Mariners' Alerting and Reporting Scheme

MARS Report No 357 July 2022

MARS 202226

Eye injury from high pressure air release

➔ A deck officer was tasked to escort an accredited technician to inspect the free fall lifeboat air cylinders while the vessel was in port. The technician requested that the officer assist him by opening the air cylinder valves one by one to check the pressure. The first valve was opened without incident but when the second valve was opened, the high-pressure hose burst near the officer's face. Compressed air, dust and particles from the damaged hose hit his eyes, causing irritation.

First aid was quickly provided and the victim was then taken ashore for medical attention.

After two days rest the crewmember was considered fit for duty.

Lessons learned

This incident is a good example of why protective eyewear should be in common use on board, much as hard hats and steel-toed boots already are.

MARS 202227

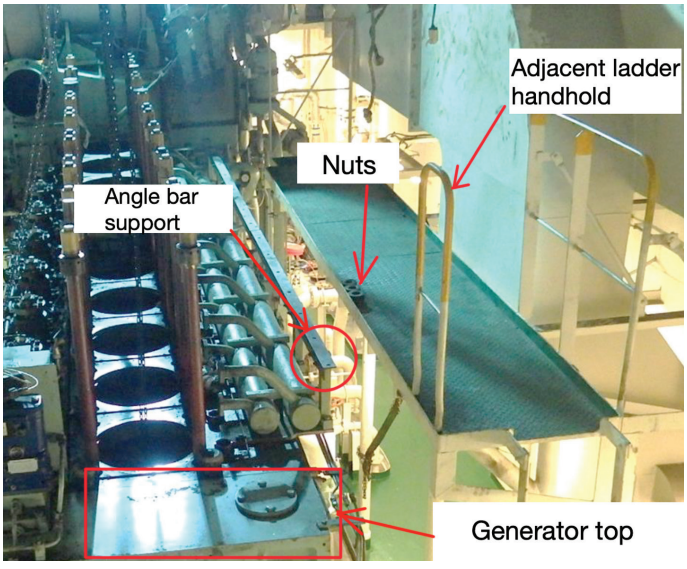
A gap – a slip – an injury

As edited from FEBIMA (Belgium) report 2020/007561

➔ An LNG tanker was moored at an offshore terminal. Work was to be done in the engine room dismantling the auxiliary generator. A permit to work was issued and a workplace inspection was carried out before work began.

As the work progressed, one of the engineers was standing on top of the generator. There was a walking platform adjacent to the generator top, at the same height but separated by a gap of 40 cm. The engineer required some nuts that were lying on the platform, but were out of his reach. He attempted to step onto the platform from the top of the generator. He steadied himself with his right hand on the adjacent ladder handhold and stepped onto the platform with his right foot. As he brought his left leg forward he slipped. His leg struck the edge of an angle bar supporting the exhaust manifold with some force.

The blow resulted in a cut 15 cm long and 3 to 5 cm deep on the calf of his left leg. He was given first aid and later disembarked for shore treatment. He was declared fit for work about three weeks later.



Lessons learned

- We are often tempted to overreach when accomplishing a job. Better to have help.
- Proper PPE is important. In this case, the engineer was wearing only a light cloth coverall. It is likely a more robust coverall would have afforded better protection.
- Permits to work and workplace inspections before beginning work are good risk reduction measures but they cannot remove all risks. Careful attention to our actions and common sense are needed throughout the task.

MARS 202228

Engine room takes on water during repair

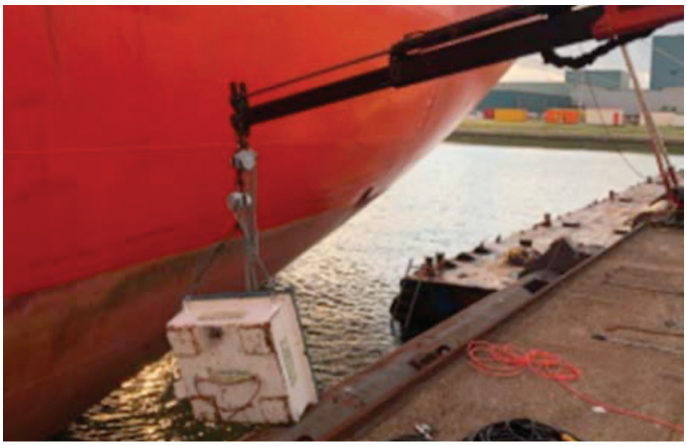
➔ A vessel was moored at a shipyard to repair an exhaust gas scrubber overboard discharge pipe. As part of the repair process, divers installed a cofferdam on the outside of the ship's hull.

