MARS – Lessons Learned

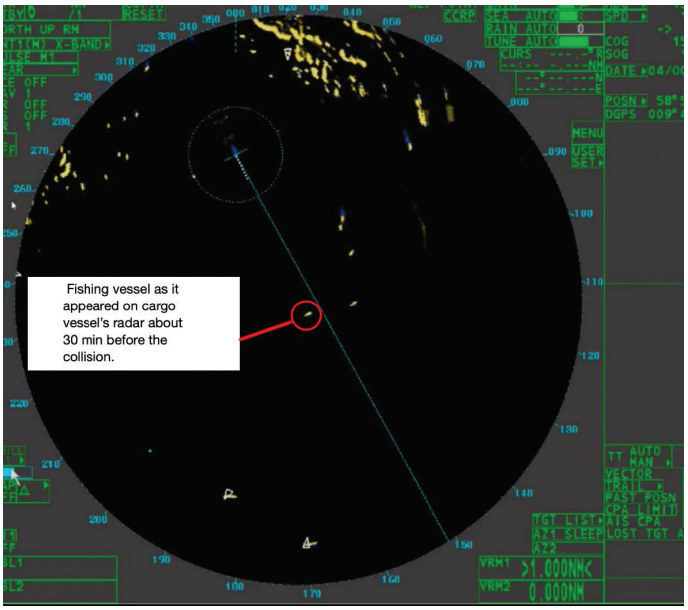
MARS Report No 371 September 2023

MARS 202339

Collision in daylight and good visibility

As edited from NSIA (Norway) report 2022/12

➔ In the early morning a small cargo ship left port bound for a short sea destination. The OOW was alone on the bridge as it was now daylight and visibility was good. He set a SSE course, as per the voyage plan, and the vessel was making about 12 knots. The OOW scanned the horizon for potential dangers through the bridge windows and observed AIS signals from a few smaller vessels on the radar. He did not see any targets that concerned him, although there was a target near their heading line to port at about 6nm. The OOW then turned his attention to administrative tasks using a computer placed aft in the wheelhouse.



Meanwhile, on a fishing vessel about six nm away, the two person crew were trawling for prawns. Both the navigation lights and day shapes for trawling were displayed. The AIS had been set to passive mode during the night to conceal the vessel's position, as the location of specific prawn fishing grounds was considered a 'trade secret'. At about 08:28 the crew stopped trawling and started hauling the trawl net. Due to currents and because they were being pulled towards the trawl while hauling, the vessel was now moving astern at about one knot.

It was around that time that the skipper noticed the cargo ship coming more or less towards them, but he perceived it as part of the normal traffic in the area. He reactivated the vessel's AIS about this time. As it was daylight and good visibility, he did not think it was necessary to communicate with the cargo ship.

After a few minutes, the skipper observed the cargo ship approaching ever closer, but initially assumed that the vessel would pass without any risk of collision. Soon, however, he realised there was imminent danger of collision; he set the engine to full speed astern but was unable to avoid impact.

On the cargo vessel the OOW felt something hit the bow of the ship. Looking out, he saw the mast of a fishing vessel close along the starboard side. The time was 08:35.

The collision caused the fishing vessel to heel over and turn around almost 180 degrees. Once clear of the cargo ship, the fishing vessel still had propulsion. The crew were unharmed and proceeded to check the status of the vessel, which had sustained considerable damage to the port bow bulwark but otherwise was out of danger.

After the collision, the OOW reduced the speed of the cargo ship, turned the ship around, called the fishing vessel on VHF and asked whether they needed assistance. Both vessels later returned to port for inspection and repairs.

Lessons learned

- Distractions, be they administrative or personal (mobile phones!) are antithetical to keeping a sharp lookout.
- Not all small vessels carry or use their AIS consistently, so keeping a sharp visual and radar lookout is essential.

MARS 202340

Accommodation ladder not accommodating

As edited from TAIC (New Zealand) report MO-2021-205

➔ A vessel was about to leave port. Once the pilot had boarded, crew began to secure the accommodation ladder for sea passage. This ladder was of 'telescopic' design, such that the lower half was able to slide inside the upper half for securing. Although of a Class approved design and SOLAS compliant, the practical considerations of using this particular type of ladder were complicated.

A previous incident had led to a risk assessment that identified the entire upper section as a 'dangerous area' while the ladder was being retracted. As a result of this risk assessment, the company had established a procedure that no person should stand in that area during securing operations. However, it appears this was routinely violated, as in this instance.

