Mariners' Alerting and Reporting Scheme

MARS Report No 350 December 2021

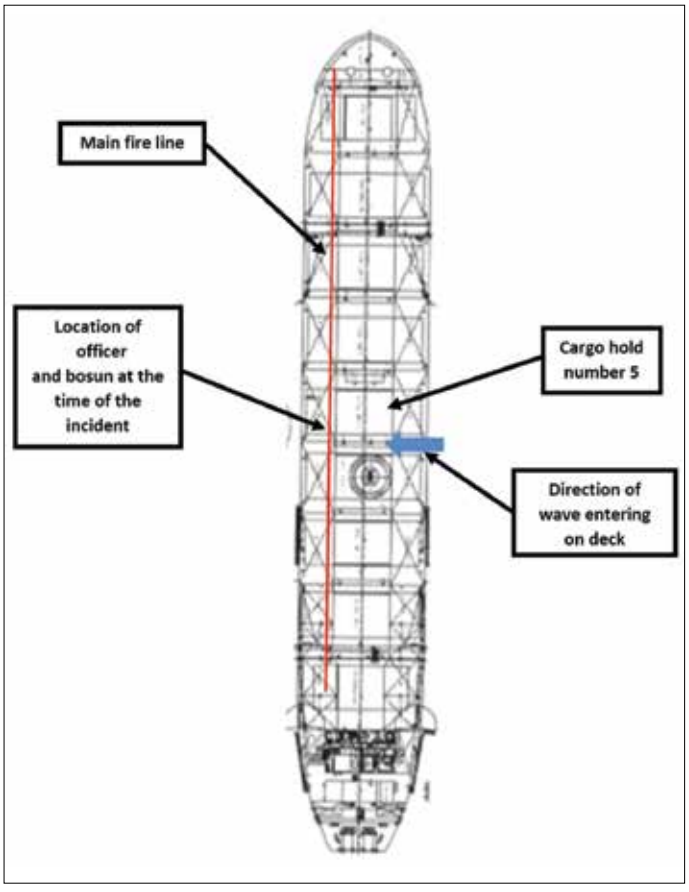
MARS 202156

Man overboard in heavy weather

As edited from official Bahamas Maritime Authority report published on 19 April 2021

➔ A loaded bulk carrier was under way at sea. A leak had been discovered in the main fire line on the main deck near hold five, and the bosun and an officer were tasked to fix it. The fire pump was stopped and the two men started working on replacing the flange gasket in the line. About an hour later, the OOW observed the wind speed and the height of waves increasing. The Master was informed of the deteriorating weather conditions, and contacted the chief officer and asked him to stop work on deck and secure the loose equipment.

By the time the chief officer told the men to stop work on the fire line the job was already completed. It only remained to collect the tools, which they proceeded to do after a rest break for coffee. As the men collected the tools, a heavy wave swept the deck from the starboard side. Both men were caught by the wave; the OOW held on to the railing, but the bosun was swept overboard by the force of the water. The alarm was raised and the crew began search sweeps of the area. Several hours later, with weather deteriorating further and darkness, the search was called off. The bosun was never found.



Lessons learned

- Accessing the deck during heavy weather, even on a large vessel, can be very dangerous. Heavy winds and waves can result in a catastrophic outcome.
- No personnel should be allowed to access the deck in heavy weather unless it is necessary for the safety of the crew or ship. If the crew is required to go on deck during deteriorating weather conditions:

i) A thorough risk assessment should be performed and appropriate safeguards implemented to mitigate the risk of heavy weather and waves breaking on to the deck, such as taking the weather on the stern.

ii) Proper Personal Protective Equipment (PPE) such as a harness, safety line and a flotation device should be worn.

■ **Editor's note:** Unfortunately, there are many reports of persons overboard in the MARS archive. Reports 202139, 202069, 202039, 201970, 201933 to cite a few, in just the last two years. It is this editor's opinion that on safe ships run by quality companies, accidents involving persons washed overboard should be zero.

