



MARS – Lessons Learned

MARS Report No 370 August 2023

MARS 202334

Cargo fire takes 10 days to extinguish

As edited from SHK (Sweden) report SHK 2023:01e

→ A general cargo vessel was fully loaded with cut timber packed into plastic-wrapped packages, both in the cargo hold and on deck. As the vessel was departing its loading berth, the linesman noticed that an electrical extension cord between the vessel and the quay had not been disconnected. The crew on the forecabin informed the bridge team, but the vessel was already moving away from the berth, and it was not possible to prevent the cable from breaking.

When the pilot left the vessel, he saw a few metres of the extension cable hanging down by the side of the vessel. The cable was not inspected after the vessel departed. During the voyage there were no observed anomalies.

The vessel anchored in a port to bunker via a bunkering barge. Just after the bunkering began, the crew of the bunkering barge smelt smoke. Then they saw flames emerging from the deck cargo of the general cargo vessel on the port side, forward.

They immediately informed the crew of the vessel and bunkering was stopped. The bunkering barge cast off and moved away. The crew on the barge then activated their water cannon and moved closer to the general cargo vessel in order to attempt to extinguish the fire. Meanwhile, the crew on the vessel were also attempting to extinguish the fire using the vessel's own firefighting equipment. Other tugs and small boats arrived to help extinguish the fire, but all efforts were in vain.

Under her own power and with tugboats attached, the general cargo vessel was docked at a port of refuge seven days after the fire had first been detected. Finally, three days after the vessel had docked and fully 10 days after the fire was first detected, the fire was declared extinguished.

The official investigation found, among other things, that the extension cable that broke while undocking was probably live when the fire started. Although a circuit breaker normally trips rapidly if there is a direct metallic connection between two conductors, if the



current is passing through an electric arc and electrical conductors with substantial impedance (electrical resistance), the current may be too low to trip the circuit breaker. So, in all probability, an electric arc had come into contact with the plastic packaging or the wood and eventually ignited the material.

Lessons learned

- Any situation where potentially 'live' circuits or wires are exposed should be corrected with the briefest of delays.
- The management of this vessel fire was one of the most extensive operations of its kind in modern times for Sweden. Among other things, the investigation revealed that multiple and overlapping responsible agencies needed to cooperate, but no protocols had been established prior to the emergency.
- The management of ships in need of assistance must be robust. Prior planning for all contingencies should be undertaken by a wide swath of concerned agencies including at the local, municipal and federal levels.

■ **Editor's note** Lessons learned often have to be re-learned. In 1998, a vessel declared a cargo fire while unloading MDF in a Canadian port (report M98L0139). Somewhat similar to the above emergency, the fire fighting efforts were extended and there was, at times, confusion and ambiguity amongst the various shore-side responsible authorities. The investigation revealed weaknesses in emergency planning and coordination amongst these groups and even the authority of the Master on the vessel was not well understood by some. The published report can be found here: <https://tsb.gc.ca/eng/rapports-reports/marine/1998/m98l0139/m98l0139.pdf>

MARS 202335

Make a point of 3 points of contact

→ A vessel underway at sea was experiencing some rolling under heavy weather conditions. Crew were undertaking normal housekeeping duties. A crewmember slipped while descending a staircase and, with only his right hand lightly gripping the handrail, his efforts to stabilise his body were ineffectual. His small finger was bent back and sustained injury on the vertical post as he fell.

The company investigation found that although he had proper Personal Protective Equipment (PPE), his method of descending was suboptimal, in that, with only one hand on the right handrail, he was ignoring the good practice of having 'three points of contact' at all times. Risks were also more acute due to the rolling of the vessel.



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Lessons learned

- Everyday tasks and movements can appear less risky over time due to familiarity. Don't let your guard down!
- It is good practice to have a firm grip and use both hands on each handrail while using a staircase.
- **Editor's note** I am personally aware of another incident where an outside staircase had become more slippery over time as the anti-slip paint was gradually worn away. The gradual nature of the wearing away had led the crew to 'adapt' their behaviour and they all took great care while using the staircase – but hadn't yet thought to redo the anti-slip paint! When an outside party came to audit the vessel, she fell on that very staircase due to it being wet and slippery. Luckily, she was not badly injured.

