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Seaways

The International Journal of The Nautical Institute

Heading south

Are relations between ship and shore on the rocks? **p14**

The Nautical Institute

Captain John Lloyd FNI Chief Executive

Focus

Supporting learning internationally

> My profound thanks to all the members and colleagues who work tirelessly to make Nautical Institute events create a real impact in their communities.

The truly international nature of The Nautical Institute has been further reinforced over the past few weeks with key activities taking place around the globe, including our very own Presidential visits to Australia, Bulgaria and Ireland. The Asia-Pacific region hosted a Regional Training Providers' (RTP) meeting in Indonesia, attended by our approved Dynamic Positioning Training centres from Korea, Singapore, India, Australia, Philippines and of course Indonesia.

RTP Meetings were also held in Naples and Houston while we also supported conferences in Singapore, Abu Dhabi, The Hague, Houston, Rotterdam, London and the Women's International Shipping & Trading Association, WISTA, AGM in Rotterdam; the UK Maritime Pilots' AGM in Middlesbrough and the meeting of the International Group P&I correspondents in London.

All of this is in addition to the highly successful Command Seminar in Cork and a number of high-profile branch activities supporting member engagement at a local and regional level. These included celebrations of World Maritime Day at branches and at the IMO in London. My profound thanks to all of the members and colleagues who have worked tirelessly to make these events create a real impact in their communities.

The Cork Command seminar was a another chance to look at issues affecting members worldwide, calling in particular for a worldwide regulatory regime for an industry which is a worldwide service to the human race. Other issues addressed by the conference include cybersecurity, the need to reduce paperwork onboard and ensure accurate recordkeeping, particularly with regard to hours of work and rest, and the use of leadership and competency to prevent incidents. We will continue to highlight these issues at the highest level, through our representation at IMO and in other forums.

We have received positive feedback about our Jobs Board, which is located on the home page on the NI website under the Jobs tab. I welcome the deep testing of the system by the group of members from Poland who agreed to really put the website functionality to the test and to recommend further developments and improvements. Helping members with Continuing Professional Development and career growth is a key activity for us and I welcome your feedback on other ways we can contribute to your professional growth.

Supporting improvements to safety and helping raise awareness of dangerous occurrences is another core activity. In this edition of *Seaways* we celebrate the 300th Edition of MARS, our Mariners' Alerting and Reporting Scheme, which has helped provide invaluable learning opportunities on board ship and ashore to improve safety awareness. All of the incidents reported remain available through our searchable online database which I hope will remain of great value to you.

We are also proud to have been awarded the prestigious Saftety4Sea award in recognition of the contribution the *Alert* series and compendium has made to shipboard safety. The citation recognised the valuable resource the bulletins provide, looking as they do at a range of issues including fatigue, ergonomics, training and health to improve awareness of the human element in the maritime industry.

We also went to Trinity House to receive the Middlesex University/Marine Society Outstanding Achievement Award on behalf of Gordon Foot AFNI. The award was given in recognition of his advocacy of lifelong learning, demonstrated in his record of CPD and reflected in his current studies. Thanks to all these efforts he was also selected to receive the Marine Society Life Long Learning Award.

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Mariners' Alerting and Reporting Scheme

MARS Report No. 301 November 2017

MARS 201770

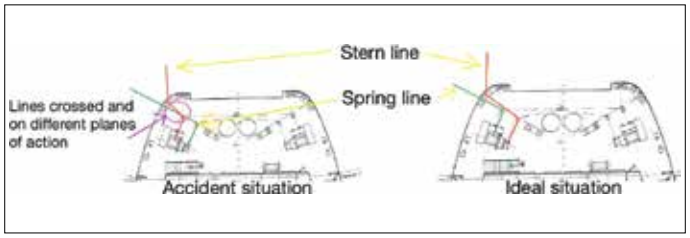
Mooring fatality

Edited from official report no 02-2017, Marine Safety Investigation Unit, Malta

➔ A ro-ro passenger vessel with a skeleton crew of four (Master, chief engineer, bosun and engine rating) was being manoeuvred out of dry dock, dead-ship but with two tugs. Further work was to be done alongside in order to bring the vessel up to operational status. The berth to which the vessel was assigned was shorter than the vessel itself, so that nearly half of the vessel was not lying flat on any sort of fender.

