MARS

MARS Report 395 | September 2025

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MARS 202534

Propeller 68% submerged gives 100% disaster

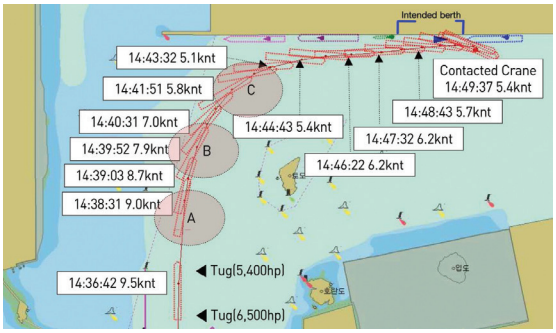
A large container ship was inbound and a port pilot embarked for docking. Before boarding, the pilot had decided to upgrade the two tugs to be used for more powerful ones because the vessel was in ballast. He did not discuss this or his other docking plans with the Master, nor did the Master discuss his expectations of the docking with the pilot.

As they entered the inner harbour at about 9.5 knots, the pilot ordered a turn to starboard to bring the vessel parallel with the berths. Starboard 10 was requested but the vessel turned more slowly than expected. Starboard 20 was requested and soon after hard starboard. When the vessel came parallel with the berths, the wind was now on the starboard side at Beaufort 4-5 and pushing the vessel to port. The vessel's large freeboard afforded ample windage, so the force to port was considerable.

The pilot soon realised that emergency action was needed as the vessel was approaching the berths with momentum to port at a speed of more than five knots. Tugs and the bow thruster were used to try and slow and turn the vessel, but contact was now inevitable. Emergency manoeuvres and some luck avoided contact with the berthed vessel aft, but the port bow of the container ship struck a gantry crane on the pier, which quickly collapsed. As the vessel came away from the pier, it struck another berthed vessel forward.

The investigation later established that, at the time of the accident, the propeller had an immersion ratio of about 68%.

Propeller with about 68% immersion ratio



Lessons learned

- Poor planning and an underestimation of the vessel's manoeuvring characteristics in ballast were major contributors to this accident.
- Another important factor was the speed of entry, which left no room for error or manoeuvring underperformance, which is to be expected with low draft high freeboard situations.
- Higher speeds also make bow thruster performance negligible and tug assistance more tenuous.
- Not only are the turning characteristics of a rudder negatively affected by being less than fully immersed, the effects of the propeller are also reduced. Carefully consider these effects and discuss with the pilot to arrive at a common plan prior to port entry or exit.
- The pilot upgraded the power of the tugs in attendance prior to boarding the vessel which indicates his concern for the limitations he

expected. Notwithstanding these concerns, his docking plan was not discussed with the Master and the 'one man show' was a catastrophic failure.

As edited from the KMST (Republic of Korea) report 2021-001

MARS 202535

From rags to riches...for the repair yard: An incinerator's tale

An engineer was charged with burning garbage and oily rags in the vessel's incinerator. At one point, smoke emerged from the exhaust pipe, accompanied by excessive vibration in the draft fan. The engineer in charge used a dry powder extinguisher and the water mist system was automatically activated.

Crew members were alerted, and firemen stood by. Once the smoke was eliminated, a thorough inspection confirmed the exhaust piping, expansion joints, and gaskets were intact with no fire brick damage. However, the draft fan's impeller sustained severe damage, causing imbalance in the unit.

It was later determined that during the burning of oily rags, the incinerator temperature increased significantly, triggering a Flue Gas Temperature (FGT) High alarm, which led to the unit automatically tripping. The flue gas fan continued running to cool down the furnace until the temperature dropped to approximately 170°C. During this cooling phase, excessive vibration in the fan reduced the furnace draft. This resulted in localised overheating of the exhaust pipes and furnace, causing insulation material to produce smoke, which subsequently activated the fire alarm and water mist system.

Lessons learned

- Disposing of high-temperature waste (such as oily rags) via the incinerator can lead to unexpected issues. Strict monitoring and controlled burning practices should be employed.
- For example, a controlled burning process for oily rags would ensure a small number of rags are fed and continuous temperature monitoring is employed to avoid rapid overheating.

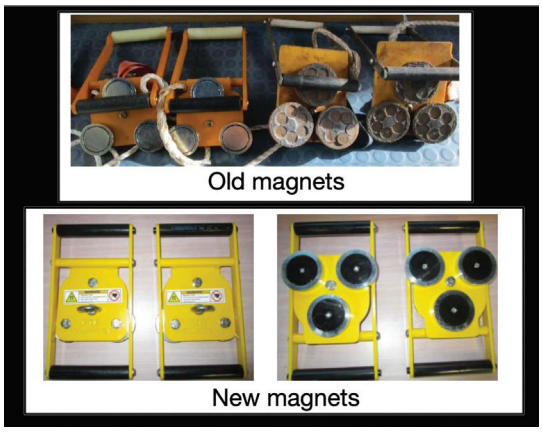
MARS 202536

Pilot/Accommodation ladder magnets may reduce in strength over time

A tanker in ballast and with a freeboard of 15.4m was about to leave port. Two pilots joined from the vessel's sea side and inspected the pilot and accommodation ladder arrangements while boarding. On their suggestion, the pilot ladder was adjusted about three steps higher but otherwise was found to be acceptable.