MARS 202336

Hatch gantry crane safety study

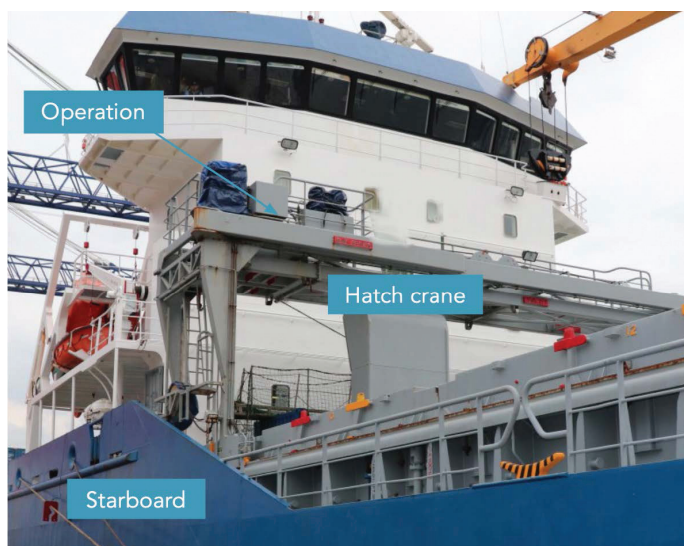
As edited from the Dutch Safety Board report published July 2022

➔ Current gantry crane practice and risk reduction measures are not adequate, finds a report from Dutch Safety Board (DSB). The in-depth report on issues with gantry cranes was published in July 2022, following a string of accidents involving where crew or shore staff suffered injuries or death. The report was based on six occurrences that involved crushing by the gantry crane due to entrapment, with very similar sequences. Two took place on the same vessel within three years of each other. Readers can find past MARS reports involving gantry cranes at 202201, 202211, 201525, 201460 and 98058.

The report underlines some of the fundamental weaknesses of gantry crane installations and operations. Among other things, it highlights that:

- The crane operator's field of view is severely restricted and does not allow a proper overview of both sides of the crane's track.
- The vessel layout allows persons to cross the track of the gantry crane.
- Communication with others is essential for determining if the hatch crane can be operated in a safe manner. Yet, this introduces the risk of miscommunication which was a contributing factor in at least one fatality.

Various measures have been adopted to control bad outcomes, but these appear to still have unacceptable residual risks. For example, having alarms continuously sounding while the crane is operating is well-intended – but they can become routine. Their efficacy will probably decline with time as crew become desensitised to the alarm and qualify it as 'normal'.



Emergency crane stop buttons are now a common installation. Yet analysis found that in many past occurrences the emergency stop button was not used because it was out of the victim's reach.

Finally, an analysis of the accidents has shown that it is common practice to carry out hatch crane operations at the same time as other operations. In many cases, the victim was not expected to be in the danger zone because he was carrying out operations not related to the use of the hatch crane.

The DSB concluded that current gantry crane practice and risk reduction measures are not adequate. Clearly, a new paradigm is needed. In many industries, working in the 'line of fire' is not allowed. Yet, any crewmember stepping across a gantry rail while it is operating is in the 'line of fire'. It is essential that work is coordinated. A clear framework and agreements for simultaneous yet disparate operations should be established. Without this, the risk of entrapment cannot be adequately controlled.

Lessons learned

- Never cross the gantry crane rails while the crane is in use. If it is necessary to cross the rails, the crane should be stopped.
- Unrelated work on deck or in the holds should not be scheduled while gantry crane operations are taking place. If schedules clash, one or other of the operations should be rescheduled.

MARS 202337

Pressure washer risks

On a vessel underway, two engine room crew were detailed to clean the engine room ventilator water mist catcher using a pressure cleaner. The job progressed without incident and afterwards, the two crew proceeded to clean the carbon and other debris on the poop deck. One of the crew was holding the lance of the pressure washer when he inadvertently pressed the trigger. The sudden pressure surge produced a hydraulic kick-back force in the lance, and the water jet hit him on his left leg just above the knee. The victim screamed and released the trigger and the lance. The other crewmember immediately stopped the pressure washer.