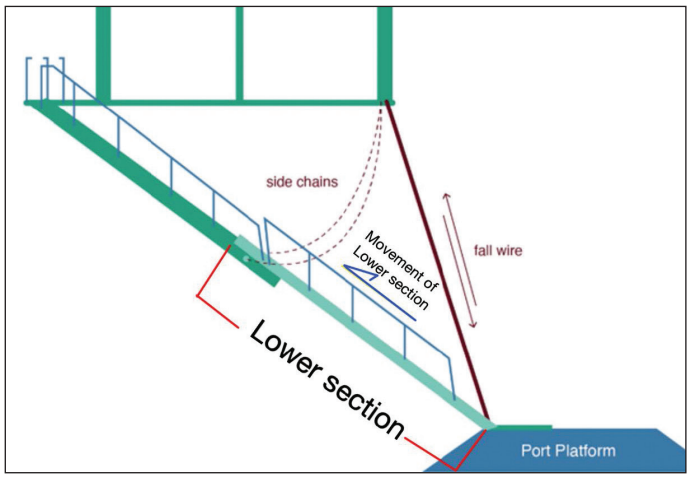
The inboard handrail side chain became caught between the sliding lower ladder and the fixed upper ladder, and a crewmember stepped onto the upper ladder to free it. Once he had cleared the inboard handrail chain, he picked up the outboard handrail chain and held onto both to prevent them from getting caught again. Holding both chains, he stood on a step close to the top of the fixed ladder, but within the area identified as dangerous from the previous incident.

On board, another crewmember resumed heaving on the fall wire to retract the lower section of accommodation ladder. As this was proceeding, the ladder end dropped off the port platform. Because the side chains were slack and not supporting the fixed upper ladder, the weight was transferred from the dock platform and onto the fall wire. This resulted in an unexpected and uncontrolled upward movement of the lower ladder.

The sudden upward movement of the lower ladder trapped the victim's left leg between the top step of the lower ladder and the third step of the fixed upper ladder. All work stopped immediately, and the

crew wedged timber between the steps to ease the weight on the victim's leg and prevent further injury.

It was decided that the safest option to free the victim's leg was to cut the step. This was accomplished, and at the same time the first responders boarded the vessel and brought the victim to hospital.



Lessons learned

- Each close call, incident or accident is an opportunity to improve safety by analysing the events and implementing mitigating measures such as new procedures or engineering solutions. To be fully effective, the new procedures should be followed.
- Don't let your 'Can Do' attitude lead you into a dangerous position, as with the victim in this accident. Follow the established procedure.

MARS 202341

No inert gas means less tanker safety

As edited from Dutch Safety Board Report Summary July-December 2022

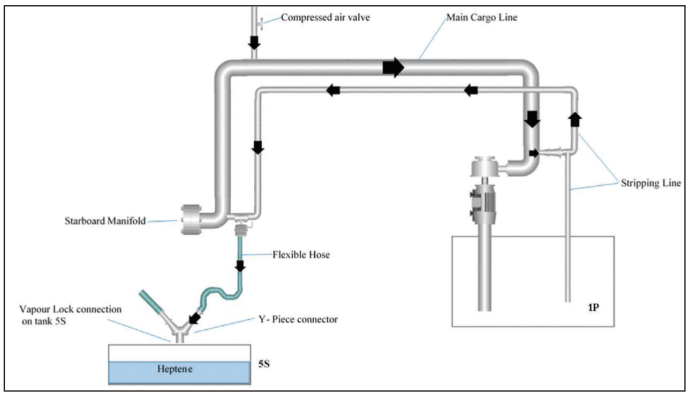
➔ A chemical tanker was in port to unload a cargo of heptene, a highly flammable chemical liquid. First, the loaded tanks were partially drained to check the piping, pumps and valves for leaks. Then the forward cargo tanks (1 starboard and port) were completely unloaded. When these were empty, the cargo pumps of tanks three port and starboard were started and the piping system of the forward tanks was disconnected from the central discharge line to shore.

There was still residual cargo in the discharge lines of the forward tanks. To remove this residual cargo, the lines were to be blown with compressed air at 8 bar. This would force the cargo through the central discharge line and the stripping line from the forward cargo tanks into tank 5S. A drain valve used to take samples was connected via a flexible hose (and Y-joint) to the drain valve. The Y-joint was then attached to the vapour lock connection on tank 5S. In this way, residual cargo from the discharge lines would be collected in tank 5S, which would be the last to be discharged. This method had been used with success by the crew for many years, although it was not strictly in line with the company's written procedure.

Seconds after the compressed air was blown into the discharge line, an explosion occurred. The investigation was able to discount a pressurisation event as the cause. In all likelihood, an explosive mixture ignited in tank 5S due to static electricity.

No inert gas or closed vapour return system had been used when loading this cargo. During the first outflow of cargo (safety ullage), outside air was drawn in through the pressure/vacuum valve. This allowed an explosive mixture of gas vapours and oxygen to develop in tank 5S.

The official investigation found that maximum safety assurance can only be achieved by inert loading or loading with a closed vapour return system. Ships without these systems should therefore no longer be allowed.



Lessons learned

This was another case of not following procedures, as in MARS 202340 and MARS 202343, among others. Although in this case the deviation from the procedure probably did not contribute to the explosion, it is an indicator of poor safety culture.

In 2017, the OCIMF cited an analysis of 35 incidents (over 25 years) compiled by an inter-industry working group that reported to IMO. This analysis showed that:

- In the majority of cases the ship was tank cleaning, venting or gas freeing when the incidents occurred.
- Failure to follow established procedures was observed in a significant number of incidents.
- In several cases, the tank atmosphere for tanks without inert gas had apparently not been evaluated or was not being monitored.
- In most cases ignition occurred within a cargo tank.
- None of the incidents occurred during the use or operation of inert gas.

