MARS – Lessons Learned

MARS Report No 375 January 2024

With the New Year, we would once again like to take this opportunity to remind our readers of what MARS is – and also what it is not. The reports that appear in MARS are selected from published accident reports as well as privately submitted reports from mariners and marine industry companies. The descriptions of the accidents and the safety lessons learned are intended, among others, to deepen the reader's 'risk appreciation'. Many of the incidents appearing in MARS have complex underlying and interconnected issues that are not necessarily discussed here, although they may be identified in the original report.

MARS reports are short, and quite simply do not have the scope to dig into all the details – instead, we seek to highlight a few pertinent points from each case. It is not within the scope of MARS to plumb the depths of all the contributing factors of each incident. In short, MARS Lessons Learned is a curated information sharing service for the betterment of the maritime industry. Please read and use MARS reports with discretion. And remember to share your incidents with the MARS team at mars@nautinst.org.

To those companies and institutions that appreciate our work here at MARS and would like to lend a supporting hand, our **Nautical Affiliate** partnership program may be an excellent opportunity for your organisation. Just £500 per annum, all of which goes to support the expenses involved in producing and sharing MARS in *Seaways* and online, will give you access to extra benefits including public acknowledgement of your organisation's support for MARS in every issue, a hard copy of the Institute's monthly members' magazine *Seaways*, and the freedom to use a specially commissioned logo on your organisation's publicity material, both online and offline.

Organisations keen to develop even stronger ties with The Nautical Institute can opt to become either a Sapphire or Emerald Affiliate partner; both options offer a superb range of additional benefits. Please contact the Institute's Chief Executive Officer, Captain John Lloyd, at sec@nautinst.org for further details.

MARS 202401

STS mooring fatality

As edited from MAIB (UK) report 09/2022
https://tinyurl.com/ycy7jcvf

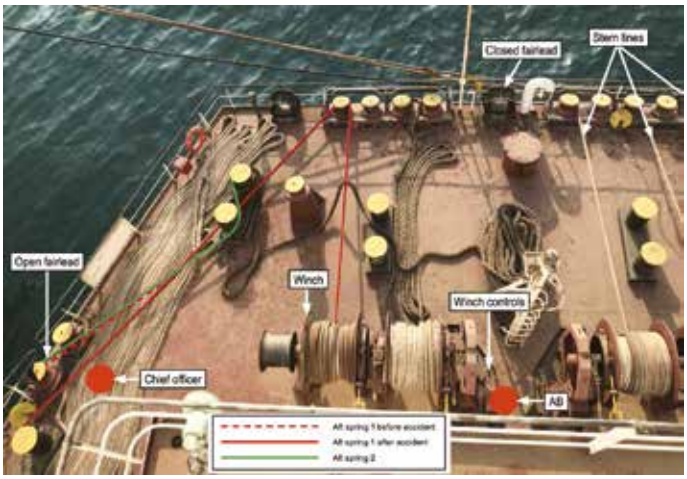
➔ A bulk carrier had arrived at an anchorage to load a cargo of grain from an anchored bulk carrier which was acting as a grain storage vessel. The vessel was moored under pilotage alongside the anchored storage vessel and prepared for the ship-to-ship (STS) transfer of cargo. The mooring arrangement agreed between the Master and pilot consisted of three head lines, three stern lines, two forward springs and two aft springs; all lines belonged to the receiving vessel. Loading commenced using the storage vessel's crane grabs. At this time the two vessels had similar freeboard.

Some 22 hours later, with loading near 80 percent complete, the forward crane operator on the storage vessel advised his duty officer that the receiving vessel needed to be moved forward to allow the crane grab to reach part of the hold he was loading. By this time, the storage vessel's deck was about eight metres higher than that of the receiving vessel.

