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Seaways

The International Journal of The Nautical Institute

Emergency plans

Making signals and muster plans clear p11

The Nautical Institute

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Focus

Seamanship

> Seamanship is at the heart of our profession, and being a good seaman is rightly identified as a high accolade.

The title of this piece is a simple word but one that covers all manner of tasks on board, from the straightforward to the complex, and from those involving little equipment to those employing highly technical skills. It is a word that is at the heart of our profession, and when we get the practice of seamanship wrong it is often the case that an accident or at least a hazardous incident will follow. Yet it is a word that is not used that often these days, even in casualty reports where you are more likely to see lack of professionalism, complacency, or risk assessment used instead in the causal analysis.

It is generally accepted that many seamanship skills are best learnt on the job, although some can be initiated in a simulated environment and then further developed on board through experience. However, does the training and qualification environment really support the development of these skills when both shore courses and qualifying sea time have been consistently cut back over the years under the auspices of the STCW Code and Convention? In this increasingly high-technology world, is seamanship an outmoded concept which lacks resonance with the younger generation of seafarers, their employers, and even the regulators of our industry?

Many of these issues were explored by the Cyprus Branch during a well attended and thought-provoking half day seminar (see pp 29-30) which concluded with recommendations for the next review of STCW. These included that the Code should be updated more frequently so as to keep pace with changes in practices and technology. The presentations focused on different aspects of seamanship including leadership, the human element, accident investigation to prevent future losses, and computer skills (a modern form of seamanship) amongst other things.

There are a number of other articles this month which also relate to seamanship although at first glance some may appear to have a more remote connection. For example, is getting involved with the design of new technology really seamanship (see p16)? We would hope so, because the manufacturers want the seaman's knowledge and skills to contribute to improving the design and siting of new equipment. Understanding the boundary zones in the water around a ship when you are working alongside in a smaller vessel is clearly a fundamental part of seamanship (see pp 23-26) but one that has largely been left to experiential learning. A mishap in the Manchester Ship Canal and the subsequent clean up operation has fortuitously provided an opportunity to add to this body of knowledge.

Emergencies and avoiding them

Thinking about your work and environment rather than just slavishly following the rules with a tick box mind set is an essential part of being a good seaman, something which was rightly identified at the Cyprus seminar as a high accolade. Sharing these thoughts and knowledge with the readership of *Seaways* is a further professional step which can powerfully influence change in our conservative industry. Have you ever thought about those most traditional of tasks – emergency signals and muster lists? Capt Mark Bull, an experienced surveyor, has and he is not impressed with the muddle of current regulations or their implementation on board many of the ships he surveys (see pp 11-15). His recommendations for change are well worth careful consideration as clarity of thought, action and leadership in emergency situations is critical to the ships and seafarers.

Similarly, Cdre Barry Goldman poses thoughtful questions about the roles that Vessel Traffic Services (VTS) undertakes in the marine environment and the need for greater clarity in the regulations (see pp 8-10). It is certainly imperative that the Master of the vessel and the VTS watch officer have a full understanding of the role of the VTS in their area and at that particular time. However, Cdre Goldman goes further than that and proposes that the confusion around navigational assistance services (NAS) would be resolved by changing navigational assistance to a procedure and ensuring VTS operators are properly trained to provide it on request or when a ship is seen to be standing into danger.

On the subject of avoiding emergencies, the Mariners' Alerting and Reporting Scheme (MARS) is our long standing service to the industry in assisting loss prevention. It relies on reports of near misses or accidents being sent in complete confidence to the MARS Editor by individuals or companies. The current dearth of reports indicates this is increasingly hard to do and yet we know these reports are being written and sent to the company under the requirements of the SMS and ISM Code. All you have to do is send them to MARS as well – little extra work from which so much good will come.


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Mariners' Alerting and Reporting Scheme

MARS Report No. 281 March 2016

MARS 201612

CPP control transfer causes berthing incident

Edited from official *Maritime Safety Awareness Bulletin* Issue 2, Australian Maritime Safety Authority

➔ With berthing almost complete, control of the ship's controllable-pitch propeller (CPP) was transferred from the bridge to the engine room. Unknown to anyone, the engine room pitch lever was not aligned with the bridge lever, which was at zero. The engine room pitch lever was not at zero pitch.