Once the cofferdam had been installed, repairs started with the removal of the pipe inside the engine room. The new pipe was then fitted and partially welded to the hull. The first welding pass covered approximately 50% of the pipe circumference. The inboard flange on the new overboard pipe was tag-welded. As a new work crew came in a leak was discovered. Immediately the divers, still in the water, were informed and they attempted to close the leak at the cofferdam.

The water in the engine room bilges was rising quickly, so the general alarm was raised. About 15 minutes later, for the safety of the vessel and her crew, the Master decided to start pumping the sea water overboard through the emergency bilge arrangement. It was also decided to quickly reduce the ship's draft aft by pumping ballast directly overboard, bypassing the ballast water treatment plant.

Local and national authorities, the company emergency response team, insurance and Flag State were promptly informed. After four hours the emergency was under control and definitive repairs were carried out as per the plan.

The investigation revealed that heat from welding could have caused deformation of the ship's side plating, causing the cofferdam to lose watertight integrity. Also, the flat cofferdam did not form a perfect seal with the hull due to a slight curvature at that location.



Cofferdam being positioned

Lessons learned

- The task was executed by an external team, resulting in limited crew participation. Close coordination and supervision of contractors by crew provides an added layer of safety.
- In an emergency, pumping bilge water and ballast directly overboard is allowed within MARPOL and the International Convention for the Control and Management of Ships' Ballast Water and Sediments.

MARS 202229

Total loss of car carrier due to fire

As edited from NTSB (USA) report MAR-21-04

➔ The crew of a car carrier were preparing for departure, having spent two days loading cars. There were 2,420 used vehicles on board. While the crew were securing vehicle ramps, the chief mate noticed smoke coming from a ventilation housing for one of the exhaust trunks. Upon further investigation, crewmembers discovered a fire on deck 8, which was one of those that had been loaded with used vehicles.

The crew attempted to fight the fire but were repelled by heavy smoke. Shoreside fire department teams soon arrived and relieved the crew. The Master consulted with the fire department, and with their agreement had CO_2 from the vessel's fixed fire-extinguishing system released into decks 7 and 8. The crew were then evacuated.

The CO_2 was ineffective for a number of reasons; not least that the dampers for decks 7/8 were ineffective or not adequately secured. This gave the fire continued access to oxygen, negating the effectiveness of the CO_2. The fire continued to spread to higher decks and the accommodation. Shoreside firefighters entered cargo decks with fire hoses in an attempt to dowse the flames. Suddenly, an explosion occurred and nine firefighters were injured, five of them seriously. Responders subsequently adopted a defensive strategy, cooling external exposed surfaces. The fire was finally extinguished eight days later.

The car carrier and its cargo of used vehicles were declared a total loss, an amount estimated at $40 million.

The investigation found, among others, that:

The fire was likely caused by an electrical arc or component fault in one of the vehicles. The company's established vehicle loading and battery securement procedures call for a properly disconnected and secured battery for all vehicles loaded on the vessel. These procedures were not followed by the longshoremen preparing and loading vehicles onto the car carrier. Neither vessel crew nor shore supervisory personnel corrected this deviation.

The company's 'Vehicle Lashing Inspection Procedure' identified the need to ensure that all vehicles loaded on board the vessel had disconnected batteries, but did not provide a process to do so.

