United Kingdom Maritime Pilots Association</td>
</tr>
<tr>
<td>UMS</td>
<td>Unmanned machinery space</td>
</tr>
<tr>
<td>USCG</td>
<td>United States Coast Guard</td>
</tr>
<tr>
<td>VHF</td>
<td>Very high frequency (radio)</td>
</tr>
<tr>
<td>VLCC</td>
<td>Very large crude oil carrier</td>
</tr>
<tr>
<td>VTS</td>
<td>Vessel Traffic Services</td>
</tr>
</tbody>
</table>
Appendix II: Meet Team Maritime!

Following on from the successful four year tenure of our previous Director (Maritime) John Rose, we would like to take this opportunity to introduce you to the maritime team that will lead CHIRP forward through 2018; not just the “front of house” personnel, but the whole support network that keeps the ship on a steady course. Without this support, the Programme would not be the growing influential entity that it is.

The CHIRP Maritime Programme is the responsibility of the newly installed Director (Maritime), Captain Jeff Parfitt and comprises five retained staff. Jeff works closely with Maritime Advisers Captain Ian Shields and Captain Alan Loynd (Hong Kong). All three are contracted to CHIRP Maritime on a part-time basis. The Maritime team is supported by CHIRP CEO Ian Dugmore and Administrator Stephanie Dykes. Beyond the retained staff, there is a much wider and broad-based network of unpaid volunteers, who freely give of their own time to support and sustain the vision of the CHIRP Maritime confidential reporting scheme. Together they make the maritime team what it is.

At ground level there is a global network of handpicked voluntary Maritime Ambassadors that jointly serve CHIRP and The Nautical Institute MARS programme. The ambassadors are senior maritime professionals who sustain a vital role in promoting our work. By gaining the confidence of the maritime community within their local sector, they generate reports and give presentations, projecting CHIRP Maritime as a local physical identity with a growing global presence. The ambassadors demonstrate that CHIRP can and will reach out.

Meet just a few of our global Ambassadors

Joshua Attipoe (Ghana)

William Bishop (UK)

Özgür Özdelice (Turkey)

The Maritime Programme also has a Maritime Advisory Board (MAB) consisting of 28 senior industry professionals. Their expertise is of the highest order and includes senior naval officers, senior maritime union officials, government medical advisers and specialists in human factors, MCA and MAIB experts, fishing industry and RNLI representatives, pilots and offshore industry specialists, as well as senior people from mainstream commercial shipping and P&I clubs.

The composition of the Maritime Advisory Board (MAB) is reviewed regularly to ensure that the membership is appropriate to the scope of the Programme. Its members act as individual expert advisers and not as representatives of their sponsoring organisations. Their function is to review the selected submitted reports for considered opinion and comment. Information is provided to the MAB on a confidential basis and all means of identifying the individual reporter are removed from reports prior to any discussion. From the resultant comments, the content of the quarterly Maritime FEEDBACK (MFB) magazine is produced and distributed.

Specific topics raised from the reports may be selected for further analysis and if taken forward may form the basis of a specialist “Insight” document. Drawing upon CHIRP Maritime’s expertise and substantial support network, an “Insight” paper could then be included in the Annual Digest. Such papers to date have included human elements, anchoring, the operation of lifeboats and causal analysis. It is intended to provide a freely accessible database on our website of these papers as they develop.

Sitting on top of the whole structure are the Maritime Trustees. The Trustees meet twice a year and their function is to ensure that proper governance, in line with the objectives of the organisation, is maintained.

The current Maritime Trustees are:

Captain David Harrison – Independent Chairman of Trustees
Mr Philip Wake OBE – Independent and Secretary of CHIRP
Captain Steve Clinch MNM – Chief Inspector MAIB
Captain Steve Gobbi – Independent
Mr Allan Graveson MNM – Senior National Secretary, Nautical International
Captain Adrian Hibbert – Operations Director, Thomson Cruises
Sir Alan Massey KCB, CBE – Chief Executive, Maritime & Coastguard Agency
Appendix III: How the CHIRP reporting process protects your identity

The Maritime Programme – HOW IT WORKS

- Reports can be generated either on mobile phone, tablet or computer. Documents, photos, videos or audio can be easily added to your submission online through a secure website www.chirpmaritime.org. Also by email (reports@chirp.co.uk) or as a written report (via post/ Freepost), or by telephone to the Charitable Trust’s office in Fleet (+44 1252 378947).
- 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 return of personal details, CHIRP is unable subsequently 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 “Lesson Learned” are disidentified and therefore the possibility of identifying the Company, Ship or Seafarer reporting or involved shall be almost impossible. Finally the depersonalised data is recorded in a secure database at the head quarters in Fleet, it can be used for analysis of key topics and trends.
- Disidentified data can be made available to other safety systems and professional bodies.

