Mariners' Alerting and Reporting Scheme

MARS Report No 330 April 2020

MARS 202018

Symphony of errors leads to collision

As edited from official AIBN (Norway) report 2019/08

➔ In the early morning hours, a navy frigate was underway in darkness and good visibility at about 17 knots. Its navigation lights were on, but the AIS was in receive mode only and therefore was not transmitting own AIS information – as is sometimes the case with military vessels. The bridge was manned with an OOW and another six crew including two lookouts and a helmsman.

The OOW called the local VTS by mobile phone, informing them that the frigate would enter the VTS area from the north and giving its planned route through the VTS area. The VTS operator saw a radar echo on his overview screen, which was assumed to be the naval vessel. Because the frigate was not transmitting AIS signals, there was no information about the vessel's identity, course and speed vectors.

The OOW's attention was focused on three vessels that were approaching from ahead on the port side. He informed the bridge team of the three approaching vessels and asked them to notify him of any further observations. In addition, the bridge team could see a floodlit 'object' on the starboard side but they did not discuss it or examine it further on the radar or via AIS because they assumed it was an object on shore.

Meanwhile, a tanker was getting ready to depart a terminal some distance from the oncoming frigate. The bridge on the tanker was manned by the pilot, the Master, an OOW and a helmsman. The pilot called the VTS on the VHF to announce their imminent departure. The deck lights of the tanker were left on to ensure adequate visibility for the crew during departure and afterwards as they secured equipment in case of heavy weather.

Soon, the tanker was moving away from the terminal. The pilot called VTS to announce their departure and intentions. The pilot ordered a course of 350° with the tanker now at a SOG of about 3 knots. The pilot had seen two southbound vessels to the north, one of which was the frigate, and two northbound vessels to the south.

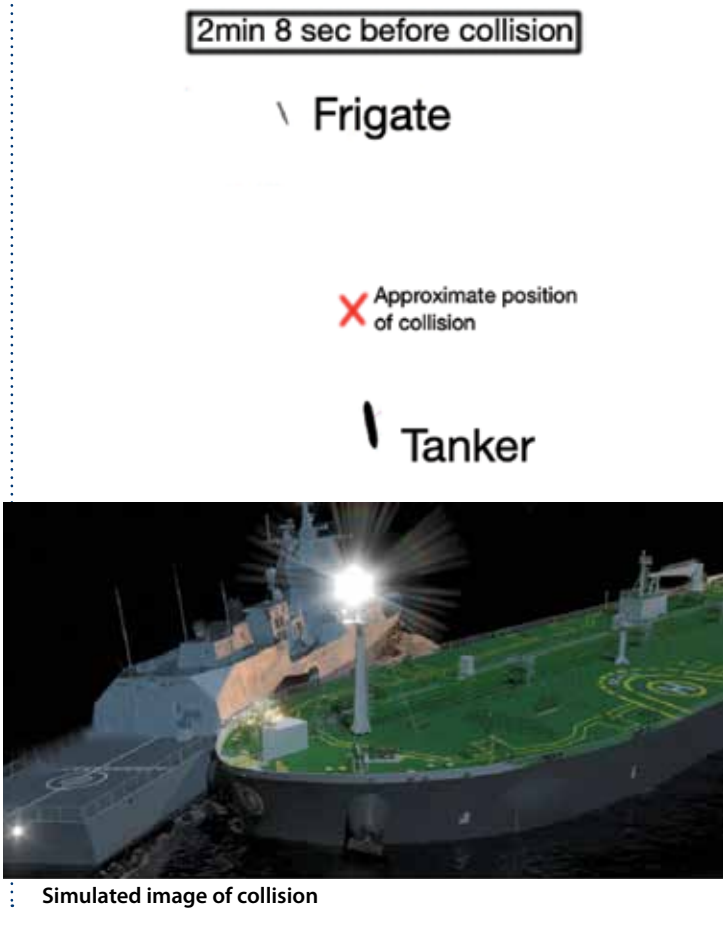
About 12 minutes later the tanker's speed had increased to about 6 knots. The frigate was by now about 1.5nm away and was approaching at an angle of 10–12° on the port bow. The pilot saw only the vessel's green light and realised that the vessel would cross the tanker's course line. The pilot requested AIS data about the vessel from the tanker's Master, but the Master replied that the vessel was not transmitting AIS data. The pilot then called VTS and requested information about the vessel, but VTS, having forgotten it was the frigate, replied that they had no information on the vessel. The pilot then asked the Master to use the Aldis lamp to signal the oncoming ship. Shortly after signalling with the Aldis lamp, the Master and the pilot observed both sidelights of the frigate so they assumed it was turning to starboard. Yet, shortly afterwards, they again saw only the green light, so they continued sending out light signals with the Aldis lamp.

