MARITIME FEEDBACK

CHIRP MARITIME

Issue 64
August 2021

An independent and confidential reporting system for the maritime industry

SUBMIT A REPORT

CHIRP always protects the identity of our reporters. All personal details are deleted from our system once a report is completed.

ONLINE

Reports can be submitted easily through our encrypted online form
www.chirpmaritime.org/submit-a-report/

BY EMAIL

You can send us a report by emailing *CHIRP* direct, we will always protect your identity – reports@chirp.co.uk

The *CHIRP* editorial

Comprehensive hand-overs: the key to success

Adam Parnell
Director (Maritime)

Readers will notice a slight change to our format in this edition of MARITIME FEEDBACK as we have added a summary of human factors at the end of each report. This has been done to make it easier for you to identify the major underlying human factors which are addressed in the reports. We hope it will be useful, but please let us know what you think. As always, we depend on you, our readers, to guide our work.

This edition is the first since the retirement of Jeff Parfitt, and the arrival of Adam Parnell as our new Director, Maritime. Together they ensured a seamless transition, and we are confident we will continue to improve under Adam's leadership. Deputy Director Dave Watkins has also settled in well and has produced a very interesting series of reports for this edition.

We begin with an account of a crew change which was less than perfect, and how

the new Master and crew were faced with numerous problems. It is to their credit that they overcame the problems in a professional manner and worked hard to ensure the safety of their vessel. This is followed by a report about flooding in a cargo hold which, among other things, reminds us of the importance of responding to alarms in a timely and thorough manner. We then learn about a steering gear malfunction which was noticed by the crew and handled very well, but highlights the importance of getting timely information from all equipment manufacturers about potential problems with shipboard equipment.

> As an industry, we must all strive to ensure that seafarers return home to their loved ones in good shape at the end of every voyage

We have a report about fatigue in the towage sector which raises worrying questions, and three brief reports about faulty pilot boarding arrangements – a topic we will continue to cover until the situation improves.

We then consider the case of a faulty lifeboat on-load release and conclude with a report about an engineer who suffered severe burns to his body and face during what should have been a routine maintenance task. This highlights the need for proper risk assessment and an effective permit to work system and emphasises the need to follow proper procedures at all times.

We hope this edition stimulates discussions about safety and accident prevention. As an industry, we must all strive to ensure that seafarers return home to their loved ones in good shape at the end of every voyage. This is especially true during the uncertainties created by the COVID pandemic, where longer voyages and increased anxiety can have an impact on safety.

Until next time, stay safe and may all your voyages bring you safely home.

M1761

Handover follow-up

Initial Report

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

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

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

CHIRP Comment

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

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

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

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

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

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

Human Factors relating to this report

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

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

Culture – Applies to individuals and the whole organisation.

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

M973

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

Initial Report

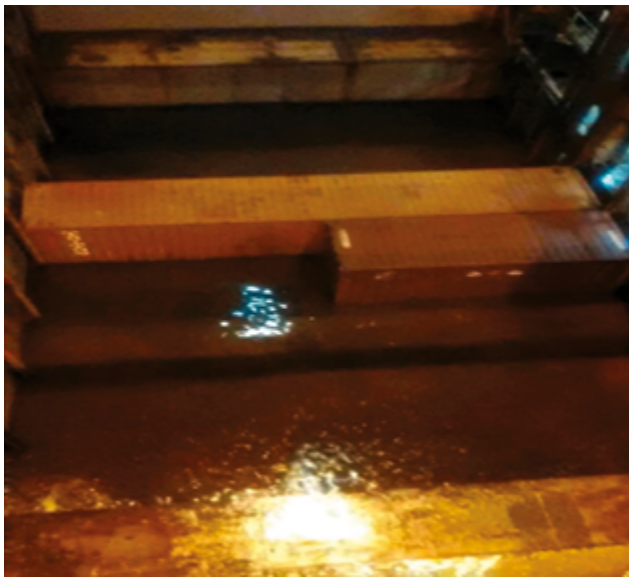
A cargo vessel went to anchor and commenced pumping out ballast water from No1C Water Ballast Tank (WBT) to adjust its trim before a canal transit the following day. Shortly before pumping was completed, the bilge alarm for cargo hold No. 5 WBT activated. The Chief Officer instructed an ordinary seaman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

The vessel successfully transited the canal and berthed alongside at 1700. Cargo operations were to commence at 1900.

No cargo movements were planned in hold No. 5 at this port.

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

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



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

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

An investigation confirmed that the bilge and ballast system valves were in good condition, and the structural integrity of the cargo hold was intact. It concluded that water had entered the hold from a manhole that had not been properly secured following work within the double bottom tank. It was noted that the inadequate reaction by the crew when the bilge alarm was activated was a contributing factor to the incident.

CHIRP Comment

This report raises several serious points:

- all alarms, particularly bilge alarms, must be treated with concern and investigated immediately. The initial hold bilge sounding of 54cm in Hold No. 5 was significant and should have been compared against daily hold bilge soundings to determine the possibility of water ingress into a compartment. An inspection of the hold by the Chief Officer should have been a priority action.
- activation of alarms indicates a deviation from the norm: it is imperative to STOP and ask 'WHY?' In this case there were enough clues to alert the crew to that fact that something was wrong. Carrying on with a ballast transfer without investigating only exacerbated the problem and resulted in 26 damaged containers.
- There are no indications that the water was checked for contamination prior to being discharged overboard in port.
- The presence of tools indicates either poor engineering practices or a task not completed correctly. Reasons for both could include fatigue, the presence of distractions, time or resource pressure. They could of course also point to a poor safety culture, complacency, or poor supervision. All of these are common Human Factors that lead to incidents such as this one.