Extra manpower was provided by seven dry dock employees at the mooring stations. The tug boats were made fast fore and aft. One crew member and four shipyard personnel were assigned to the forward mooring station, while at the aft mooring station there were two crew and three shipyard personnel. Apparently, the stern line was passed around a lower pedestal fairlead and in between the two aftermost button-rollers and sent ashore. A second line at the aft mooring station was sent ashore as a spring and was fed around a higher pedestal fairlead and between the two forwardmost button-rollers. This resulted in the aft spring line being higher than the stern line yet crossing from below this line, causing an upward thrust on the lower pedestal fairlead.

At some point in the manoeuvre the aft spring line came under extreme tension. The stern line absorbed some of the tension, which was transferred to the lower pedestal fairlead. Unexpectedly, the roller fairlead was launched from its pedestal, fatally injuring one of the shipyard personnel.



Some of the findings of the official report were:

- The immediate cause of the accident was the failure of the two 10mm bolts holding the roller-keep in place, which sheared off under the tension generated by the mooring ropes.
- The berth configuration, which supported only half of the vessel, and the position of the fender contributed to a turning moment that could easily cause uneven tension on the fore and aft mooring ropes.
- The handling of mooring ropes was not discussed, nor were the dangers associated with mooring stations. None of the seven shipyard personnel present at the mooring stations on board the vessel had any training in mooring operations.
- The crew members at the aft mooring station did not have the necessary experience and knowledge to handle mooring ropes safely.

Lessons learned

- Mooring a vessel involves great stresses. Always have experienced and sufficient crew to handle mooring lines.
- Never cross your mooring lines and never have them acting against each other in competing planes of action.
- Be aware of the forces acting on the mooring lines and stay clear of any areas of potential danger.

MARS 201771

Oil sprayed into eyes

➔ A crew member was making a visual inspection of one of the fuel oil booster units in the engine room while underway. He found a minor oil leak at the buffer tank and saw that the fuel oil supply pump discharge line pressure was above nominal values. While checking the mixing column air vent valve, hot fuel oil was sprayed on his face.

The crew member was treated for his injuries and the defective air vent valve was replaced.

Lessons learned

Every effort should be made to 'de-energise' and 'lock-out/tag-out' (LOTO) a system before undertaking work. Sometimes, this may not be possible – so all the more reason to wear appropriate PPE. In this case, this would have meant at least eye protection and ideally a full face shield.

■ **Editor's note:** Every incident, accident or close call is an opportunity to improve safety. Analyse the events and determine the unsafe condition(s), then make the necessary adjustments so that the risks for the unsafe condition(s) are brought As Low As Reasonably Possible (ALARP).

MARS 201772

A most dangerous tool

UK P&I Club Bulletin 605

➔ The crew member in the photograph is seen operating a hand-held grinder, yet he is not wearing any eye protection. Grinding work throws off metal particles from the disc as well as from the metal surface being worked. Additionally, incidents of grinder disks shattering are not uncommon.

Operators of grinding and cutting tools should assume that the disc may shatter and should ensure that the guarding will deflect broken pieces away from themselves. The correct component parts which support and secure discs must always be used.

From the University of New South Wales, Australia: Did you know?

- Angle grinders are one of the most dangerous tools in any workplace;
- Most angle grinder injuries are from metal particles lodging in the operator's eye;
- However, the most serious injuries are from kick-back, where the disc is thrust back violently towards the operator;
- Discs can shatter or explode, sending pieces flying in all directions.

Lessons learned

- Give your crew training and guidelines before letting them work with a grinder;
- Cutting wheels or discs should not be used for grinding jobs, and grinding wheels should not be used for cutting jobs;
- Wheels designed for a particular revolution speed should not be used on machines of different speeds;
- Wheels should be used only for the specific material and purpose for which they are designed, and according to the manufacturer's recommendations;
- The British Abrasives Federation recommends using abrasive discs that comply with standard EN12413:2007+A1. This stipulates that discs be marked with a date of expiry that is at most within three years from the date of manufacture;
- Wheels worn small through use should be discarded and never used on smaller machines.

MARS 201773

Squall gusts break stern moorings

Edited from official report 324-MO-2016-001, Australian Transport Safety Bureau

➔ A ro-ro passenger vessel was docked and crew were loading vehicles and passengers. A strong wind warning was in effect for the area, but at the time of loading winds were steady at about 20 knots. Two of the ship's four main engines were kept ready for immediate manoeuvring.