As a result, when control was accepted in the engine room, the propeller pitch moved to the ahead position and the vessel began to move forward. This placed considerable load on the mooring lines, causing one of the forward lines to part. Another line that was being tended by a crew member came under tension, slipped off the winch drum and struck the crew member on the leg. The ship was quickly brought to a halt and the berthing was completed without further incident.

The injured crew member sustained bruising to the leg and was declared unfit to work for five days. This incident clearly demonstrates how the smallest of lapses, even those far removed from the mooring deck, can have significant consequences during mooring operations.

Lessons learned

- When transferring CPP pitch control from the wheelhouse to the engine room, best practice is to call beforehand and confirm 'pitch to zero' – 'transferring to engine room'.
- When tending mooring lines, keep your situational awareness at maximum and watch for any unexpected ship movements, among others.

MARS 201613

One small valve causes grounding, sinking and channel closure

Edited from the Swedish Accident Investigation Authority official report RS 2015:07

➔ A small general cargo vessel lost steering in a restricted waterway and ran hard aground against the edge of the channel. The cargo hold filled with water and the vessel listed heavily to port. Shortly afterwards, the vessel came away from the channel edge and floated free. The crew pumped ballast with the intention of reducing the list while the vessel slowly manoeuvred against the fenders of a nearby bridge on the opposite side of the channel. The vessel managed to moor alongside the fenders, and then sank to the bottom of the channel without capsizing.

The vessel was evacuated and the navigation channel was closed to all commercial shipping for about four days. Once the vessel had temporarily been made watertight, it departed to a nearby port to unload the cargo and continued to a shipyard for permanent repairs.

The accident investigation found that the vessel initially lost steerage

Shut off valve Speed governor

and went aground due to a reduction in speed. This was caused by the unintentional operation of a shut-off valve that acted on the main engine speed-governor.

Lessons learned

- The placement and protection of critical valves and buttons should be carefully considered so as to avoid accidental activation or de-activation.

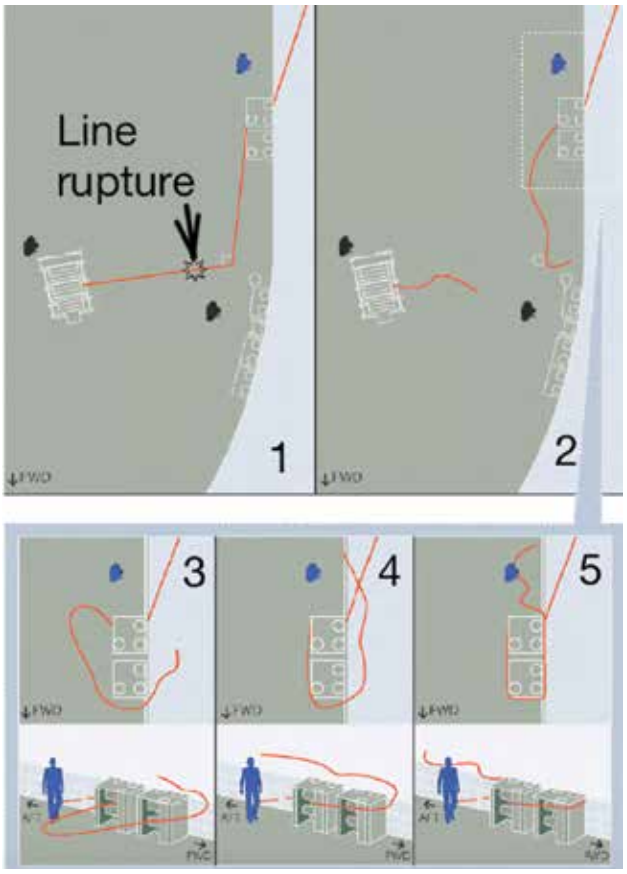
MARS 201614

Snap-back slipup

Edited from the OCIMF official bulletin *The Hazards of Snap-back*, Sept 2015

➔ A large LNG carrier was being warped into position by tensioning the forward back springs. The deck officer in charge of the forward mooring party was standing aft of the fairlead through which the spring lines passed. He was directing operations by signalling to a seaman who was located forward. From this position the seaman was able to relay the signals to the winch operator, who could not see the deck officer.

While under tension, the mooring line parted inboard from a pedestal fairlead. The section of the line between the break and the port shoulder roller fairlead struck the deck officer on the head as it whipped back before going overboard through the fairlead. The deck officer was



found lying unconscious forward of the roller fairlead. He had sustained multiple skull fractures.

