



Mariners' Alerting and Reporting Scheme

MARS Report No. 310 August 2018

MARS 201847

A brush with a buoy

→ A tanker had finished discharging cargo and moved to an anchorage to wash tanks and prepare for the next load. After washing, the Master received orders to change anchorage to allow delivery of the washing water to a slop barge. Once at the new anchorage, Port Control told the bridge team (Master, OOW and helmsman) that they were too close to the port fairway.

The crew weighed anchor to reposition the vessel, but this introduced delays. The Master was aware that the washing water should be delivered as soon as possible in order to respect the loading schedule at the next port. He expedited the manoeuvre to save time, but in the process the vessel came into contact with the fairway buoy. Although the buoy and vessel were damaged, there were no injuries or pollution.

The Master was invited to the company office to assist the investigation team and help understand the causal factors of the incident. He was subsequently enrolled in a shiphandling course for large vessels. The OOW was replaced at the first convenient port and was subsequently enrolled in a BRM course to refresh his knowledge on participating in the bridge team during decision making.

The company investigation team found that:

- The Master was experienced, but possibly complacent and time-pressed in undertaking the manoeuvre
- The OOW had failed to challenge the Master properly during the decision-making process.

Lessons learned

- There is no such thing as a trivial shiphandling operation; all manoeuvres should be carefully prepared and communicated to the bridge team. Masters should welcome any comments from the team.
- Complacency and over-confidence can negatively affect outcomes.
- **Editor's note:** It is especially refreshing to see the company involve the Master in the investigation and to respond with additional training for both the Master and OOW rather than searching for a guilty party.

MARS 201848

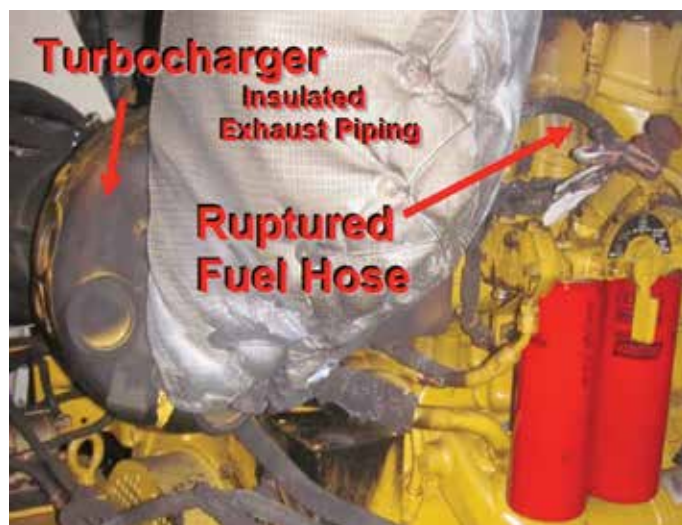
Fuel spray on hot surface = fire

Edited from USCG Marine Safety Alert 06-17

→ While underway a main engine low fuel pressure alarm sounded on the bridge. The crew member on watch entered the unmanned engine room and identified a high-pressure fuel leak spraying on the port engine's turbocharger. There was also a large quantity of diesel fuel in the bilge. The Master arrived on scene just as the fuel ignited and began a fire. He attempted to extinguish the fire using a portable fire extinguisher, but without success. He activated the general alarm, secured the hatches, had crew members secure the ventilation dampers and closed the remote fuel shut-off valves to the engine room. The fire then quickly self-extinguished.

The investigation identified the source of the fuel leak as a rupture on a flexible fuel hose connected to the fuel filter assembly. The fuel filter assembly and its components were installed relatively close to the

turbocharger on the inboard side of the engine. The heat radiating from the turbocharger components was very high and probably led to the degradation of the rubberised hoses nearby. However, the installation was in accordance with the manufacturer's marine engine manual.



Lessons learned

- Closely inspect fuel and lubricating systems, from source tanks to system end points. Think about system vulnerabilities such as loose or missing pipe clamps and securing devices, wear or chafing from vibration that is affecting hoses, and pipes or tubes that may be poorly secured. Make sure that plastic piping is not close to hot spots.
- Ensure all insulation, blankets and lagging are maintained and kept tight. Look for areas where released fluids may make contact. Where spray shielding is used, check that it is kept in place; if it is not used, consider adding shielding.
- Minimise the use of non-metallic flexible hoses in systems carrying flammable liquids, particularly around engine areas where leakage or spray may reach hot spots capable of igniting the fluids. Consult with engine representatives if modifications are needed.

MARS 201849

Waxy deposits in low-sulphur MGOs

MAIB Safety Bulletin SB1/2017 and Japan Transport Safety Board Report MA2017-12

→ A container vessel had been operating in the North Sea Sulphur Emission Control Area (SECA) for several days. The auxiliary boiler fuel supply had been switched from heavy fuel oil (HFO) to marine gas oil (MGO) to comply with emission regulations in the area. The boiler had cut out several times due to flame or ignition failures. On each occasion, the fault was investigated and the boiler reset by the second engineer.