The pilot ordered a course change of 10° to starboard to indicate to the approaching vessel that they were making an evasive manoeuvre. At about the same time the OOW on the frigate ordered a course change to port of about 10 degrees, which was applied in small increments.

As the two vessels approached each other the VTS operator now remembered the frigate's report some hours earlier and he immediately called the pilot on the tanker. By this time there was approximately 875 metres between the two vessels. The pilot broadcast over VHF: 'Turn starboard if you are the one approaching.' The OOW on the frigate understood the call to be from one of the three other northbound vessels that wanted the frigate to go further to starboard to increase the passing distance. The OOW still thought the 'object' on the starboard side was stationary and that they could not go further to starboard without getting too close to the 'object'.

Meanwhile, the tanker was still altering course to starboard and increasing speed, now at about 7 knots. On the frigate, the team saw the lights on their starboard side were getting closer, but they believed that the OOW was in control of the situation. On the tanker, the Master, seeing that the situation was becoming critical ordered 'stop engines'.

The OOW on the frigate suddenly realised that the 'object' that was giving off light was moving and that they were on a direct collision course. Seconds later, the pilot on the tanker ordered full speed astern on the engines but the two vessels collided nonetheless. The tanker's starboard anchor ploughed into the starboard side of the frigate causing extensive damage.



Simulated image of collision

Lessons learned

- Small course changes are to be avoided if you want to signal to an oncoming vessel, via radar and visual aspect, that you are changing course.
- Darkness and/or poor visibility changes everything. Would this have happened in daylight?
- Radar targets that are not emitting AIS signals should always be plotted.
- Never assume. Establish the facts.

Note: an excellent Youtube video and simulation of the incident is available at https://www.youtube.com/watch?v=HVGe6ltIxQs

MARS 202019

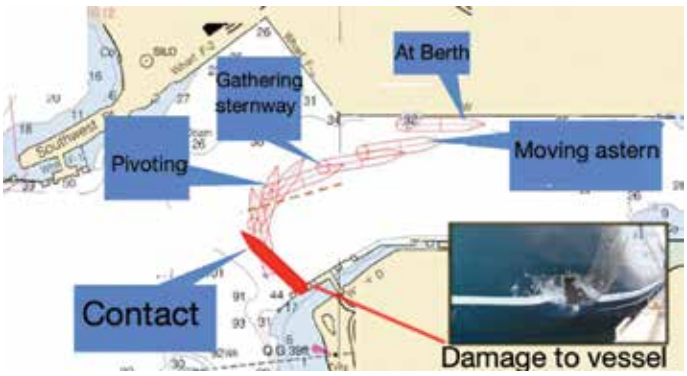
Less than adequate BRM allows single point failure

As edited from official NTSB (USA) Marine Accident Brief DCA19FM012

➔ A passenger ship was leaving dock in darkness. The Master, a pilot and the OOW were on the bridge. A tug was secured aft on the starboard quarter. When the lines were clear and under the pilot's instructions the tug pulled while the Master operated the bow thruster to move the vessel off the berth. Once the vessel was about 20 metres off the berth the pilot requested astern engine and stopped the tug.

A port swing was initiated in order to turn the ship 180°. The tug was initiated again to help with the turn and the Master used the bow thruster to port. The pilot then requested ahead propulsion, but the Master mistakenly set it to astern instead. The pilot could not see the controller the Master was using, nor the RPM or rudder angles. The Master, for his part, was operating the RPMs, rudder (one joystick) and bow thruster, and was not repeating the orders in a closed-loop manner. The OOW warned the Master, in a language that was not understood by the pilot, that the propulsion was astern, but the Master did not respond. Distances aft were being reported to the bridge by VHF radio, again in a language that was not understood by the pilot.