The mooring line that failed was a 44-millimetre-diameter sheathed ultra-high-modulus polyethylene line. The line was fitted with a 22-metre-long polyester/polyethylene tail. The section of line in use between the winch and the connection with the tail was approximately 68 metres long.

Lessons learned

- Snap-back zones can be complex and sometimes counter-intuitive. In this case, computer modelling was used after the accident to assess the dynamic trajectory of the entire length of the rope from its point of failure. The modelling indicated that it was highly probable that the rope would go aft of the roller fairlead and wrap around it before finally going outboard.
- Synthetic tails provide additional elasticity in the mooring system and serve to reduce peak dynamic loads. As a result of the tail's elasticity, the elongation of the total mooring line under tension is increased; this introduces considerable stored energy that will be released if the mooring line fails. The snap-back characteristics of this type of mooring line (ultra-high-modulus polyethylene), initially considered to be relatively benign, will be heavily influenced by the addition of the synthetic tail.
- The length of tail fitted to the mooring line will influence the amount of stored energy in the system. The longer the tail, the greater the elasticity and stored energy, and the greater the likelihood of recoil and snap-back should the mooring line fail.
- Depending on where the line breaks, there can be snap-back zones in multiple locations. Actual mooring arrangements on board require specific analysis to determine the most likely snap-back zones.
- The best protection during mooring operations is not to have line ruptures. Careful inspection, use and well-considered modifications, such as adding synthetic tails, are the best guarantee of safe operation.

MARS 201615

Backdraught injures 10

Edited from UK Marine Accident Investigation Board (MAIB) official report 20-2015

➔ While approaching port, a ro-ro ferry experienced a fire alarm. A smoke detector in the port boiler room had been activated. A pulse of smoke could be seen emanating from the jointing surfaces at the top of the furnace. The boiler room ventilation was stopped from the bridge, and the ship's fire teams were instructed to don fire-fighting outfits.

An uncontrolled fire in the port thermal oil heater furnace was confirmed; the unit was shut down at the local control panel and isolated. The Master advised the port and made a safety announcement to the passengers.

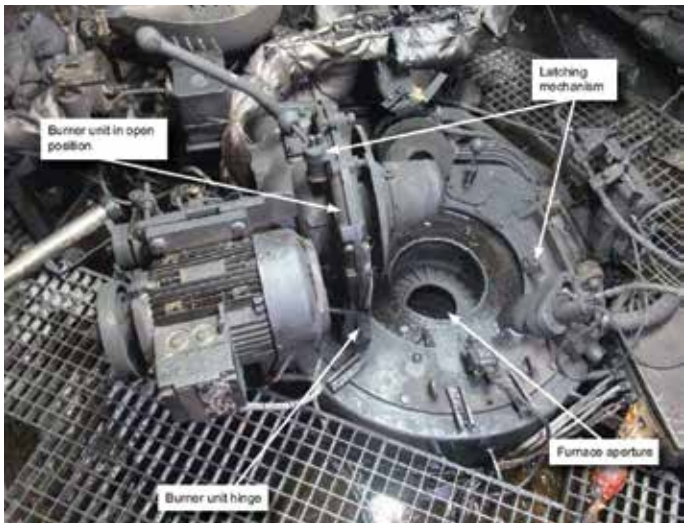
A 15kg dry powder fixed fire-extinguishing system for the oil heater furnace was activated on the chief engineer's instruction. A few minutes later the ferry berthed and passengers were disembarked. Monitoring of the oil heater furnace exhaust temperature over a 15-minute period showed it had risen from 280°C to 340°C.

Soon, shore fire-fighters joined the effort to extinguish the fire, coordinating with the ship's crew. At one point the port boiler room access door was opened. This resulted in an unexpected fireball, which swept across the deck with considerable force, and knocked a number of personnel to the deck. First-aid treatment for burns was administered on board the ship while ambulances, including an air ambulance, were called to the jetty.

Soon afterwards all members of ship's crew who were not involved in fire-fighting were mustered and accounted for. The Master indicated to the crew that there was a fire that required them to proceed to emergency stations. At the same time, the fourth engineer manually operated the hi-fog fixed fire-extinguishing system covering the oil heater burner unit, and the ship's crew began boundary cooling.

