Mariners' Alerting and Reporting Scheme

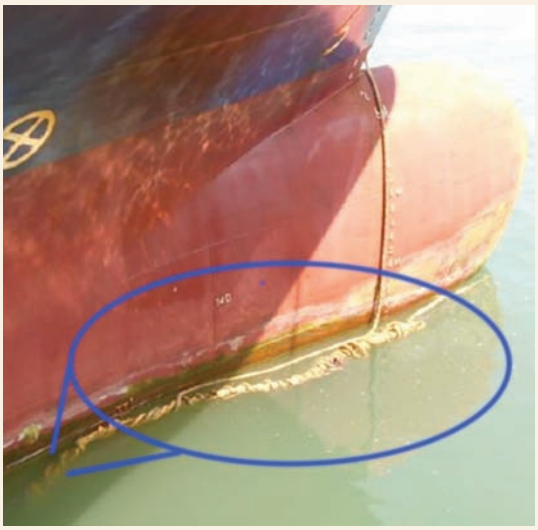
MARS Report No 332 June 2020

MARS 202031

Bow thruster sucks two lines

➔ A tanker in ballast was berthing starboard side to in a strong current, running at nearly five knots. The Master was on the bridge and the vessel was under the guidance of a pilot. A small line handling boat was attending to help achieve the planned mooring pattern of three head and aft lines as well as two forward and aft spring lines.

To begin, forward and aft springs were set using the bow thruster at 70%, with the rudder at port 20° and the main engine running ahead as per pilot's instructions, in order to keep the vessel close to the berth. Next, the three head lines were passed to the line handling boat forward. Two of the head lines slipped off the bollard and more slack was payed out than needed. The lines floated on the water. Before they could be mastered by the launch personnel, they were entrained into the starboard inlet of the thruster tunnel, fouling the propeller blades.



Lessons learned

- Due care must always be taken with lines near a working bow thruster. Ideally, lines should not be allowed to float near a working bow thruster.
- Vessels in ballast have their bow thruster tunnels nearer to the waterline than loaded vessels and are at increased risk of mooring lines being sucked in.

MARS 202032

Gas Freeing Risks

As edited from US Coast Guard Marine Safety Alert 01-20

➔ On a tank barge, personnel were preparing to undertake gas freeing of the cargo tanks. Cargo tank booby hatches and Butterworth openings were open and the flammable vapours within the cargo tank were being removed with mechanical air moving equipment. There was an explosion and the barge sustained extensive damage.

The investigation established that when outside air is introduced into the cargo tank during gas freeing, the vapour/air mixture within the tank and near the tank openings can reach the flammable range. If the air moving equipment used to gas free the cargo tank is not the proper type, is not properly maintained, or is not properly electrically bonded (grounded) and secured to the vessel's structure, static electricity generated by the equipment can discharge as an electric arc and ignite the flammable mixture.

The air blowers that were recovered from the exploded tank barge had either missing or improperly maintained bonding (ground) wires. This was likely the cause of the explosion.