MARS 202342

VHF+DSC+GPS=Safety

As edited from USCG Safety Alert 03-23

➔ Analysis of a marine casualty involving the loss of a commercial fishing vessel found that the Digital Selective Calling (DSC) equipped VHF radio was not properly configured with the vessel's GPS system. While the Master was able to broadcast the vessel's position before sinking, having the DSC alert properly enabled could have provided the Master more opportunity to focus on emergency operations and egress from the sinking vessel, while still continuously broadcasting an emergency signal over VHF.

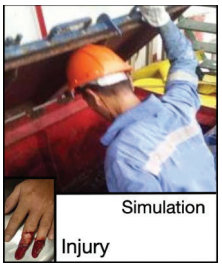
Lessons learned

- Obtain and properly register an MMSI number.
- Ensure that your GPS and DSC-equipped radio are connected.
- Confirm proper operation of your radio equipment by adequate testing.

MARS 202343

Severe injury during routine task

➔ A tanker was under way at sea in fair weather conditions. After breakfast, a crew member was undertaking a familiar task; disposing of food waste from the galley in the food waste container on deck. He lifted the heavy cover but did not install the safety pin to ensure the door remained safely open during the disposal operation. Instead, he relied on this own strength to keep the door ajar. The door slipped and fell on his left hand, causing severe injuries to his ring and middle fingers. After first aid on board he was evacuated ashore and eventually sent home to undergo medical follow-up procedures.



The company investigation found that although the crew member was very familiar with the task, he had acted with overconfidence and in contravention of the established procedure as he had not used the safety pin on the container hatch.

Lessons learned

- Everyday jobs can appear less risky as we become desensitised to the hazards. Stay aware!
- A strong safety culture means adhering to procedures and good practices.

Editor's note: Shortcuts and complacency can easily work their way into common everyday tasks. It is likely that this was not the first time this crewmember had not used the safety pin. If other crew members or senior officers had witnessed these sub-standard acts but did not correct the behaviour, they too are contributing to a weakening of the safety culture.

MARS 202344

Collision in daylight and good visibility, take 2

As edited from NTSB (USA) report MIR-23-09

➔ A bulk carrier in ballast was underway in daylight conditions and good visibility. Near noon, there was a handover of the watch. The helm was on autopilot and the vessel's speed was 14.8 knots. Since it was daylight and good visibility, the OOW was alone on the bridge while the helmsman/lookout was occupied with other ship duties on deck.

Meanwhile, on the bridge of an offshore supply vessel (OSV) about 8nm away, the OOW was also alone. Although ostensibly navigating, he was also occupied with various personal calls and text messages on his mobile phone.

According to the Voyage Data Recorders (VDRs) of both vessels, each vessel was present on the other's ARPA display, both as a radar and AIS target. Neither radar had any automatic target tracking or alarm features enabled, and neither vessel was acquired by either OOW. The vessels were in a crossing situation with a CPA of zero.

Eventually, the OOW on the OSV became aware of the risk of collision. He disengaged the autopilot, increased the throttles and turned to port to minimise the damage to the vessel as a collision was now inevitable. The bulbous bow of the bulk carrier, which was traveling at about 14 knots, struck the port side of the OSV, which was traveling at 9 knots, and breached the hull. The impact caused the OSV to heel to starboard, and water rushed over the main deck from the starboard side.

At the time of the collision, the bulk carrier was still in autopilot mode, and there was no recorded change of engine telegraph (which was still at full ahead) or rudder order. About 18 seconds after impact, the OOW engaged manual steering and turned the rudder hard to port. About 30 seconds after impact, the Master of the bulk carrier arrived on the bridge.

The general alarm was sounded on the OSV, and all crew were instructed to go to their muster stations. As a consequence of the collision the port side propulsion room started to flood, and the OSV began to list to port and trim by the stern. The ship's ballast pump was used to dewater the space and to get the breach to the hull out of the water as far as possible. Although the OSV lost propulsion, the electrical generators in the engine room remained operational and provided power to the ship.

Damage to both vessels was estimated at $12.3 million.

OSV Damage

Bulk Carrier damage

The official investigation found that the probable cause of the collision between the bulk carrier and the OSV was distraction of the bulk carrier's OOW due to performing non-navigational tasks and distraction of the OOW on the OSV due to cell phone use, which kept both officers from keeping a proper lookout. Contributing to the casualty was the OOW on the OSV not following his company's watchkeeping policies, which called for two persons on the bridge at all times.

Lessons learned

- Nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions has been a factor in casualties and accidents in all transportation modes. Using cell phones and other personal electronic devices has been demonstrated to be visually, manually, and cognitively distracting.
- Nonoperational use of cell phones should never interfere with the primary task of a watchstander or a bridge team member to maintain a proper lookout. It is important for personnel to follow established protocols regarding cell phone use.

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