After further discussions between ship's crew and shore fire-fighters, it was decided to inject foam directly into the oil heater furnace using the dry powder fixed fire-extinguishing system pipework. This took more than three hours, due to delays in planning and approval among other things. It was not initially successful. Shore fire-fighters also deployed their combined water-jet cutting and fog nozzle fire-fighting equipment (COBRA) to assist in cooling the port boiler room. Finally, more than 12 hours after the initial smoke detector had operated, the fire was confirmed extinguished. Temperature monitoring of the furnace then continued throughout the night.

As a consequence of the fire, six members of ship's crew and four shore fire-fighters suffered burn injuries, three of which were serious. All of the injuries resulted from the backdraught.



Some of the findings of the official report were:

- The coil in the port thermal oil heater failed as a result of stress caused by a securing weld. The section of coil that failed was particularly difficult to inspect visually because of the refractory insulation in the vicinity. In such circumstances it would have been more appropriate to pressure-test the coil.
- The absence of a standard operating procedure for dealing with a fire on the thermal oil heating system installation meant that such a scenario had not been exercised as part of the training programme on board the ferry.
- Had fire-fighters conducted a thorough situational risk assessment, the risk of backdraught conditions ought to have been identified and a revised entry plan devised.
- The failure of the retrofitted furnace dry powder fixed fire-extinguishing system to extinguish the fire inside the port thermal oil heater furnace demonstrates the **unsuitability of dry powder as a fire-extinguishing medium for this purpose**.

Lessons learned

When fighting a fire, backdraught is a particularly dangerous event. In this occurrence, the observations of smoke intermittently pulsing from the furnace joints were an indication of the risk of backdraught conditions developing within the compartment.

Be aware of the signs of backdraught conditions:

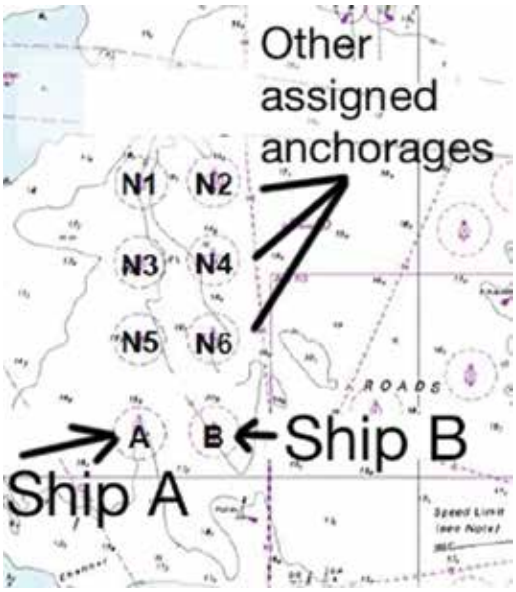
- Fire in a compartment with limited ventilation;
- Fire has been burning for some time;
- Fire gases being pushed out under pressure from gaps;
- Windows blackened with no visible sign of flame;
- Fire gases pulsing out from gaps.

MARS 201616

Underway at anchor

Edited from Australian Transport Safety Bureau (ATSB) official report 308-MO-2014-003

➔ Several ships were at anchorage awaiting berthing space in port. In the early morning, squalls and rain passed across the anchorage and the weather was otherwise stormy with a west-northwest wind at 20+ knots. As a squall with wind gusts up to 56 knots moved across the anchorage, the increased noise from the wind and rain woke the Master of vessel A. He called the bridge and the OOW confirmed they were maintaining position.