Breached cargo tank

Lessons learned

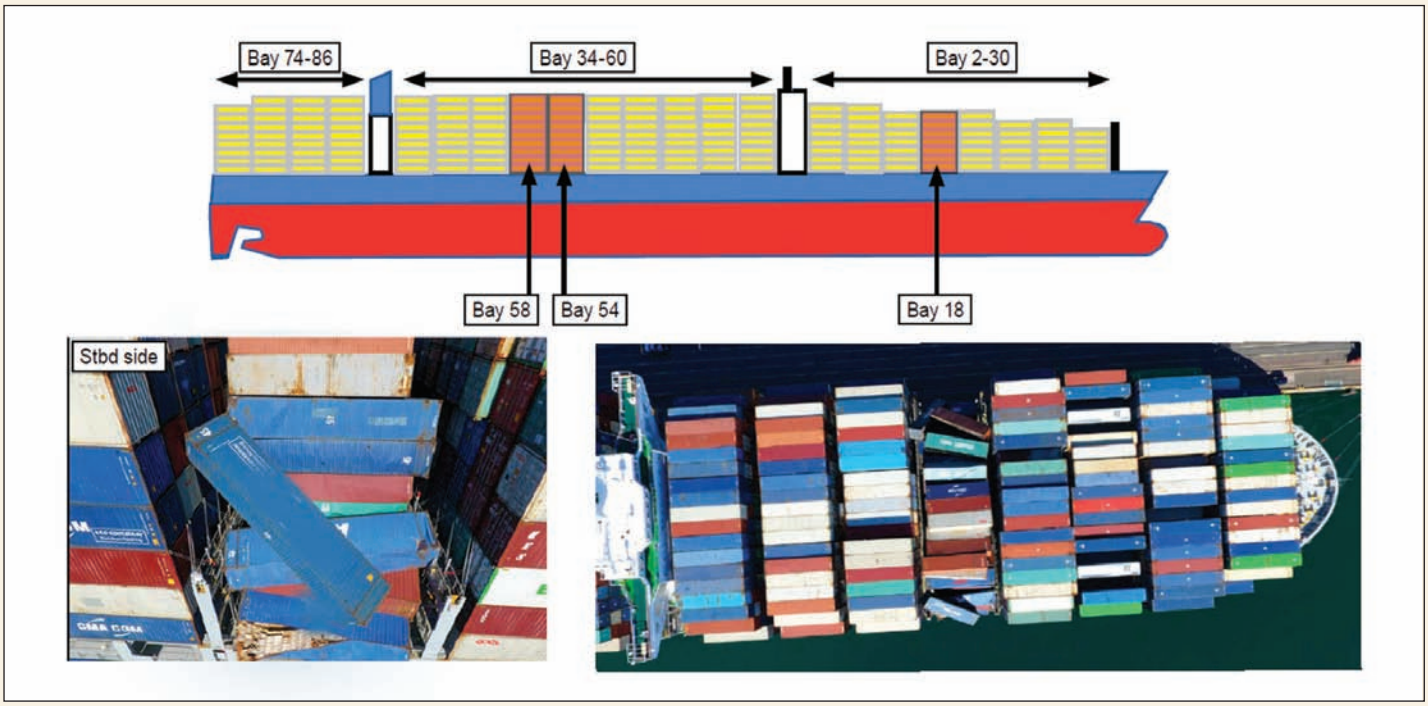
- All personnel should be aware of the critical importance of bonding (grounding) air moving equipment such as blowers or fans before commencing gas freeing operations.
- Proper bonding means the contact point to the vessel or barge is clamped to bare metal, not a painted surface. Simply resting the blower/fan on bare metal is NOT an adequate means of bonding.
- Clamps used with the bonding wire or strap should be free of corrosion, with sufficient tension to ensure a tight connection when clamped to the vessel structure.
- Fans or blowers should be properly secured to prevent movement due to vibration.
- Inspect all air moving equipment before first use each day and ensure that all attached accessories (cones, ducting, etc.) are tightly connected to the blower/fan.

MARS 202033

Containers un-contained due to parametric roll

As edited from official MAIB (UK) report 02-2020

➔ A large container vessel was underway in the open ocean when the weather began to deteriorate. The wind was force 6 and the ship was rolling between 7° and 12° in a three metre swell. The deck crew began the daily lashing checks as usual, but the weather conditions meant that they were only able to inspect the bays forward of the bridge. Later that day the swell increased to 4.5 metres. That evening, the ship experienced a sudden large roll of approximately 16°. Later on, it started to roll routinely to 15°.



The Master reviewed the data provided by the ship's electronic motion monitoring and forecasting system and instructed the OOW to switch to hand-steering and alter course from 088° to 082°. Following the alteration of course the ship's rolling reduced to less than 10°. Later, the Master told the OOW to return to automatic steering as he was now confident that the autopilot was up to the task. About an hour later the ship unexpectedly rolled 20° to starboard, paused for a few seconds, then made a similar roll to port.

The deck lights were turned on after the large roll, but no damage was seen from the bridge and the container stows appeared to be intact. At daylight, an officer went to the weather deck with the bosun to investigate. They found that bays 18, 54 and 58 had collapsed. It was later determined that 137 containers had been lost overboard and 85 damaged.

The official investigation found, among other things, that:

- It is likely that the forces generated when the vessel rolled 20° to port and starboard initiated the collapse of the container stows at bays 18, 54 and 58.
- The amplitude of the ship's rolling exceeded the limits set by the company for the class of vessel.
- It is almost certain that the vessel experienced parametric rolling prior to and at the time of the container collapses.
- The Master and his bridge team were familiar with, but did not fully understand, the functionality of the ship's motion monitoring, forecasting and decision support tool. As a result, they did not appreciate the imminent risk of parametric roll.
- The cause of the collapse at bay 18 could not be determined. It is most likely that this collapse was initiated following the structural failure of one of its containers, brought about by a combination of factors including: excessive stack loads as a result of mis-stowed or overweight containers; excessive racking loads or contact between containers due to loose lashings; and/or existing damage or poor material condition of a container.

Lessons learned

- Parametric rolling is where a ship experiences larger than expected roll behaviour when the primary sea wavelength is similar to the ship's length with either:
  1. the wave crest amidships and the bow and stern in wave troughs.
  2. the ship is supported by a crest at the bow and stern with the trough amidships.
- IMO guidance suggests that parametric rolling may occur when either the period of roll equals the period of encounter, or the period of encounter is approximately half the roll period.
- The risk of parametric roll in a following sea is very sensitive to minor changes in the relative direction of the sea. Large container ships are particularly vulnerable to parametric rolling due to their length and fine hull form.
- If you work on a vessel equipped with a motion monitoring, forecasting and decision support tool, ensure you are fully conversant with its functionalities.