MARS 202157

Vapour migration to bow thruster compartment causes explosion

As edited from official TSB (Canada) report M09C0029

➔ After discharging a cargo of gasoline and fuel oil a tanker was proceeding in ballast with the cargo tanks in an 'over-rich' condition – that is, it would be potentially explosive with the addition of oxygen. A vent was planned for the transit. As there were no written procedures on board for venting, the deck crew only had the verbal instructions from the officer on how to perform their task, although both deck crew had previous experience performing these venting operations under supervision and without incident.

The crew intended to use the tank-drying system for tank ventilation. In preparation for venting operations, the deck crew laid out flexible hoses beside the tank-cleaning hatches at tanks 1 port and starboard and manually opened the tanks' pressure/vacuum (PV) valves. About an hour later, the flexible hoses were connected to the tank-drying system. The other ends of the flexible hoses were inserted through the tank-cleaning hatches close to the bottom of the tanks. The cargo officer went to inspect the arrangements before the tank-drying fan was activated. Because he had previously experienced vapour migrating through these hoses into the forecastle, he proceeded forward and removed the hoses from the tanks and closed the tank-cleaning hatches. He then went to the forecastle, but before reaching the door, he smelled gasoline vapour. He left the door open to ventilate the forecastle area, but did not start the bow thruster ventilation fan in case it might cause a spark. He informed the bridge of the forecastle atmosphere and instructed the next watch to stay clear. The forecastle was naturally ventilated for the next hour and 40 minutes.

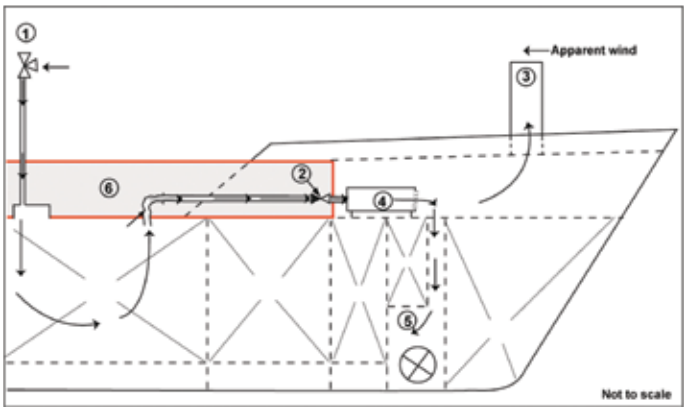
Some time later, the officer returned to the forecastle and verified the atmosphere with a gas detector, which showed 0 Lower Explosive Limit

(LEL). He then proceeded to the trunk space to verify the valve settings on other tanks.

Very soon after, an explosion occurred in the forecastle. From the bridge, debris was seen ejected from the forecastle doorway, followed by dark gray smoke. At the same time, the flexible hoses separated from the tank-drying system, which began emanating smoke. The fire alarm sounded automatically and the general alarm sounded from the bridge soon afterward.

The crew immediately proceeded to muster stations and a fire team of two crew members suited up before assembling outside the forecastle doorway. Once inside, they reported no visible fire. Adjacent compartments were checked for heat sources; none were found. The paint locker door was ripped from its hinges. Air ducting to the bow thruster compartment and ducting to the air drying unit were also damaged, as were some lights in the forecastle area and all lights in the bow thruster compartment. The bow thruster compartment was blackened with soot, including burn patterns on the heater.

The analysis in the official report describes how, given that the forecastle door was open, the apparent wind across the vessel's bow had created an area of lower pressure in the forecastle. This, coupled with open PV valves, induced a flow of gasoline vapours from the cargo tank into the forecastle through the drying unit and the modified non-return valve, as shown in the diagram. The modifications to the non-return valve had not been approved. Once the heavier-than-air vapours passed through the tank-drying unit, they settled downward and into the bow thruster compartment. The vapours were probably ignited by an automatically controlled heating unit in the bow thruster compartment.