The three crew on watch and the chief officer of the receiving vessel manned the forward and aft mooring decks to warp the vessel forward using the spring lines. The Master decided not to wake the off watch crew to assist as this would disrupt their hours of rest. On the aft mooring deck, the chief officer was standing close to the vessel's side with the other crew standing by the winch ready to heave in the aft spring. As the forward springs were slackened, the winchman aft began to haul in on one of the aft springs to heave the vessel forward. Almost as soon as the mooring line came under tension, it sprang out of its open roller fairlead and struck the chief officer's head as it snapped tight. The victim fell unconscious to the deck.

The accident was immediately announced and the victim attended to. He was lying unresponsive on the deck, but with no visible injuries; he was breathing, and a pulse was observed. The victim was evacuated ashore via a tug, but by this time his condition had deteriorated and his pulse had weakened. Later the victim was declared deceased having suffered closed blunt force trauma to the head, traumatic swelling of the brain and a brain haemorrhage.

The accident investigation found, among other things, that the chief officer was standing in a hazardous location but, almost certainly, had not appreciated the risk of the spring line jumping out of the fairlead. The investigation also found that, although the chief officer's working hours were compliant with STCW requirements, he was likely to have been in a fatigued state. This may have influenced his actions and motivated him to complete the job quickly so he could rest.



Lessons learned

- An operation to shift a vessel involved in an STS transfer should be assessed for the development of potential new hazards over the course of the operation – for example, the change in relative vertical reference due to draft changes of each vessel.
- During STS transfer operations, mooring lines will develop increasingly vertical leads as the discharging vessel's freeboard rises and that of the loading vessel falls. To ensure containment of mooring lines that have or develop more vertical leads, closed fairleads should be used.
- Always evaluate your physical position at a mooring station and stay clear of potential snap-back or other energy release zones.

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- Compliance with STCW work/rest requirements does not guarantee a person is not fatigued. Each individual is responsible for ensuring their own sleep hygiene is adequate.

MARS 202402

Fatal fall overboard to quay

As edited from NSIA (Norway) report 2023/05
https://www.nsia.no/Marine/Published-reports/2023-05

➔ A general cargo vessel was loaded with timber in the holds and on deck. Before departure, crew were securing tarpaulins over the deck cargo of timber. Conditions were windy and the deck crew working on top of the timber bundles did not have fall protection. At one point, the six crew (A to F in the reconstruction photo) realised that one of the tarpaulins which had already been spread out needed to be rotated, which also meant they moved away from their original positions. During the rotation only two crew members were holding down the windward side of the tarpaulin; one in each corner, which reduced the crew's ability to control the tarpaulin.

Person A, who was moving aft along the edge of the deck, was caught in the tarpaulin, which then caught the wind and acted as a sail. The other crew present were likewise unable to withstand the forces that acted on the tarpaulin. As a result, person A was pushed over the edge of the deck and fell to the dock. The crew immediately administered first aid to the victim until port rescue personnel arrived. The victim was transported to hospital by helicopter but was declared deceased the next day from injuries sustained.

Several strong gusts of wind force person A under the tarpaulin and push him close to the edge

Person A is pushed over the ship's side
And falls to the dock

The official investigation found, among other things, that time pressure may have played a role in the accident. The deck crew had noticed that the wind was increasing and they considered the working conditions to be risky. Yet, since an early morning departure for the next day had been announced, everyone was concentrated on 'getting the job done' during the evening.

Another finding of the investigation was that even though the work at height checklist had been completed (i.e. crew were to use fall protection equipment), this was not done in practice. The crew found it cumbersome to use a safety line during this type of operation.

Lessons learned

- Time pressure is no reason to relax safety standards, as tempting as it may be to 'get the job done'.
- Safety leadership means ensuring good practices and that the vessel's SMS is always put into practice.
- A checklist mentality – where you consider ticking the boxes more important than the task they relate to – must be avoided. Remember, most checklists are the result of a risk assessment that was done to reduce harm. Only check 'yes' on something if you have actually done it!

MARS 202403

Oil drip caught before it became a deluge

➔ A tanker had just finished discharging and crew were preparing for departure. The portable gangway that had been secured on the dock was to be retrieved using the vessel's hose handling crane. As work progressed, the crew spotted a minor leak from one of the hydraulic hoses of the crane and interrupted the operation. The hydraulic hose was replaced and appropriate tests were carried out. Once the crew were satisfied of the operational integrity of the crane, the portable gangway was retrieved and the vessel subsequently sailed without further delay.