As the vessel gathered sternway, it contacted the dolphins aft. The investigation found, among other things, that the Master's abilities were probably negatively affected by alcohol consumption.



Although the major contributing factor to this accident appears to be alcohol abuse by the Master, several other factors conspired to allow the mishap. Had proper BRM been applied, the single point failure of the Master may have been avoided.

Lessons learned

- The bridge team, including the pilot, should all be on the same page. To accomplish this a plan should be agreed and implemented and a common language used.
- Closed-loop communications are an essential part of good BRM.

MARS 202020

Fall into open manhole

➔ While at sea, deck crew were sweeping the empty hold of a vessel. The bilge well covers had been left open and were without barriers or guards. One crew member was near the bilges. Concentrating on his sweeping, he forgot that the bilge well covers had been removed. He stepped back and fell into one of the bilges. He was immediately helped out of the bilge well and given a physical evaluation. No apparent injuries were observed but the next day he complained of mild back pain. On arrival at port, he was sent to the shore doctor for further evaluation and medication.

Lessons learned

- In this case the injuries were not severe but they might well have been. Always protect unattended open manholes with guards or barriers.
- Practise on-site risk assessment to identify all potential hazards at the work site and implement the necessary risk reduction measures.
- Stay aware of your environment – situational awareness is your best friend.

MARS 202021

Boiler repair fatality

From IMO Lessons Learned III 5, No 16

➔ While at berth, a water leak was suspected in the boiler/economiser so it was shut down for inspection. About five hours later, after the boiler had cooled, an engineer and a fitter entered the boiler space from the bottom manhole door. They were satisfied it was safe, as the pressure gauge indicated zero. They identified a leaky boiler tube and plugged it from the bottom. Their plan was to plug the same tube from the top before restarting the boiler.

As the engineer and fitter were exiting the bottom manhole door, the recently inserted boiler tube plug fell off along with a small broken section of the water tube. Hot water, steam and smoke poured out from the boiler water drum and covered the fitter. His injuries were so severe that he was declared deceased while still on board.

The investigation revealed that not only was the engineer probably in a fatigued state, there was no procedure to cover this task and no boiler work risk assessment had been completed.

Lessons learned

- Vessel-specific procedures covering tasks with identified risks should be developed. Boilers, which involve heat and pressure, are inherently a risk and should be included in vessel procedures.
- Never make assumptions based on gauge pressure. Boilers should be depressurised and emptied before starting work.
- Additionally, the vent on top of the boiler should be opened to check that the boiler is truly depressurised.
- Working in a fatigued state increases the likelihood of negative consequences.

Editor's note: There have been numerous MARS reports about boiler or pressurised vessel accidents – for example, 201734, 201536 and 201238. Does your vessel have boiler work procedures?

Visit www.nautinst.org/MARS for online database

MARS 202022

Uneven stairs

➔ A visitor on a vessel almost fell as he descended the last steps of the exterior accommodation ladder. The last two treads were not equidistant from the rest of the stairs. This appeared to be an 'as built' construction issue but was clearly a tripping/fall hazard that had not yet been identified by the crew. Although the upper and lower steps of these stairs were nicely tiger-striped to identify them, the stairs themselves were not totally safe.