Migration of flammable vapours from cargo tank to bow thruster compartment

1. PV valve 2. Double non-return valve 3. Forecastle door 4. Air-drying unit 5. Bow thruster compartment 6. Trunk

The official report found, among other things, that:

- The inappropriate practice of using the tank-drying equipment for cargo tank ventilation allowed the migration of explosive vapours into the bow thruster compartment.
- The modification of the double non-return valve reduced its effectiveness and contributed to the migration of explosive vapours into the forecastle and bow thruster compartment.
- With no formal procedures and training to mitigate the risks associated with tanker operations, the effectiveness of the vessel's safety management system (SMS) was reduced.

Lessons learned

- Safety depends on training and good procedures. In this instance, there were no written procedures for safe tank venting and equipment designed for tank drying was being co-opted for tank venting.
- Any modifications to equipment, such as the double non-return valve in this case, should be vetted through the vessel's classification society.

MARS 202158

A small repair proves fatal

As edited from official DMAIB (Denmark) report published 9 May 2019

➔ A small split-hull suction dredger had suffered damage to hydraulic hoses controlling the port propulsion, so the Master decided to berth the vessel. During berthing, the vessel struck the berth aft and damaged the starboard propulsion. Now very close to the berth but with no propulsion, the Master requested a tug, but was told it would take about an hour. The Master went aft to see the other officer. Because of the perceived urgency, he had already started to change the hydraulic hoses on the starboard actuator.

After helping the officer with an associated task, the Master returned to the bridge to inquire about progress with the tugboat. Suddenly, he heard a yell from the aft deck. He rushed back, finding the officer trapped under the cardan shaft. The officer had disconnected the lifting cylinder hose instead of the damaged hose, and the shaft had fallen down on him. The Master immediately searched for tools that could help release the officer. He tried to lift the cardan shaft using a strap and chain hoist, but without success. He then called for an ambulance, and, at the same time, got some persons on the quay to help him; a forklift truck and several crew members came from nearby ships. The forklift succeeded in lifting the cardan shaft, so the Master and another crew from a nearby ship could secure the shaft off of the victim.

Outline of victim under cardan shaft

Even once the victim was free of the weight of the shaft, there was not enough room for the rescue team to extricate him. Another item of equipment had to be dismounted before the rescue team could free the victim, who was then transported to a nearby hospital but declared deceased.

The official investigation found, among others, that since the ship's crew (Master and officer) did not possess advanced mechanical engineering skills, they did not recognise that this repair might present special risks.

Lessons learned

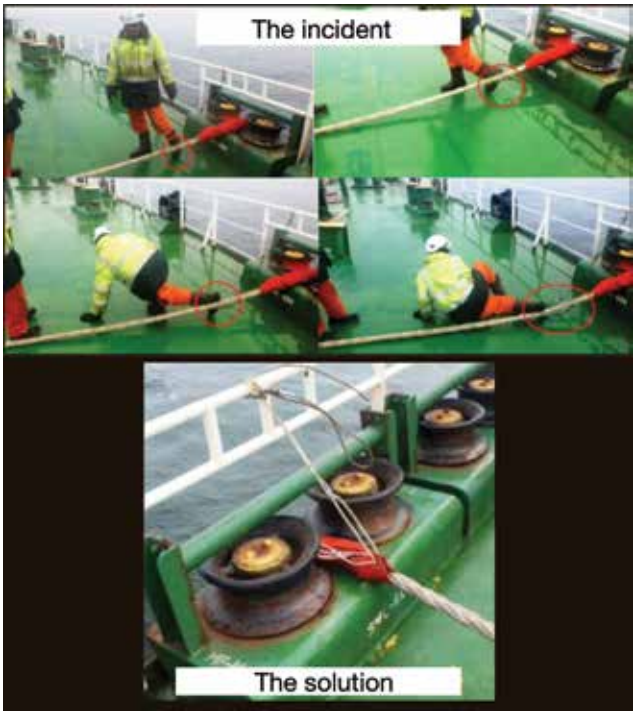
- On small vessels, the reduced crew can be tasked with duties that go beyond their competencies. This can bring unintended consequences that, as with this case, can prove fatal.
- If there is an emergency the first priority is to raise the alarm and solicit help. In this case, although well meaning, the Master lost valuable time rigging a strap and chain hoist for an improvised rescue before calling for help.
- Some perceived urgent situations can be, upon calm consideration, less urgent than initially assessed. In this case the vessel was nonetheless in a safe position near the berth and there was no need to undertake a hasty repair of the starboard propulsion.
- Mariners are often endowed with 'can-do' personalities; they wish to fix the problem in quick order. Resist this temptation and make a calm assessment of the situation before acting.