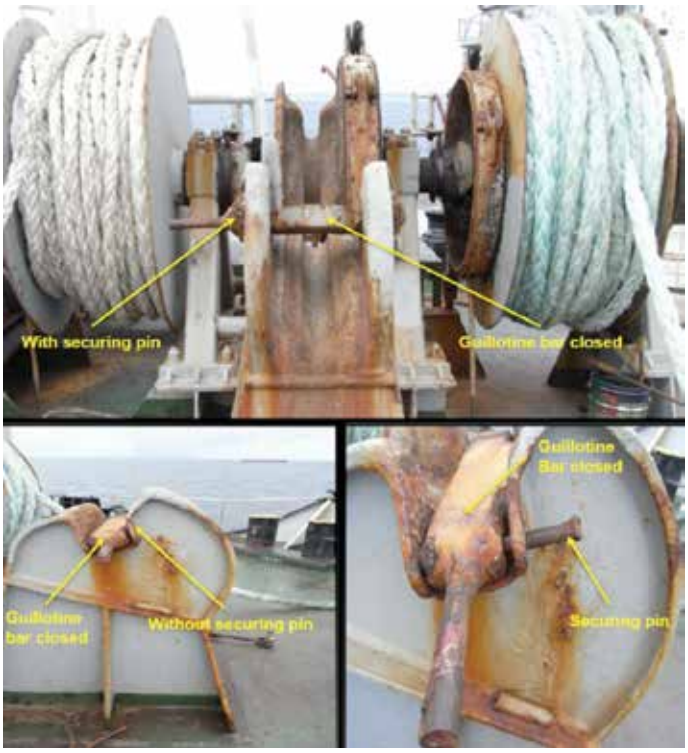


At about the same time the OOW on the vessel at anchorage B observed on radar that ship A was moving towards his ship. His calls to ship A on VHF went unanswered. He next attempted to attract the attention of the OOW on ship A by sounding his ship's whistle. The OOW on ship B then phoned the Master and sounded the ship's general alarm.

Meanwhile, ship A's OOW now realised that they were moving eastwards. He phoned the Master and reported that the ship was dragging its anchor and moving at 1.5 knots. Ship A's deck crew were mustered on the forecastle but saw, to their surprise, that the port anchor cable was missing. The Master instructed them to let go the starboard anchor. Meanwhile, ship B began to veer more cable to try and avoid contact with ship A.

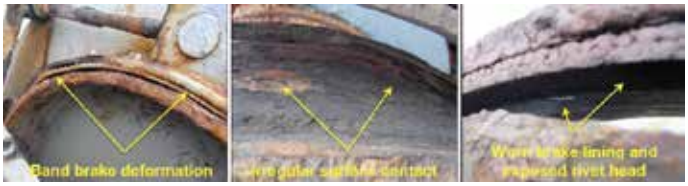
Ship B's main engine was started as the deck party continued to veer more cable. The Master used the main engine in an attempt to manoeuvre the ship's bow to port, away from the closing ship A. With collision imminent, ship B's deck crew retreated from the forecastle; ship A's starboard quarter then collided with ship B's bow.

Shortly thereafter, ship A's main engine was started and run at slow ahead. The Master began to dredge the starboard anchor and move clear of Ship B.



Some of the findings of the official investigation were as follows:

- In adverse weather conditions, the securing pin from ship A's port anchor chain cable stopper bar worked free. As a result, the guillotine bar opened and the cable's load came on to the windlass brake, which did not hold. The anchor cable ran out to its bitter end and the entire cable was lost into the sea.



- The poor condition of ship A's anchoring equipment was indicative of inadequate maintenance. The shipboard management team was not aware of the equipment's maintenance history, nor was it able to provide relevant documents from the ship's planned maintenance system.
- As the sole watchkeeper, ship A's OOW remained on the navigation bridge during the anchor watch. As such, routine rounds of the forecastle deck were not undertaken and no one detected that the cable stopper's securing pin was working free.
- Ship A's main engine was not in an appropriate state of readiness for the adverse weather conditions forecast and the warnings issued.

Lessons learned

- The windlass is an essential piece of equipment that should be kept in top notch condition.
- At anchor, rounds to the forecastle deck to check the condition of the anchor and associated gear should be considered best practice.
- While at anchor in adverse weather conditions, the main engine should be on standby.

MARS 201617

Catch of the day

Edited from US Coast Guard (USCG) Safety Alert 12-15

➔ A vessel was preparing to depart the port. The forward mooring line messenger was secured to the tow hitch of a pick-up truck to assist in the task. When the line was thrown off the bollard, the ship began to haul it in with the messenger still attached to the truck. The pick-up truck was subsequently dragged into the harbour. The shore-side line handler in the truck narrowly escaped dire consequences by quickly jumping out before it was dragged off the berth.

Line handlers often use the assistance of powered machinery such as trucks, forklifts and golf carts to help handle mooring lines. The extreme weights of the mooring lines involved and the lack of adequate personnel to accomplish this task safely lead to the unconventional line handling practices.

Lessons learned

- Ship's crew should use caution and remain vigilant when hauling in, ensuring that lines and cables are clear and free of attachments. Special attention should be given to the mooring lines as they are coming off the dock and being hauled aboard.