Lessons learned

- As with most accidents, there must be a failure of several layers of the safety regime for there to be negative consequences. In this case these failures were both ashore and on board.
- Procedures are meant to be an administrative barrier to negative consequences. They should not only describe the hazards but provide the process by which the hazards are actually mitigated.
- Extinction of a fire using a fixed extinguishing system such as CO_2 relies on two conditions:

1) Timely release of the extinguishing agent before the fire can spread elsewhere on the vessel

2) The securing of vents and ventilation so that the extinguishing agent can be effective and air cannot continue to feed the fire.

■ **Editor's note:** This is an interesting report with more lessons learned than can be enumerated in this short MARS format. Readers are invited to read the report in its entirety, available online at the NTSB webpage https://www.ntsb.gov/investigations/Pages/DCA20FM020.aspx.

MARS 202230

Anchoring kerfuffle

➔ A tanker arrived at a busy anchorage for bunkering and provisions. With pilot on board, they prepared to drop the port anchor at the designated anchorage. After preparations were completed the port anchor was let go on the brake, with instructions to secure it with seven shackles in the water. During the operation the anchor and chain took on too much momentum and the brake could not stop the outflow of chain. The anchor was presumed lost.

Having consulted with the pilot, and in view of the surrounding traffic, the Master instructed the anchoring team to prepare and lower the starboard anchor with the windlass in gear in order to safely complete the anchoring operation.

The port anchor chain was then heaved up. It was found that the anchor was not, in fact, lost; the bitter end had remained secured. However, when the port anchor was heaved up, it could not be secured because it had become entangled with the starboard anchor chain.

The company investigation found that the port anchor brake was not working properly; it did not move before the brake reached the 90% open position. If the equipment had been in good condition, the anchor chain could have been controlled.

Also, the investigation found that after the port anchor chain paid out uncontrollably, the actual condition of the port anchor was not correctly assessed/communicated to the bridge. Had this been done, the starboard anchor would not have been deployed and the incident would have been avoided.

Lessons learned

- Anchor brake maintenance is a crucial element in safe operations. The uncontrolled descent of an anchor chain can not only pose a significant risk of losing an anchor, but also poses a lethal hazard to crew.
- During and after an incident it is sometimes difficult to assess and communicate the state of affairs – yet this is what is needed for ships' leaders to make the right decisions going forward.

MARS 202231

Collision with tug

As edited from the SHK (Sweden) report RS 2022:03e

➔ A ro-ro vessel was inbound and had just boarded a pilot. The Master was soon to take a pilot exemption certificate for the port, so he asked the pilot for permission to manoeuvre the vessel into the harbour under the pilot's supervision. The pilot had no objections.

Infrastructure works were taking place in the harbour near the ro-ro vessel's dock. On the day of the occurrence, a dredging barge, split hopper barge and an attending tug were working as a group in an area indicated by four yellow buoys.

As the ro-ro vessel entered the harbour, it had to turn through 180 degrees before berthing. An officer, in direct radio contact with the bridge, was posted on the quarterdeck in order to assess and report the distance between the vessel's stern and the dredging units. Once the vessel's stern had passed the last yellow buoy of the dredging area at a distance of 30 metres, the Master initiated the turn to port, using the rudder and side thrusters (bow and stern). The Master then moved to the portside bridge wing where the engine, rudder and side thruster controls were now switched. At about the same time, the pilot moved over to the starboard side of the bridge in order to have a better view of the vessel's stern.

The vessel gained speed astern, and was closing on the dredging units. The officer on the quarter-deck warned the bridge team that the vessel was now 20 metres from the dredging units and continued to give the distances, which were closing quickly as the ro-ro was now making about two knots astern. At some point, full ahead was applied on the engine controls but the effect was too late. The stern of the ro-ro continued to sweep over the attending dredging tug. The tug wheelhouse was torn from its attachments, and was left hanging over the starboard side of the tug.

After the collision the ro-ro proceeded ahead in order to pass the dredging unit, complete the turn and reverse into its berth. The three crew of the dredging unit were unharmed but the tug was listing heavily.

Tug wheelhouse torn from attachments

Lessons learned

- Controlling a vessel that is moving in two directions (swinging and fore/aft movement) is harder than controlling a vessel that is moving in only one. The fact that the vessel was turning at the same time as it was reversing probably affected the bridge team's situational awareness.

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