MARS 202159

Small trip on lanyard requires surgery and repatriation

➔ A vessel was in the process of berthing. A crew member carrying out his work at the forward berthing station tripped over the lanyard securing the spring line's chafing sleeve to the vessel's railing. The victim did not think he was injured but, when trying to stand he felt severe pain at his left hip.

First aid was provided, but there was no visible injury such as bruises or hematoma. The victim felt pain only while standing on his left leg. Later that day he was transported to the local hospital. As it transpired, the victim required surgery and extended recovery time, and was repatriated after surgery.



Lessons learned

- Even the most minor incident can lead to serious consequences. All incidents should be investigated and opportunities for risk reduction sought.
- A clean and unobstructed deck is a safe deck. In this case a small lanyard left adrift on the deck was enough to cause a repatriation.

MARS 202160

Line throwing device/ rocket inversion

➔ An officer was tasked with pyrotechnic inspection and replacement. While undertaking the rocket replacement in the Line Throwing Device (LTD) he found that the previously installed rocket had been inserted upside down, which would have certainly meant an improper activation if needed. The same was found in two other LTDs on board.

It was found that the LTDs had been delivered in this state but this defect had not been discovered during inspections.

Lessons learned

- The inspection of even the most basic equipment might lead to surprises. This task must be taken with the utmost seriousness as even manufacturers can make mistakes.

MARS 202161

Forklift accident with one injury and one fatality

As edited from BMA (Bahamas) report published August 2020

➔ A roro vessel was making a routine planned stopover and the bosun was using the forklift truck for a routine job of moving tools and small containers. Later that same day, several other deck crew members also used the forklift for various tasks.

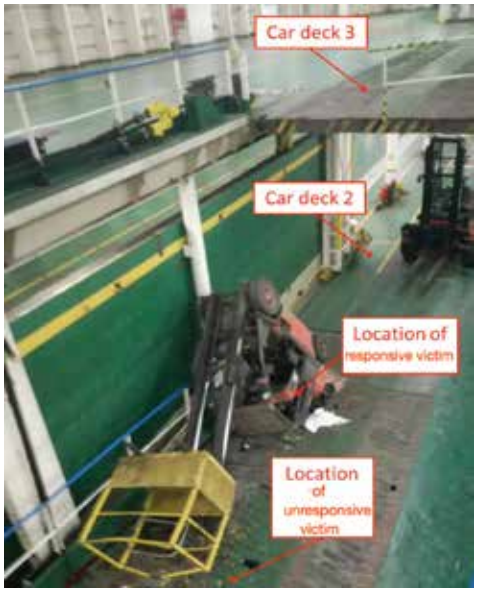
Later on, while most crew were at coffee break, a loud bang was heard. Various crew members went towards car deck 2 to identify the source of the sound. The securing barrier on car deck 3 was found broken, and the forklift had fallen from car deck 3 onto car deck 2. The forklift was lying overturned on the ramp with a crewmember inside the forklift cabin. This crewmember was injured but responsive. Another crewmember was found inside the overturned forklift basket and he was unresponsive.

Crew members began first aid. An ambulance arrived and the paramedics attended the unresponsive victim. He was transported to hospital but later declared deceased.

The crewmember that was in the forklift cabin later recovered, but he did not remember events from the accident. The company investigation found that the forklift had been operated with the victim in the basket and the forklift mast extended to the top. It was also found that the crewmember operating the forklift truck did not have the training or authorisation to operate the truck. There was no dedicated procedure in the company's SMS providing requirements for the access and operation of the forklift. Neither was there any specific procedure for maintaining, recording or managing crew members' qualification and experience for operating a forklift truck.