Although the failed hose was a genuine part and was within the usable time frame, a hidden defect in the hose had escaped detection until the leak appeared.

Lessons learned

- If a flexible hydraulic hose leaks during an operation, never hesitate to suspend the work. Identify and correct the cause of the leakage before a drip becomes a deluge.
- Defects or damage to high-pressure flexible hydraulic hoses present a safety and pollution risk and should immediately be addressed.
- All parts of cranes, including the hydraulic pipes and hoses, must be thoroughly and effectively inspected.

MARS 202404

STS bunkering blunder

➔ A tanker was scheduled for bunkering at a deep sea location via an STS transfer. The bunker barge was made fast alongside the tanker and the bunker hose connected, but one of the aft mooring lines parted before the bunkering operation could begin. While the mooring team was replacing the parted line, the Mooring Master on the bunker barge instructed the tanker to stop engine. This caused the tanker and the bunker barge to slowly turn to port, so that the swell came increasingly on the beam. About 20 minutes later, the tanker's Master challenged the Mooring Master about the situation, but it was too late. With the swell now nearly on the beam, the rolling action of the vessels occasioned higher stresses on the remaining lines. As the vessels drifted further apart, these lines also started parting.

It was decided to disconnect the bunkering hose and abort the operation, and the teams were instructed accordingly. The tanker crew started to disconnect the bunker hose, but the hose came under tension before all the bolts could be released. As the tension on the hose increased, the disconnection team cleared the area for their own safety. The bunkering hose eventually broke away from the manifold and the hose flange snapped, struck on the hose resting bar and went overboard.

The company investigation found, among other things, that the weather conditions were considered borderline yet acceptable. The swell at the time of the incident was not high enough to threaten the safety of the operation had the vessels kept moving. But once the vessels stopped, they slowly swung perpendicular to the direction of the waves, which led to excessive rolling and much higher forces on the mooring lines. It would appear that the Mooring Master on board the bunker barge displayed poor coordination of the vessels' manoeuvring and was not properly in control of the situation as the incident unfolded. The Master on the tanker realised too late the consequences of stopping the engine. Additionally, the company checklist seems to have been mis-used by the crew. Such vital items as 'Is the ship upright and at a suitable trim?, Are mooring gangs in position?, Are berthing and mooring procedures agreed including fender positions and number/type of ropes to be provided by each ship' were marked as Not Applicable by the Master even though the swell (2m) and bunker vessel size (183m) indicated this particular operation as high risk on the checklist risk matrix.

Lessons learned

- STS operations require good team planning and coordination, on and between both vessels.
- The number and location of all lines and fenders, among others, should be pre-determined for an STS operation.
- Good practices for STS operations can be found in the *Ship to Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gas* published by Marisec.

MARS 202405

Don't be terminated by a faulty termination

As edited from USCG Safety Alert 04-21
https://tinyurl.com/3an649am

➔ A vessel suffered extensive damage to equipment when a wire rope swaged splice termination failed. The investigation reiterated the importance of verifying the condition and appropriateness of wire rope terminations used in a load-handling capacity. This includes lifesaving appliances, cranes, and lifting slings, among others.

Improperly applied swaged fittings could result in unintentional damage to the wire rope, resulting in failure of the termination. Different types of fittings/end terminations might decrease the safe working load (SWL) of the wire rope. For example, a swaged sleeve in a common turnback eye results in a 90% or better efficiency of the termination (i.e. 10% or less reduction in the SWL of the wire rope) when properly installed in accordance with manufacturer's recommendations.

Lessons learned

- When renewing material such as wire rope and fittings, materials should be selected to match the specifications of the original equipment manufacturer.
- Visually examine wire rope terminations for abnormalities that may indicate improper installation such as out-of-roundness or over-crimping.
- Ensure that the termination type does not reduce the SWL of the wire rope below the minimum safety factor for the type of service.

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