# Mariners' Alerting and Reporting Scheme

MARS Report No 326 December 2019

## MARS 201976

## Fixed $CO_2$ system with mixed messages

**Edited from official SHK (Sweden) report RS2019:02e**

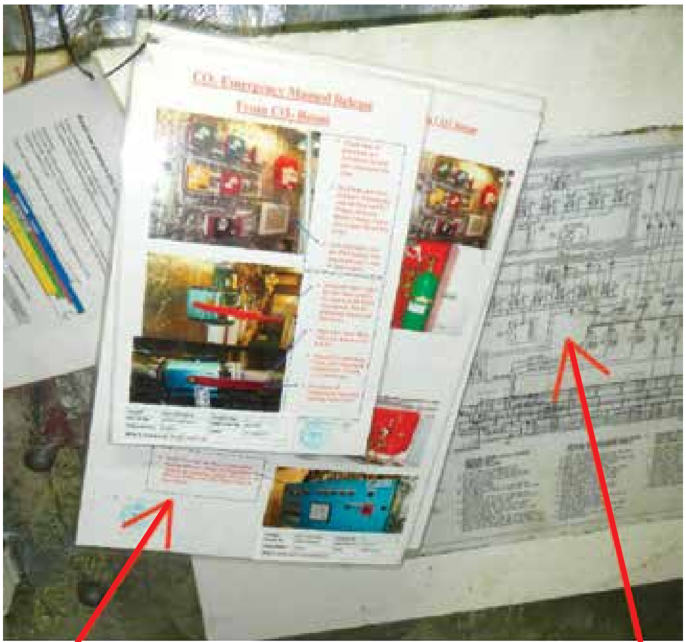
➔ A car/truck carrier, loaded with new and used vehicles, was underway at sea when the fire alarm sounded in the cargo compartment on deck 1 (the lowest deck). Following this, fire detectors on other decks also sounded.

The crew mustered and a team was sent to investigate. Personnel on the bridge tried to assess the situation using a surveillance camera on deck 4, but nothing out of the ordinary could be observed. The search team reported that thick black smoke could be seen further astern on deck 1. No MAYDAY or PAN-PAN call was made and nearby vessels were not contacted.

It was decided to use the $CO_2$ fire suppression system to combat the fire. Once it was confirmed that all crew were accounted for, the chief engineer initiated the extinguishing system. However, because there were two different versions of the activation procedure posted – one from the manufacturer, one from the ship – he found the instructions unclear. After about five minutes, he was finally able to activate the system, some 26 minutes since the fire alarm had first sounded.

Soon afterwards, smoke was seen coming out of one of the ventilators on the upper deck. The ventilator's fire dampers should have closed automatically when the fire alarm or the fire suppression system was activated, but one damper remained open. It was quickly closed manually.

An inspection the following day revealed that the fire had been extinguished but had caused major structural damage.



Ship's operating instructions

Manufacturer's operating instructions

The investigation found that the origin of the fire was probably due to a short circuit in the starting motor of one of the cars. The high temperature caused by the short circuit melted a copper plate in the starting motor solenoid, which began the fire sequence.

### Lessons learned

- Are there confusing, contradictory or competing procedures for $CO_2$ activation (or other actions) on your ship? Correct the situation before an incident occurs.
- Calling for help (PAN-PAN or distress message) is always a good idea when a fire breaks out. If it is brought under control you can always cancel the message.
- Always ensure all crew are accounted for before $CO_2$ is activated.
- Always check before and after $CO_2$ activation that all ventilation to the space is well and truly closed.

## MARS 201977

## Pilot ladder side rope fails

**Event Lessons Bulletin WELEV18070051 – Woodside HSE**

➔ A condensate tanker was outbound from a port and two pilots were disembarking. During their descent one of the ladder's side ropes failed (see photo), but the two pilots were able to safely regain the pilot boat. After the incident an inspection revealed the ladder's side ropes had been weakened by mould.

### Lessons learned

- There is no excuse for a less than perfect pilot ladder – lives depend on it!
- Rope ladders are constructed in such a way that they have many areas that are difficult to inspect. These ladders deserve expert attention. If in doubt, replace with new.

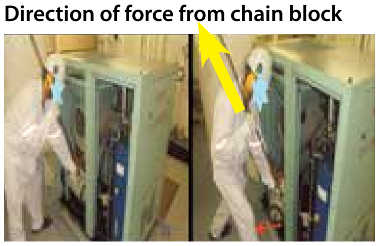
## MARS 201978

## Uncontrolled load swing injures crew

➔ Crew were tasked with removing an air compressor motor from its enclosing cabinet. Because working space around and in front of the cabinet was restricted, chain blocks were installed to lifting eyes on either side of the compressor to facilitate removal of the motor.

While the motor was being lifted and slewed outwards from its foundation, it became stuck. A crew member attempted to clear it. As he was doing so, the motor released itself and swung out under the force of the hoisting chain block, striking his right shin.

Direction of force from chain block



Motor gets stuck    Motor comes free

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The victim sustained an impact injury and was given first aid.