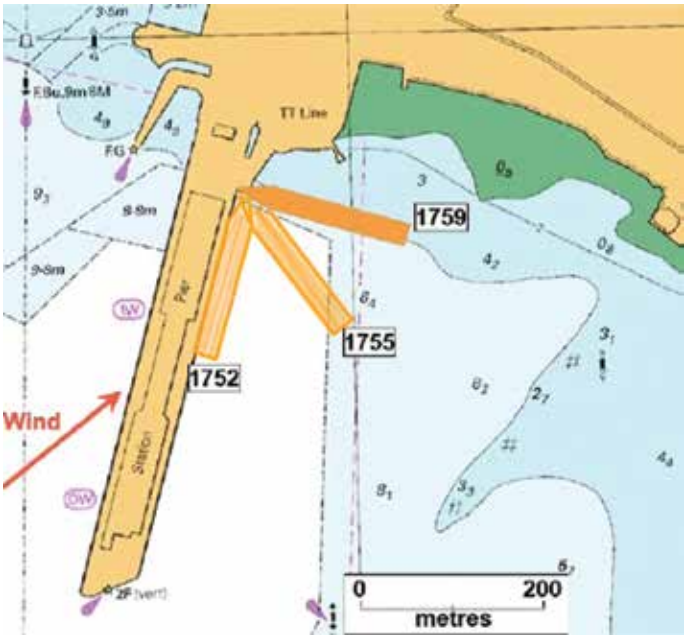
Within two minutes the south-westerly wind suddenly increased from about 25 knots to 60 knots. As the wind speed was peaking, the vessel's aft mooring lines parted in quick succession and its stern broke away from the wharf. As the stern swung away from the wharf the forward breast line came under tension and, along with one head line on the bight, held the vessel's bow.

Within minutes the Master was able to hold the ship's stern off the beach using the main propulsion and the fore and aft thrusters. About ten minutes later a tug arrived and was made fast to the ship's stern. Shortly thereafter a second tug also arrived and began assisting. Within the hour the wind dropped back to about 10 knots and the vessel was returned to the berth.

According to technical analysis, the aft moorings should not have failed, given their nominal breaking strength. Possible reasons for their failure, apart from any unknown defects, could have included:

- Unequal tension in the mooring lines (before the sudden increase in wind speed);
- Not all lines were held on winch brakes (some winches were on self-tension mode);
- Sudden dynamic forces (six-fold increase in wind loading);
- Dynamic loading (ship's momentum as it rapidly moved off the wharf).

It is possible that the breakaway might have been prevented had the precautions for adverse weather been more carefully considered. For example, had the breast lines been held on winch brakes, the increased static load capacity of the aft mooring line pattern may have prevented the first stern line parting. Similarly, had the ship's propulsion been ready for immediate use, the stern thruster (maximum 15T transverse thrust) could have been used to counteract some wind loading to prevent the first line parting.



Lessons learned

- Since the wind force varies as the square of the wind speed, small increases in speed translate to large increases in force. In strong winds, gusting amplifies these forces significantly. Strong winds frequently contribute to breakaways;
- Check your mooring lines and ensure they are under equal load proportional to their breaking strength;
- At berth, putting mooring lines on winches and in self-tensioning mode is not best practice. Better to use the winch brake or on bitts as the securing method.

MARS 201774

Danger of adiabatic compression

➔ An engine room crew member was preparing to do some torch cutting. He opened the stop valve on the oxygen pipeline that precedes the pressure reducing valve on the gas bottle. As he opened the stop valve an explosion occurred. Thankfully there were no victims.

On investigation and consultation with the manufacturers the following points came to light:

- The explosion was probably due to adiabatic compression (gas hammer effect); that is, ignition without external heat input. This can occur when there is a sudden increase in the pressure of oxygen in the presence of an ignition agent such as metal particles, an organic substance, oil or grease;
- Compression heat is generated locally inside the piping system when the pressure increases quickly. This increased temperature can, in turn, cause auto ignition, depending on what products are in contact with the oxygen;
- The ignition agent (e.g. grease or impurities) could have been deposited during oxygen cylinder exchange or have been present within the piping system.

Lessons learned

- When working on oxygen gas connections, pipelines and hoses, working gloves should be clean and tools free from oil, grease and dirt;
- Ensure that all pipelines, hoses and valves in the connections between the manifold and cylinders are clean and free of all impurities;
- High pressure oxygen cylinder valves which connect the cylinders to the manifold should be opened slowly to avoid undue generation of compression heat;

- Ensure that there are no leaks from the oxygen installation, which can lead to dangerous levels of oxygen enrichment – especially in poorly ventilated areas;
- Ensure crew that use compressed gases know the best practices.