Lifting the coverall to reveal the injury showed that there was bleeding from a wound created by the high pressure water stream and that a small portion of the flesh in that area was missing. The victim was given first aid which was, in this case, sufficient.

Lessons learned

- A pressure washer is like a loaded gun. The water forces generated can cause severe injury in contact with a person's body.
- If a pressure washer is on, always hold the lance with both hands to have full control. Never point the lance at yourself or others.

MARS 202338

Go around before going aground

As edited from TSB (Canada) report M17A0390

A bulk carrier, loaded to 12.65 metres draft, arrived at its destination and took a pilot for port entry. The bridge team consisted of the Master, the pilot, and a helmsman. The OOW had left the bridge for other duties.

When the pilot arrived on the bridge, there was a brief exchange of vessel information between the Master and the pilot. The pilot called for hard to starboard, as the vessel was too close to the pier and there would not be enough time for it to safely make its approach on the current heading. However, he issued helm orders without communicating to other bridge team members his plans for an alternative approach to the pier.

Because the tide was turning, the pilot initiated a circular manoeuvre that included numerous and varied course and speed alterations to position the vessel further to the east. This was intended to give the vessel more time and distance to set up its approach to the pier.

Once the vessel had passed the apex of its circular manoeuvre, it was making good a course of 160 degrees. The pilot's priority was now to slow the vessel before making the approach to the northern pier. He ordered both attending tugs to make their lines fast fore and aft and begin slowing the vessel down while gradually turning to starboard. At this time, the vessel's speed over ground was between 6 and 7 knots.

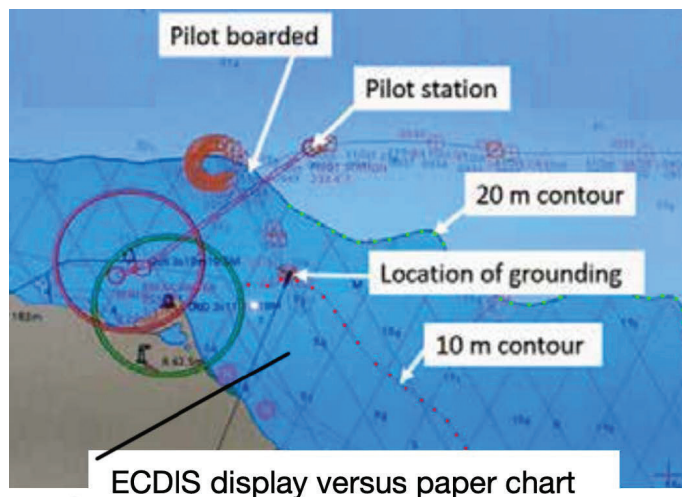
The pilot was not monitoring the radars or ECDIS. Some minutes later the vessel ran aground while making about 3 knots. The bridge team did not realize immediately what had happened. Shortly thereafter, the pilot checked the radar for the first time and realized the vessel was aground.

The vessel was refloated at the next high tide with tug assistance. No damage to the vessel or pollution was reported.

The official investigation found, among other things, that although there had been a brief exchange of basic vessel information (horsepower and stopping capability) between the Master and the pilot, there was no exchange of passage plans or discussion of the approach to the berth. The pilot did not discuss his intended circular manoeuvre to reposition the vessel for its approach to the port, and the Master did not ask about the pilot's intentions. Furthermore, the Master did not communicate with the pilot the information that he was gathering from the ECDIS and radar, including course, speed, and the rapidly approaching depth contour on which the vessel grounded. Information exchange throughout the pilotage operation was limited to the pilot's helm orders. The pilot did not request feedback from the bridge team, and none was offered.

Lessons learned

- Without electronic validation or input from other bridge team members, even an experienced navigator can make errors that can lead to bad outcomes if left uncorrected.
- The 'challenge' is a key principle of good BRM. When one member of the bridge team sees a developing dangerous situation, it must be communicated to the person having the con.
- In this case, the ECDIS shading was set to depict anything shallower than 20m in dark blue, to differentiate it from deeper waters, which were identified with light blue. Had waters with a depth of 10 metres and less been shaded with dark blue and marked distinctly as a no-go zone, the vessel's relatively rapid approach to the 10 metre depth contour would have been more apparent.



ECDIS display versus paper chart

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