The crew member had positioned himself on the axis of the motor swing while clearing it from the frame. He had not identified the risk associated with space limitation while handling the motor. The chain block that was used to slew the motor was held slack, hence there was no control on the motor's swing.

### Lessons learned

- A lifting hoist should be placed at right angles when removing any heavy load. If this is impossible a slewing hoist must be kept taut.
- This incident illustrates the importance of a detailed risk assessment and discussion during the toolbox meeting before any job.
- Consider all potential hazards such as space restrictions, lifting eye position and total control of the object during the manoeuvre.

**MARS 201979**

## Steering failure ends with a bump

**Edited from BSU (Germany) 423/16**

➔ A small multi-purpose vessel crewed by a Master, an officer and two ratings was up-bound in a river system. The OOW was alone on the bridge and the duty rating was making a safety inspection of the ship. The Master had just been woken so that he could take over the navigational watch as planned. The OOW switched from autopilot to manual (FFU tiller). About one minute later, he tried to make a course alteration to starboard and noticed that the rudder was not responding normally. He then switched to the second steering pump, but the rudder did not respond.

Next, the OOW set the engine control lever to STOP but the vessel was already very near two moored vessels on the port side. The vessel slid along the first moored vessel and then collided with the pier, between the first and second moored vessels, at about seven knots. The OOW had neither sounded the general alarm nor attempted to have the rating let go the anchor before the collision.

The Master arrived on the bridge at the moment of the collision with the pier. The starboard side of the vessel was severely dented and a small crack had formed level with the waterline. The Master sounded the general alarm and issued instructions for the two ratings to check inside the ship for damage. Realising that it was not possible to control the rudder from the bridge, he went to the steering gear compartment where he switched to the backup rudder system, carried out a test, and found that the rudder now responded. He then started the main engine and began to manoeuvre the ship astern and away from the pier.

After the accident, a service company discovered that the contacts of the steering switch were loose and corroded. Accordingly, in addition to the primary means of steering, the backup means of steering also failed.

### Lessons learned

- When the steering fails in restricted waters, time is of the essence and the stress on watchkeepers can be intense. Practice drills involving scenarios of this kind should be undertaken to help crew prepare for such eventualities.
- With only four crew on this vessel it is hard to imagine how a full and effective response to the steering failure could have been undertaken in time.

**MARS 201980**

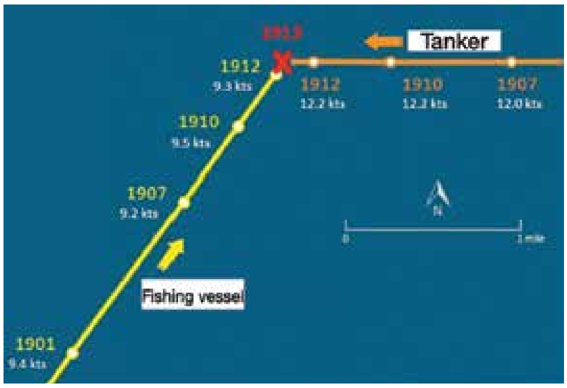
## Collision in plain sight

**Edited from NTSB (USA) Marine Accident Brief DCA18FM023**

➔ A partially loaded tanker was underway at about 12 knots in a safety fairway. An OOW and lookout were on duty and the helm was on autopilot. Daylight was beginning to fade but night had not yet fallen. Ahead and to port the two bridge team members saw a fishing boat coming in their direction. Both believed, from visual observations, that it would pass astern. The Master and the second mate were also on the bridge but were working on ship's business on computers.

At one point the chief engineer came to the bridge to talk to the Master. As he looked out of the window he saw the fishing vessel at very close range. His exclamation caught the Master's attention and the Master left the work station to see the fishing vessel for himself. He immediately ordered hand steering and starboard helm as well as the sounding of the ship's whistle.

Meanwhile on the fishing boat, the lone watchkeeper had been cleaning when he heard a metallic sound, which turned out to be the first contact of the fishing vessel's outriggers with the side of the tanker. He tried to turn the vessel but it was too late and it made heavy contact with the tanker.




Fishing vessel

Tanker

### Lessons learned

- Many collisions can be attributed to ineffective lookout and low situational awareness. This accident is yet another example.
- Never assume the give-way vessel will pass ahead or astern; plot the targets and follow the situation until all clear.
- Undertaking other duties that distract from your navigation responsibilities, as on the fishing vessel in this instance, is a recipe for an accident.

**MARS 201981**

## Soot blowing risk

➔ A tanker was underway at sea when two crew members noticed smoke coming from the upper deck alleyway. They alerted the rest of the crew and started investigating the source of the smoke. They quickly found that the canvas cover of the emergency towing wire aft had caught fire. The emergency response procedures were activated and the fire was quickly extinguished.

The company investigation concluded that the incident was probably

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caused by a soot particle emitted from the funnel during soot blowing.