Director (Maritime) November 2017
Report processing flow – CHIRP Maritime

Guiding Principles:
Confidentiality Protection / Non-Punitive/ No “Whistle Blowing”
Appendix IV: CHIRP Near Miss report form

Please use the online report available using mobile phone, tablet or personal computer at www.chirpmaritime.org or by email to reports@chirp.co.uk or use this hand written form.

### CHIRP Maritime REPORT FORM

**CHIRP is totally independent of any organisation in the maritime industry**

<table>
<thead>
<tr>
<th>Name:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>Postcode:</td>
<td></td>
</tr>
<tr>
<td>Telephone Number:</td>
<td></td>
</tr>
<tr>
<td>Personal e-mail for reply:</td>
<td></td>
</tr>
</tbody>
</table>

1. **CHIRP** is a reporting programme focussing upon safety related issues in **COMPLETE CONFIDENCE**. Your personal details are required only to enable us to contact you for further details about any part of your report. Please do not submit anonymous reports.

2. On closing this Report, **NO RECORD OF YOUR NAME AND ADDRESS WILL BE KEPT**.

On receipt of this report **CHIRP** may seek your approval to contact the owner or manager of your vessel, or if your report relates to non-compliance with regulations, those of a third party. The identity of you as the reporter is never disclosed.

On completion of our review, if your report relates to safety issues that may apply generally to seafarers, it may be considered for publication in **MARITIME FEEDBACK**. Reports may be summarised. **THE NAME OF THE REPORTER, THE NAMES OF VESSELS AND/OR OTHER IDENTIFYING INFORMATION ARE NOT DISCLOSED.**

**PLEASE COMPLETE RELEVANT INFORMATION ABOUT THE EVENT/SITUATION**

- Date of the incident:  
- Time [local/GMT]:  
- Your vessel name:  
- Flag:  
- IMO number if known:  
- Vessel type:  
  (Tanker, bulk carrier, cruise, ferry, fishing, yacht etc)  
- Vessel location:  
- Your position onboard or in the organisation:  

Please place the completed report form, with additional pages if required, in a sealed envelope to:

**The CHIRP Charitable Trust, Ancells Business Park, Ancells Road, Fleet, GU51 2UJ, UK**  
(no stamp required if posted in the UK).

Confidential Tel [24 hrs]: +44 (0) 1252 378947 or Freephone [UK only] 0800 772 3243.

Report forms are also available on the **CHIRP** website: www.chirp.co.uk
CHIRP Maritime REPORT FORM

CHIRP IS TOTALLY INDEPENDENT OF ANY ORGANISATION IN THE MARITIME INDUSTRY

DESCRIPTION OF EVENT

Photographs, diagrams and/or electronic plots are welcome:

Your narrative will be reviewed by CHIRP who will remove all information such as dates/locations/names that might identify you. Please bear in mind the following topics when preparing your narrative: The chain of events / type of communication / any decision making / equipment / training / situational awareness / weather / task allocation / teamwork / sleep patterns.

The description of the near-miss / hazardous incident:

Safety lessons learned from the near-miss / hazardous incident:

Please place the completed report form, with additional pages if required, in a sealed envelope to:

The CHIRP Charitable Trust, Ancells Business Park, Ancells Road, Fleet, GU51 2UJ, UK
(no stamp required if posted in the UK).

Confidential Tel (24 hrs): +44 (0) 1252 378947 or Freefone (UK only) 0800 772 3243.

Report forms are also available on the CHIRP website: www.chirp.co.uk
Appendix V: Working with ISWAN to improve the safety and welfare of seafarers

The International Seafarers’ Welfare and Assistance Network (ISWAN) and the Confidential Hazardous Incident Reporting Programme (CHIRP Maritime) have signed a Memorandum of Understanding (MoU) so the two organisations can work more closely together to help improve seafarers’ safety and welfare.