Human Factors relating to this report

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

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

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

M1008

Steering gear malfunction

Initial Report

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

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

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

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

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

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

- the steering gear system inspections and tests were carried out in accordance with the company's

procedures and instructions and the vessel's PMS. There was no malfunction noticed during these tests.
- the malfunction was investigated by a service engineer who identified the cause as the potentiometers of the autopilot system. However, spare potentiometers were not available at the port.
- the malfunction was further investigated by the maker's service engineer who reconfirmed that the issue was due to an inoperative potentiometer of the auto pilot system control units resulting in a lost signal and alarm. The potentiometers were replaced, and the proper operation restored.
- there was no requirement in the maker's system manual for replacement of the malfunctioning potentiometers. During the vessel's special surveys, the system was inspected by qualified technicians and no issue had been raised in respect to the condition of the potentiometers. However, during the investigation it was identified that the maker had issued a technical letter the previous year, which recommend periodical replacement of the potentiometers every five years.
- the subject technical letter was never received in the company.
- there was no document to indicate that the potentiometer had been replaced since the ship's construction in 2007.
- there was no history of any previous malfunction of the system on the vessel nor on any other vessels in the fleet using the same system.

Library Image courtesy of Shutterstock

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

CHIRP Comment

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

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

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

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

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

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

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

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

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

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

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

Human factors relating to this report

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

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

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

M1767

Fatigue in the international towage sector

Initial report

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

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

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

In line with most tug companies the job consists of:

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

Library image courtesy of Shutterstock

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

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

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

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

CHIRP Comment

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

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

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

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

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

Human factors relating to this report

Culture – Does everyone really care about safety?

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

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

M2604

Lifeboat on-load cable release unit defect

Initial report

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

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

The post-event investigation noted that the company's shipboard safety operations manual required the lifeboats to

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

CHIRP Comment

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

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

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

Undertaking maintenance on the lifeboat hooks - the hanging-off strop is rigged along with the fall prevention device (FPD). Once the weight of the boat is taken by the hanging-off strops the hooks can be released. The FPD can remain attached to their shackles.

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

MAB comments

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

Human factors relating to this report

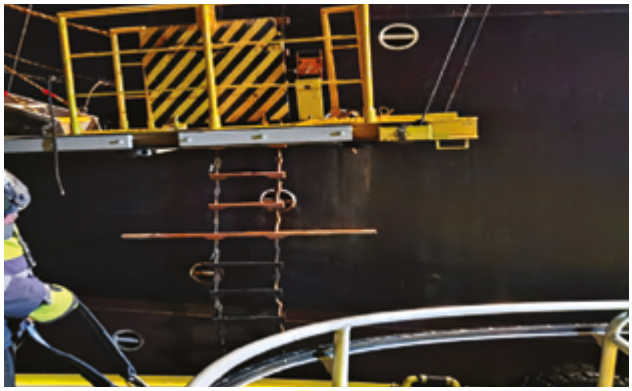
Capability – Take active steps to identify capability gaps, and address them.

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

M1773

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

Initial Report (1)



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

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

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

Human factors relating to this report

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

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

Initial Report (2)

Pilot ladder did not meet SOLAS standards.

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

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

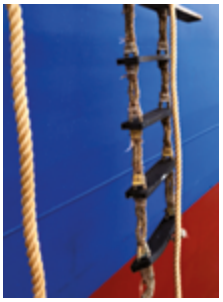
Human factors related to this report

Complacency – Check: is everything really ok?

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

Capability – Is your team capable of spotting defects?

Initial Report (3)



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

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

CHIRP Comment

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

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

Human factors related to this report

Alerting – Do you really speak up when you should?

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

Complacency – Never assume all is ok.

M2550

Personal injury – burn to body and face

Brief account of incident

The vessel was alongside the berth. At 15.50 engineers started the removing the cover of the main engine fuel oil filter filter. Hot fuel sprayed onto the body and face of one of the engineers who was transferred to the ship's hospital for immediate medical attention, while urgent transportation to hospital ashore was arranged. The engineer was hospitalized locally for a week and then repatriated. According to the final medical report issued two weeks later, the engineer was recovering well but his condition would need to be re-evaluated in a month's time.

A Typical modern Fuel Oil Back flush filter

Incident investigation

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

A review of the work/rest hours revealed that the injured crew member was well rested and his working hours were with in company and MLC requirements. A Permit to Work had been issued and all involved crew members were wearing the correct PPE.

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

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

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

The maker's safety instructions were not followed.

Lessons learned

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

A toolbox meeting should always take place at the work site prior to every job, covering hazards involved and the necessary

preventive measures, work permits, risk assessments should be considered/ discussed during the meeting.

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

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

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

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

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

CHIRP Comments

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

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

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

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

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

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

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

Human factors relating to this report

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

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

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

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

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

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

The Corporation of Trinity House

TT Club Mutual Insurance Ltd

The TK Foundation

Lloyd's Register Foundation

The Britannia Steam Ship Insurance Association Ltd

The UK P&I Club

Witherbys

Seafarer's Trust

Seafarers UK

CHIRP MARITIME
One Kingdom Street, Paddington Central, London W2 6BD, UK
www.chirpmaritime.org | reports@chirp.co.uk | +44 (0) 1252 378947

Design: Phil McAllister Design Ltd.
Printed in the UK by The Print Consultancy