## Lessons learned

- Soot blowing has associated risks. As such, proper procedures and risk control measures should be implemented.
- The OOW on the bridge should be informed before soot blowing begins. It may be necessary to alter the ship's course during blowing to help prevent soot deposits and sparks from accumulating on deck.
- Soot blowing must not be carried out when the wind is blowing from the stern.
- During the soot blowing process deck crew should be assigned to monitor the open deck and ensure that sparks and ignited soot are safely controlled.
- Combustible material should not be stored on the open deck. It should always be properly and safely stored in closed, dedicated spaces.

**MARS 201982**

# Passenger ship hits rock

**As edited from TAIC (New Zealand) report MO-2016-202**

➔ A passenger ship was inbound in daylight and fair visibility. The Master gave the pilot a briefing regarding the ship's manoeuvring characteristics; the ship was highly manoeuvrable and would 'turn on a dime,' he said. The Master told the pilot that a three-degree helm order would create a rate of turn of 10-15 degrees per minute.

The bridge team would consist of the pilot at the con while the Master would have overall navigational command. The staff captain would be in charge of communications while the first officer would be in charge of electronic navigation and collision avoidance. Finally, the second officer would be in charge of plotting the ship's position on the navigational chart.

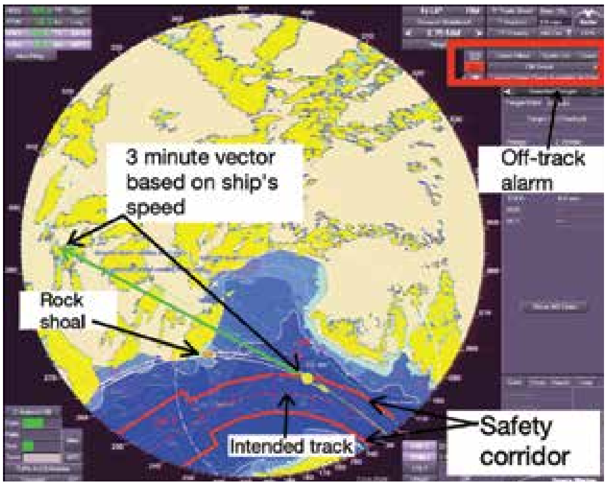
The pilot and the Master discussed and agreed the intended passage plan, noting a strong flood tide that would be running astern. However, the subsequent investigation found that, due to miscommunication during the exchange, the passage inwards began with the Master and pilot having different understandings of how the first turn would be conducted.

The ship was lined up with the leading navigation lights and entered the channel without incident. As the pilot took the con the Master briefed the staff captain on the Master/pilot exchange and explained his understanding of how they were going to negotiate the turn to port. The rest of the bridge team were not included in this conversation and essentially relied on what they overheard.

Under the pilot's con, the first alteration of course to port was initiated using three degrees of port helm. At this time the vessel had a speed over ground (SOG) of nearly 18 knots. The initial helm order was followed by successive increases to five and then 10 degrees of rudder. About one minute after the initial three degree port helm order an off-track alarm flashed on the ECDIS, but this information was not brought to the attention of the Master or the pilot. The alarm appeared only as a visual indicator on the radar screen because its audio had been muted prior to the ship entering the channel (see VDR screen capture).

Even so, the Master and pilot soon realised that the ship was proceeding dangerously close to a known rock shoal, so 20 degrees of port rudder was ordered, immediately followed by maximum port rudder.

About three minutes after the initial helm order of three degrees, and despite the emergency helm order, the ship's bilge keel and the




**Yellow dot ● shows position of vessel when off-track alarm flashes**

starboard propeller made contact with the rock as the ship passed. The ship was then navigated back to the centre of the channel and continued on its passage to port without further incident.

The official report on this accident discusses the concept of allowing a ship to depart from an intended track in the belief that other influences, such as tide in this case, would return the ship to the intended track. The report notes that this carries a high risk when manoeuvring large ships in narrow waterways where margins for error are small. The report posits that there is less risk when a ship is kept strictly to the intended track by increasing or decreasing its rate of turn in response to the external influences such as tide and wind. This method has the advantage of being unambiguous for other members of the bridge team tasked with monitoring the progress of the ship against the planned track.

## Lessons learned

- Plan safely and then execute safely. In this case the intended route, as entered in the ECDIS, was a good plan, but it was not adhered to.
- Muting alarms on an ECDIS is not considered industry good practice.
- If conditions allow, consider reducing speed for manoeuvres in restricted waterways. This will give more time for the bridge team to react to deviations in the plan.

■ **Editor's note:** One may ask how a well crewed and equipped vessel under pilotage in daylight and good visibility can hit a rock. Humans are fallible, and therefore we all make mistakes. Bridge resource management (BRM) was developed as a means of interrupting the accident sequence by eliminating what is referred to as 'single-point failure'. But if mariners continue to operate ships the same way they did before the inception of BRM, single-point failure will continue to be a weak link that leads to failure. Readers may wish to refer to previous articles that illustrate this point, included in the following issues of *Seaways*: September 2008, The Pilotage Paradox; October 2009, The Pilotage Paradigm; and January 2019, The Portable Pilotage Unit: Panacea or Pandora's Box.

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