MARS 202034

Sudden movement causes load to swing

As edited from IMO Lessons learned III-5, No 17

➔ A general cargo vessel was loading heavy stainless steel pipe bundles with its own cranes. During this time, and unknown to crew or stevedores, the underside of the vessel's midships fenders caught on the top of the wharf fenders. As the tide fell and the vessel's draft increased due to loading, the forces between the two fender systems increased. Suddenly, the ship's fenders and the wharf fenders released from one another causing the vessel to roll.

The sudden and unforeseen release of energy and the movement of the vessel caused the suspended pipe load to swing uncontrollably in the vessel's cargo hold. As the load swung it caught three stevedores in the hold, crushing them between the suspended load and the side wall of the vessel. Two stevedores died as a result and one was seriously injured.

Lessons learned

- Close attention should be given to mooring lines and ship-shore interfaces at all times but especially while working cargo and when tides are present. It would not be unreasonable to undertake hourly rounds.

MARS 202035

Anchor lost in heavy winds

➔ A tanker in ballast dropped anchor and six shackles of chain in the early evening to await a berth for loading. Winds were force 4, but stronger winds were forecast so the main engines were kept on standby. Early the next morning, with winds now gusting to force 6-7, the OOW deduced that they were dragging anchor as the vessel had departed its swing circle. The anchor party mustered on the foredeck, but by the time they had done so, the vessel had already reached a speed of about 2.8 knots.

Once at the anchor station, the personnel realised that the vessel was not dragging anchor, but that the anchor had been lost. The main engine was engaged and the vessel was able to safely make its way out of the anchorage.

Lessons learned

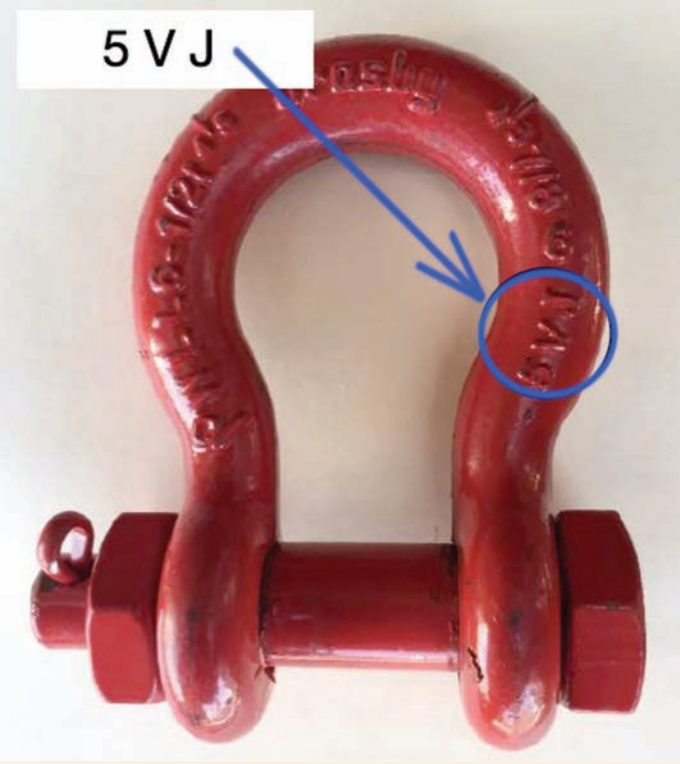
- Anchors and associated gear are for holding ships in light to moderate weather conditions. For more adverse weather, drifting or slow steaming (hove-to) would be the safer option.
- Vessels in ballast are particularly vulnerable to wind effects. This should be considered when anchoring.
- Information concerning loads on anchor systems can be found at https://www.ocimf.org/publications/tools/anchoring-systems-environmental-load-calculator

MARS 202036

Defective shackles

As edited from Crosby Group Safety Notice November 2018

➔ The Crosby Group has determined that certain shackles have a condition that can reduce the ultimate load capacity from the published catalogue values. Continued use of these shackles may result in unexpected failure. These products are 7/8" 6.5t shackles with Production Identification Code 5VJ, as illustrated below. These products should be taken out of service immediately.