ISWAN regularly hears from seafarers about unsafe working practices and now offers to assist seafarers to complete an initial report to CHIRP highlighting those unsafe practices. This is particularly helpful for seafarers whose first language is not English. Ray Barker, Head of Operations at ISWAN, reports that: ‘We have always worked closely with CHIRP but this MoU ensures that CHIRP and ISWAN are not only supporting seafarers in their own area of work but also looking out for them in other ways. We believe that through our daily contact with seafarers we will be able to increase the number of reports to CHIRP, particularly from seafarers whose first language is not English. Through CHIRP’s investigation and reporting processes we are confident that these reports will lead to safety improvements in the maritime industry’.

CHIRP is regularly told by seafarers about personal and employment problems and will now ask them if they want to be put in contact with ISWAN’s SeafarerHelp team. If so, a SeafarerHelp officer will contact the seafarer to offer assistance with personal and employment problems, as well as emotional support and counselling if necessary.

The MoU brings together two organisations whose sole interests are to improve the lives of seafarers all around the world. Working in partnership with likeminded organisations is a great pleasure and together we can achieve more for the benefit of seafarers than we can on our own.

By working together in this way, CHIRP and ISWAN will help to ensure that seafarers’ safety and welfare are given a high priority. To learn more about CHIRP and ISWAN, please visit our websites at:

www.chirpmaritime.org
www.seafarerswelfare.org

If you require further information please contact:
CHIRP: Capt Jeff Parfitt FNI, jeff.parfitt@chirp.co.uk
ISWAN: Ray Barker, ray.barker@iswan.org.uk
Appendix VI:  
**CHIRP Maritime Videos**

The video extracts are taken from the four video broadcasts produced in 2017 by Rob White of Maritime Films UK and sponsored by The Standard Club.

The intention is to use the videos for educational purposes in maritime academies and among seafarers for discussion onboard and disseminating the safety lessons learned.

The full list of video broadcasts 2016/17 are listed below with hyperlinks

**CHIRP News 4**
https://youtu.be/Yzl10zwOITM

**CHIRP News 3**
https://youtu.be/yOjnWD7viwo

**CHIRP News 2**
https://youtu.be/fVT6j0bmNFs

**CHIRP News 1**
https://youtu.be/-5eevugEr5M

**CHIRP News 8**
https://youtu.be/aj24sfGcVxk

**CHIRP News 7**
https://youtu.be/q8jr4vgH-EQ

**CHIRP News 6**
https://youtu.be/R2RpuYxhpq

**CHIRP News 5**
https://youtu.be/zQuzmG1tX_Y

Maritime video broadcasts are sponsored by the Standard Club
Editorial

We continue to publish these Summary Reports as a way of sharing some of the many stories from the maritime community that we receive every month, in order to ensure they are as widely read as possible. They are intended to be accessible and informative to all members of the maritime community, and as such we welcome our readers to circulate these reports as widely as they choose. We are always interested in hearing from the maritime community about their experiences, and we encourage readers to contact us if they have any story ideas or wish to contribute to the magazine.

This month’s Summary Report includes a case study from the Far East, and we also publish a report on an attempted armed robbery that took place in the South China Sea.

Reports

Attempted Armed Robbery

A report from the South China Sea involving an attempted armed robbery.

Summary

A report summary of the attempted armed robbery.

Conclusion

In conclusion, it is important to ensure that all crew members are aware of the potential risks involved in such situations and take appropriate precautions to minimize the risk of such incidents occurring.

CHIRP WEBSITE: Publications and submission of reports by personal computer, lap top, tablet, mobile phone

www.chirpmaritime.org
Appendix VIII: Our sponsors
We are grateful to the sponsors of the CHIRP Maritime Programme. They are:

- The Corporation of Trinity House
- Lloyd's Register Foundation
- The Britannia Steam Ship Insurance Association Ltd.
- International Foundation for Aids to Navigation (IFAN)
- Cammell Laird
- The TK Foundation
- The UK P&I Club
- TT Club Mutual Insurance Ltd.
We are grateful to the following sponsors for funding the publication and distribution of this CHIRP Annual Digest 2017. They are:
We aim to improve the safety of all individuals employed in or associated with maritime operations.

We manage an independent confidential reporting programme for the reception and handling of human factors and hazardous safety-related issues associated with the international maritime communities.

**Post**

The CHIRP Charitable Trust, Centaur House, Ancells Business Park, Ancells Road, Fleet, GU51 2UJ United Kingdom

**Email**

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

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

**Telephone**

Tel: 01252 378947
Freephone (UK only): 0800 772 3243