The second engineer and the oiler were trying to restart the boiler burner unit when an explosion occurred. The force of the explosion blew the boiler burner unit door open and propelled the air diffuser into

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the engine room, killing the oiler who was standing directly in front of the burner unit. The second engineer was close by and sustained non-life-threatening injuries.

Examination of the boiler fuel system identified a build-up of waxy deposits in the supply filter, sufficient to restrict the fuel flow. Samples of the MGO being burnt at the time of the accident were sent to a laboratory for analysis. The tests found that the fuel had a cold filter plugging point (CFPP) of 14°C and a pour point (PP) of less than -9°C; it therefore required a minimum fuel operating temperature of 15°C. The ambient air temperature at the accident location was about 4°C, low enough for wax to form.



Safety issue

Since the more stringent sulphur emissions limit was introduced, there has been an increased incidence of boiler and marine diesel engine problems in colder waters, industry reports suggest. This has been attributed to the increased paraffin content found in some low-sulphur MGOs, which leads to the formation of waxy deposits or crystals as the fuel temperature falls. Restricted fuel flow due to wax deposits in filters and pipework can cause intermittent and incomplete combustion to the point of flame failure. This could have unintended consequences, as in this case.

The paraffin content of MGOs varies globally due to disparate regional crude oil composition and refinery processes. Prior to March 2017, the often-used ISO 8217 standard focused on pour point. But this specification does not provide any indication of the temperature at which filtration issues may occur.

Lessons learned

- When purchasing low-sulphur MGO bunkers, give careful consideration to the ambient air and sea temperatures likely to be experienced during the voyage. The required cold flow characteristics of the fuel being supplied using cloud point (CP) and CFPP must be appropriate.
- If necessary, the CP and CFPP of the fuels carried on board can be tested through sample testing.

When operating in cold climates, the risk of waxy residue developing in the vessel's fuel lines can be controlled by:

- Closely monitoring the visual appearance of low-sulphur MGO bunkers for signs of wax precipitation
- Conducting regular fuel filter inspections and close monitoring of fuel system pressures.

- Maintaining the temperature of the low-sulphur MGO in the vessel's tanks and pipework above the CP and CFPP temperatures to avoid the possibility of filter blocking.

The addition of cold-flow improver chemicals to the low-sulphur MGO in the vessel's storage tanks should only be considered as a last resort, and then only under the strict guidance of an additive supplier.

MARS 201850

Mooring line mishap

→ A tanker was in the process of mooring in a river berth. Two headlines were rigged on the same shore bollard (hooks), while the third was positioned on a second bollard. As the fore mooring party started to shorten up the lines, it was noted that one of the three headlines was twisted on the other two. The linesmen were called back to attend the vessel and to rearrange the fore headlines.

Two linesmen arrived. Once the line was slacked the linesmen started to haul in the line in order to have some slack to move it easily, using the winch positioned on top of the bollard. The fore mooring party was watching, waiting for the order from linesman to haul up.

When enough line had been hauled ashore, the linesmen shifted the eye of the rope on the hook. The linesman was in the process of removing the layer on the drum when the slacked rope suddenly moved ahead on the left, hitting the linesman and throwing him down the embankment and into the water.

Immediately the alarm was raised and the linesman was quickly recovered from the water. First aid was administered and the linesman was declared fit soon after.



Lessons learned

- When working with mooring lines, always be situationally aware of the forces and direction of tension that are in play – both on board and ashore.
- It is always good practice to keep linesmen in view while they are working your lines. If an accident happens to them, you are well placed to raise the alarm quickly.

MARS 201851

Unmarked crushing hazard claims a victim

As edited from official report of the Bureau d'Enquêtes sur les Événements de Mer (BEAMer, France), 26 July 2017

→ A small dredger was in port and a crew member was discharging a load of sand on the foredeck, using the vessel's deck crane and grab. Meanwhile, another crew member was assembling some containers of old oil on the port foredeck in preparation for disembarking the oil ashore.

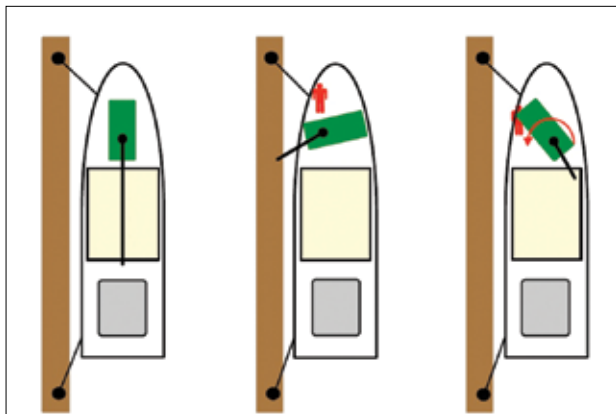
The sand offloading moved to the middle of the hold, and the crane's counterweight swung over the starboard railing. The crane operator then swung the counterweight to port to access the sand on the starboard side of the hold. In this position, he could not see the port side of the deck.