Departure and outbound voyage were without incident but at the pilot disembarkation area the vessel was rolling so heavily that the magnets for the accommodation platform released from the hull. The disembarkation of the pilots was postponed to re-secure the ladder. The magnets were re-attached to the vessel's hull, the accommodation ladder was secured, and one pilot disembarked safely to the pilot boat. The second pilot could not disembark as the magnets were again dislodged from the hull due to rolling. The disembarkation of the second pilot was postponed and the vessel headed towards an area where the weather conditions were deemed more suitable for disembarkation.

The Master subsequently ordered new magnets for the vessel.



Lessons learned

Pilot and accommodation ladder magnets, like any magnet, will lose their strength over time. Various factors contribute to the loss in magnetic strength, depending on the type of magnet, including among others:

- High temperatures.
- Physical damage: Impacts or vibrations.
- Electromagnetic interference: High levels of electromagnetic fields generated by strong electrical currents can reduce a magnet's strength.

- Corrosion: Magnets made of iron can rust if not coated or protected. Over time, corrosion can compromise their structure and reduce their magnetism.
  - Keep ladder magnets in a protected environment and if possible one with stable temperature control.
  - Maintain ladder magnets by eliminating rust and protecting them from impacts.
  - When in doubt, since judging magnet strength is difficult under operational conditions, replace old pilot/accommodation ladder magnets with new ones.

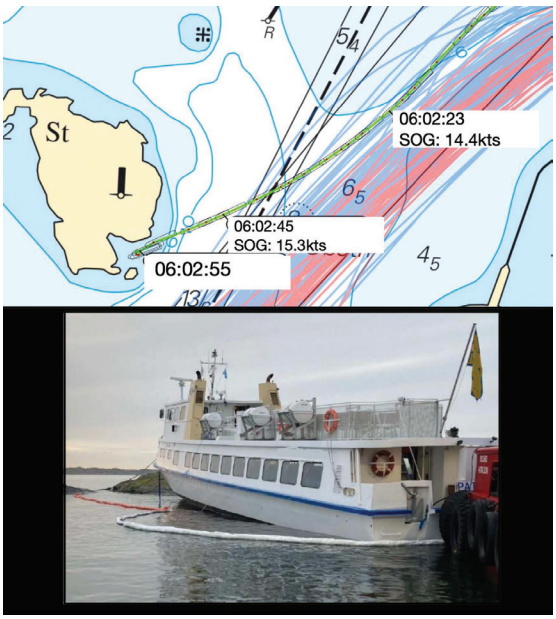
MARS 202537

Distractions and speed lead to hard grounding

In the early morning, a crew of three were bringing a small ferry to its departure port for the first run of the day. Having just left the sleep-over port in darkness, the captain found that the displays of the two engine monitoring instruments were shining too brightly, hampering his night vision. The displays were located to the left of the driver's seat, but access to them was constrained by the left armrest of the chair. Once out in the fairway, the captain activated the autopilot that was integrated into the left armrest. He then raised the armrest and attended to the displays.

To dim the light on the displays, two buttons had to be pressed simultaneously. The buttons were not backlit, so the captain took out his mobile phone and activated the flashlight function to see better. With the phone in one hand, he pressed two buttons simultaneously with the other hand. On his first attempt the display went completely black instead of dimming. Concentrating on this task for a second time, he saw something appear in front of the ship. With no time to turn away the ferry ran aground on an island at a speed of almost 16 knots.

The investigation found, among other things, that the autopilot's 'change in operating mode' warning was not effective. The autopilot probably became disengaged when the armrest was raised to give the captain access to the engine monitoring displays, without him being aware of this. At nearly 16 knots, it only took a few seconds for the ferry to veer off course and run into danger while the captain was preoccupied with dimming the panels.



Lessons learned

- Poor design and ergonomics are nefarious unsafe conditions that often go unnoticed until it is too late.
- In darkness and navigating the vessel in a restricted waterway, the captain was trying to undertake an adjacent task that takes both hands and both eyes.
- Once again speed is an issue. At 16 knots the captain did not put chance on his side when deciding to attend to an adjacent task.
- A seaman was sitting in the aft part of the wheelhouse without duties. He would have been more useful as lookout.

As edited from SHK (Sweden) report 2025:04

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