Lessons learned

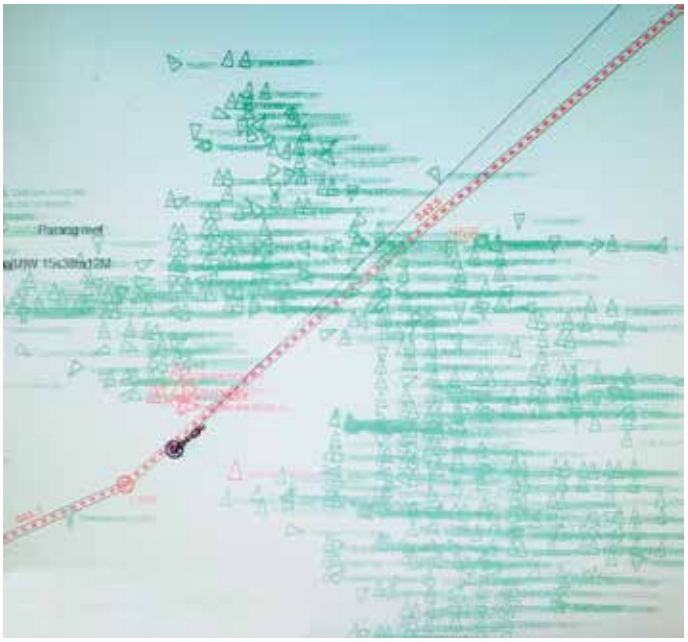
- As a design principle, stair treads should always be equidistant.
- We often become accustomed to hazards in plain sight; sometimes visitors are more likely to identify these than crew. Try taking a walk about on your vessel and look for hazards with 'new' eyes.
- Always have at least one hand on a railing when using stairs.

MARS 202023

An accident waiting to happen

➔ The AIS-equipped fishing net problem seems to be increasing exponentially. The picture below was taken on a recent trip from Shanghai to Busan showing a multitude of AIS targets, most of which are fishing nets. The vessel's recent-model AIS receiver can show up to 1,000 contacts, but still it is overloaded. It appears that these 'smart' fishing nets are now hailing ships by call sign and/or MMSI number over VHF channel 16, with an automated voice giving its bearing and position and telling vessels to keep clear. But which AIS target is it?

Readers are requested to submit their anecdotes or experiences with 'smart' AIS-equipped fishing nets.



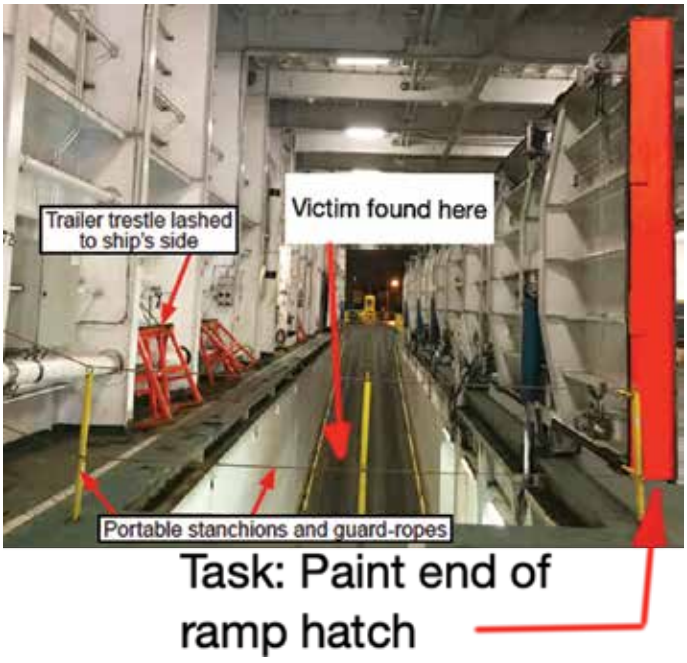
MARS 202024

Fatal fall from 4.5m

As edited from official MAIB (UK) accident report 9/2019

➔ An experienced deck crew member was tasked with painting the end of a raised car-deck ramp hatch while a ro-ro was at dock. He was attending to this work alone when several other crew heard a loud crash in the vicinity of the ramp. The other crew found the victim lying on the inboard side of the ramp, some 4.5m below the main deck, with a trestle lying on its side and across the lower part of his right leg.

The victim was attended to. He was conscious, but it was quickly assessed that he had broken a leg and an arm, and the shore emergency services were called. The crew member was taken to hospital, but died three days later. It was reported that he had suffered a stroke caused by traumatic brain injury.



The official investigation found, among other things, that:

- The victim crossed a safety barrier and fell 4.5m from the main deck on to the ramp.
- The victim's task did not require access to the unprotected deck edge beyond the rope barrier. It is not known why he entered the hazardous area.
- Work practices adopted by other deck ratings during hatch cover maintenance two days earlier indicated that adherence to the vessel's safety procedures was more a matter of routine and compliance than of understanding and conviction.

Lessons learned

- Experience does not give one a free pass to short-circuit safety procedures.

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