The crew member who was assembling the containers was in a vulnerable position on the port side, where the crane operator could not see him. He was trapped by the counterweight against the ship's bulwark. He collapsed and was quickly attended to but was later declared deceased.



The official investigation found, among others that:

- The victim was relatively inexperienced, and had probably not been made aware of the dangers of the foredeck while the crane was in operation
- The victim was not wearing hi-vis clothing nor a hard hat
- There were no barriers nor indications around the swing radius of the counterweight to warn persons of the danger.



■ **Editor's note:** This really was an accident waiting to happen. An inexperienced crew member was put into a dangerous environment where hazards were unmarked and unprotected.

MARS 201852

Weak planning and BRM breakdown leads to grounding

As edited from official UK Marine Accident Investigation Branch (MAIB) report 23/2017

→ An ultra-large container vessel (399m LOA) was inbound in a restricted channel under pilotage, in darkness and on a rising tide. The bridge team included two pilots, an OOW and helmsman as well as the Master and a lookout. The lead pilot was using a portable pilot unit (PPU) to con the vessel while the Master exchanged information with the assistant pilot. The assistant pilot used a partly completed port passage plan form and the port's generic passage plan guidance leaflets to help explain the pilotage and berthing plans.

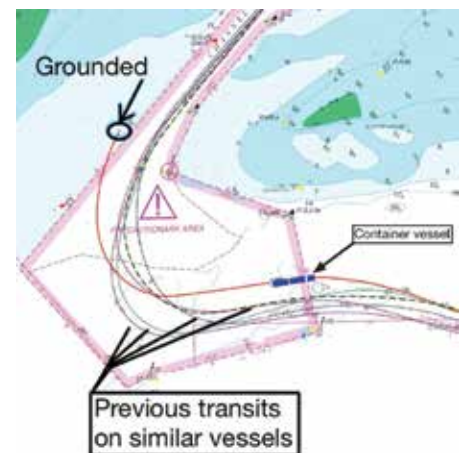
At one point the lead pilot received a call to his mobile telephone from the pilot on an outbound vessel to discuss how and where they would execute the meeting manoeuvre between the two vessels. Both pilots agreed to a conventional port to port meeting, with the speed of the container ship being adjusted to ensure the meeting took place to

the east of the precautionary area, a place in the channel where a large turn to starboard was required.

The container vessel was now making 12kt and the lead pilot informed the Master of his planned manoeuvre into the precautionary area in order to make a turn first to port to allow for more sea room and then to large starboard. To combat the strong flood tide and prevailing headwind, the lead pilot stated that he intended to navigate the vessel 'deep' into the precautionary area before beginning the starboard turn.

The lead pilot gave the helmsman a series of courses to steer that, over the next four minutes, brought the vessel on to a heading of 260°. Shortly afterwards, the lead pilot ordered the starboard turn and the engine set to full ahead. Soon, he expressed concern to the assistant pilot about the turn. At the same time, the Master expressed similar concern to the OOW in his native language, Romanian.

Soon after, the container vessel grounded with the engine at full ahead. The Master implemented the vessel's emergency procedures. The crew's initial inspections and tank soundings indicated that the vessel's hull had not been breached. Tugs quickly freed the vessel on the rising tide.



Some of the report's findings include:

- The intended route through the precautionary area was not charted, and key decision points, wheel-over points and abort options were not identified.
- The absence of a charted pilotage plan meant that the Master, his bridge team and the assistant pilot were unable to monitor the lead pilot's actions and the vessel's progress during the execution of the turn in the precautionary area.
- The lack of a shared understanding of the pilot's intentions prevented the bridge team from providing the support to challenge or seek to clarify the pilot's actions.
- The bridge team became disengaged from the pilotage process and allowed the lead pilot to become an isolated decision-maker and a single point of failure.

Lessons learned

- If you have concerns about the conduct of the vessel, discuss them with the entire bridge team.
- For critical turns or other manoeuvres, have key decision points established in advance. In this case, when compared with past trips, the vessel was obviously too far north as it entered the precautionary area and prior to making the starboard turn. This should have triggered an abort decision.

■ **Editor's note:** The report also states: 'It is accepted that detailed plans for complex pilotages cannot always be produced by navigating officers and pilots prior to a vessel's arrival at a pilotage station, and that vessels often need to deviate from planned tracks in busy and congested waters. However, realistic intended tracks need to be plotted and key decision points identified.'

This basic premise has been identified by other investigative agencies. In Canada, for example, the Transportation Safety Board published a recommendation with similar ideals in 1994.

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