Lesson learned

- Forklift truck operation is an inherently high-risk operation. Operators of this equipment should have proper training and follow procedures. According to the website McCue.com, on average 95 people are seriously injured in a forklift accident every day and 1 person is killed in a forklift accident every 4 days in the United States alone (land-based use).
- Effective administrative and access controls must be maintained to ensure that only authorised and trained personnel can operate such equipment.



Thank you to all our Nautical Affiliates for their continued support

AqualisBraemar LOC Group
https://abl-group.com/

ABC Maritime
www.abcmaritime.ch

African Marine Solutions
https://www.amsol.co.za/

A. R. Brink & Associates
www.arbrink.com

Blue Orange Wave
www.blueorangewave.com

BMT Surveys
www.bmtsurveys.com

Britannia P&I Club
www.britanniapandi.com

Chevron Shipping
www.chevron.com

Commissioners of Irish Lights
www.cil.ie

Constellation Marine Services
http://constellationms.com

Excelerate Technical Management
https://excelerateenergy.com/

Exmar
www.exmar.be

Finnish Ship's Officers' Union
https://seacommand.fi/en/

Fundacion Avante
http://www.fundavante.com/inicio.html

Gard
www.gard.no

Green Bow Maritime
https://www.greenbowmaritime.com/

HC Maritime Consulting Pty Ltd
www.hcmaritime.com

Hindustan Institute of Maritime Training
https://www.himtmarine.com/

IAMI
http://iami.info

IMAT
https://www.imat2006.it/

IMCS
www.imcs-group.com

Intership Navigation
https://www.intership-cyprus.com/

Iridium
www.iridium.com

KASI GROUP
www.kasimalaysia.com

Keelson Marine Assurance
https://www.keelsonmarineassurance.com/

K. C. Lyrintzis Group
https://kclgroup.gr/

Louis Dreyfus Armateurs
www.lda.fr

Marine Society & Sea Cadets
www.ms-sc.org

Maritime Training Services
https://www.maritimetraining.com

Marlins
https://marlins.co.uk

Martech Polar
http://martechpolar.com

Menezes & Associates
www.menezesandassociates.com

Mintra
https://mintra.com/

MOL Marine & Engineering Co., Ltd.
https://www.molmc.co.jp/en/

MSI
www.msiships.com

North of England P&I Club
www.nepia.com

NorthLink Ferries
www.northlinkferries.co.uk

Norwegian Hull Club
www.norclub.no

Nautical Science Academy
https://academy.nauticalscience.com.br

Ocean Technologies Group
https://oceantechnologiesgroup.com

Octant Marine Limited
https://www.octantmarine.com

Pacific Basin
https://www.pacificbasin.com/

The Port of London Authority
www.pla.co.uk

The PTC Group
http://ptc.com.ph

Rightship
www.rightship.com

Seagull Maritime AS
www.seagull.no

SDT
www.sdtultrasound.com

SQLearn
https://www.sqlearn.com/

The Standard Club
www.standard-club.com

Steamship Mutual
www.steamshipmutual.com

STARGATE
www.stargate-crewing.ro

The Swedish Club
www.swedishclub.com

Seavie
http://seavie.com

Stolt Tankers
www.stolt-nielsen.com

Swire Pacific Offshore
www.swirespo.com

Tsakos Columbia Shipmanagement
http://www.tsakoshellas.gr/

UK P&I Club
www.ukpandi.com

UK Chamber of Shipping
www.ukchamberofshipping.com

Vertex Oil Spill Supply
www.vertexoilspill.com.br

Videotel
www.videotel.com

West of England P&I Club
www.westpandi.com

WAVES GROUP
www.waves-group.co.uk

Our Nautical Affiliates help us make a difference to the shipping community by ensuring that our MARS Scheme is available to the industry for free. Find out more at: www.nautinst.org/affiliate