MARS 202037

Fatal fall from ladder

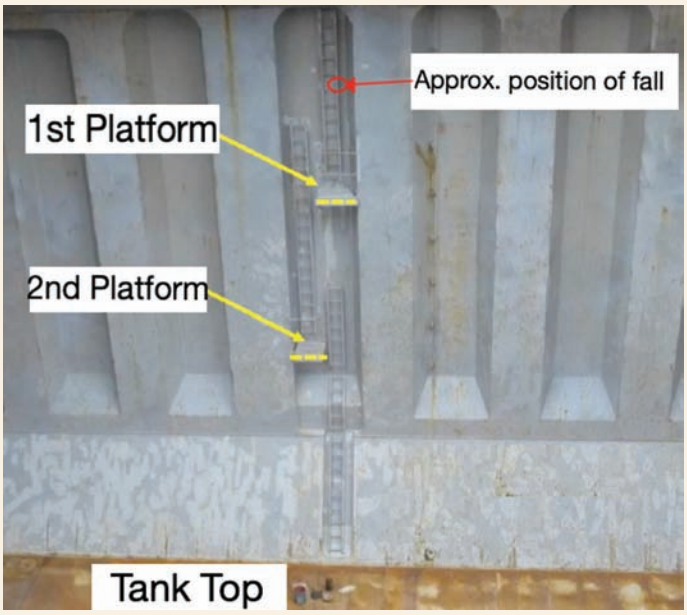
As edited from official Transport Safety Investigation Bureau (Singapore) MIB/MAI/CAS.008

➔ A bulk carrier was underway. The vessel was in ballast and hold washing was scheduled in preparation for taking the next cargo. An officer, bosun and another deck crew conducted a risk assessment for cargo hold washing operations, as required by the shipping company's SMS. The risk assessment was approved by the Master, and the officer conveyed the contents of the risk assessment to the other members of the washing team.

The washing team completed the cleaning of holds one and two by the end of the first day without incident. The next day, washing of hold three was commenced. A crew member standing on the first platform started climbing up the vertical ladder to reach the main deck. He slipped and fell to the bottom of the cargo hold, about 12 metres below.

An emergency team was quickly mustered to help the victim, who was conscious but complained of severe abdominal pain and difficulty breathing. The victim was evacuated from the cargo hold on a stretcher using the ship's crane and transferred to the ship's infirmary. He was placed under constant observation and his medical condition was monitored and recorded. About six hours later, all vital signs were absent and he was declared deceased.

The investigation found that there was no securing arrangement to which to fasten a safety harness lifeline. Because of this, it was common practice for the crew to climb up and down the ladder without securing the safety harness lifeline to any point and without any fall arresting device. A damp and wet cargo hold, wet gloves and a ladder slippery with seawater from the wash were probably contributing factors to the fall. The risk assessment carried out for cargo hold washing operations did not identify the risk of falling from height during climbing up or down the vertical ladder.



Lessons learned

- As is often the case, hazards remain in plain sight but go unseen by crew who have become desensitised to them. In this case it was accepted practice to climb up and down the hold ladder, which was not fitted with a cage, without fall arrest or safety lines.
- Another indicator of this particular fall hazard going unseen by crew: the hold washing risk assessment did not mention this risk.

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AMCOL
www.amcol.ac.th

BMT Surveys
www.bmtsurveys.com

Britannia P&I Club
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Caledonian MacBrayne
www.calmac.co.uk

City of Glasgow College
www.cityofglasgowcollege.ac.uk

Carnival Corporation
www.carnivalcorp.com

Chevron Shipping
www.chevron.com

Commissioners of Irish Lights
www.cil.ie

Constanta Maritime University
www.cmu-edu.eu

Constellation Marine Services
http://constellationms.com

Epsco Cyrpus
www.epscocy.com

Everard

Exmar
www.exmar.be

Gard
www.gard.no

GigaMare
https://www.gigamare.com/

The Gdynia Maritime School
http://morska.edu.pl/en

GNS
www.globalnavigationsolutions.com

HC Maritime Consulting Pty Ltd
www.hcmaritime.com

IAMI
http://iami.info

IMAT
https://www.imat2006.it/

IMCS
www.imcs-group.com

Inmarsat
https://www.inmarsat.com

International Salvage Union
www.marine-salvage.com

KASI GROUP
www.kasimalaysia.com

K. C. Lyrintzis Group

Lodestar
www.lodestar-marine.com

LOC Group
http://loc-group.com

Louis Dreyfus Armateurs
www.lda.fr

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

Marlins
https://marlins.co.uk/

Martech Polar
http://martechpolar.com/

Menezes & Associates
www.menezesandassociates.com

MES
www.myanmarexcellentstars.com

MOL Marine Co., Ltd.
www.molmc.co.jp

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

Pacific Basin

PHRS
www.phrs.gr

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

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

IHS Safety at Sea
http://magazines.ihs.com

Seagull Maritime AS
www.seagull.no

SDT
www.sdtultrasound.com

The Standard Club
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Steamship Mutual
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