MARS 201775

Unidentified fire damper hazard contributes to injury

➔ During a Port State Control (PSC) inspection, the inspector asked the engine room crew to demonstrate the function of one of the engine room ventilation fire dampers by moving the lever to the closed position.

The crew member grabbed the lever in the middle and pulled to close the damper. The damper closed rapidly to its maximum and was then stopped by the welded limiter block. Because the crew member was holding the lever in the middle, his finger was caught between the lever arm and limiter block and heavily squeezed.

Neither the lever arm nor the limiter were marked in any way to warn of this hazard.

Apart from the lack of hazard identification, another contributing factor was that engine room dampers may not be subject to regular operation. Crew may hesitate to shut these dampers or otherwise be unfamiliar with the particulars of a specific damper lever.

Lessons learned

- Identify all hazards on your vessel. Each close call or accident presents opportunities for identification and risk reduction measures.
- Practise closing engine room dampers with crew when the vessel is in port and the main engine(s) are not running. The more familiar crew are with each lever, the more efficient they will be in case of an emergency or PSC inspection.

MARS 201776

Message mix-up contributes to collision

Edited from official report RS 2016:05e, Swedish Accident Investigation Authority

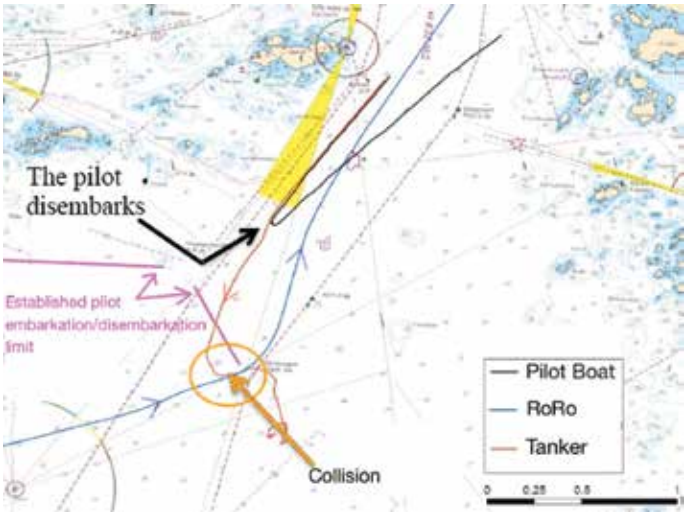
➔ In the very early morning hours (2 am) a loaded tanker was outbound from a port at about nine knots. The pilot left the vessel about six cables before the normal pilotage disembarkation point, in order to disembark in more protected waters. The Master, who had been surveying the pilot transfer from the wheelhouse, now had the con, with a helmsman on the wheel. The Master realised that an inbound ro-ro ferry was closing faster than he had anticipated, at about 20 knots. With the vessels now about seven cables apart, he contacted the ferry via VHF and proposed that they should pass starboard to starboard. The ferry's OOW, possibly believing there was still a pilot on the tanker, responded in the negative – but in a language the Master of the tanker did not speak. At a closing speed of nearly 29 knots, the vessels were now only 90 seconds apart.

The bridge teams of both vessels were in VHF contact, but each team developed different understandings of how the meeting would be conducted. The Master of the outbound tanker had the impression that it had been agreed that they would pass starboard to starboard. However, on the inbound ro-ro, the OOW intended to have the vessels pass in the conventional port to port fashion. He requested this via VHF but received no response from the tanker. About 30 seconds before the collision Vessel Traffic Services (VTS) intervened to warn both vessels that they were running into danger but no response was received.

As the tanker was turning to port, in order to provide more space for what the Master believed would be a starboard to starboard meeting, it became apparent that the ships would collide. The Master of the tanker put the engine astern but a collision ensued nonetheless.

One of the recommendations from the accident investigation states, in part, that the Swedish Maritime Administration should 'ensure that pilotage is conducted within the areas that are defined in applicable regulations'.

Damage to ro-ro ferry



Lessons learned

- Communication between vessel bridge teams must be sufficiently early, clear and unambiguous, especially when it involves a deviation from the collision regulations.
- A best practice is to repeat back the message that was sent to you and ask for the sender's confirmation.
- Multi-tasking is not safe; in this case the Master was the sole lookout and acting as navigator while the pilot left the vessel. His attention to the pilot transfer left his navigational situational awareness less than adequate.
- The official report states that the officers on both vessels were probably affected by fatigue. Fatigue is an insidious and often overlooked factor in accidents.

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