IMCA Safety Flashes summarise key safety matters and incidents, allowing lessons to be more easily learnt for the benefit of all. The effectiveness of the IMCA Safety Flash system depends on members sharing information and so avoiding repeat incidents. Please consider adding **safetyreports@imca-int.com** to your internal distribution list for safety alerts or manually submitting information on incidents you consider may be relevant. All information is anonymised or sanitised, as appropriate.

1 BSEE/USCG: Dealing with extreme weather events

The United States Coastguard (USCG) and Bureau of Safety and Environmental Enforcement (BSEE) have each published a joint Safety Alert relating to the reasons for a drillship's unsuccessful attempts to avoid a hurricane.

What happened

The Joint Safety Alert addresses an extreme weather event involving a Mobile Offshore Drilling Unit (MODU) conducting well operations in the Gulf of Mexico. The MODU, with 115 personnel onboard, lost 11 marine riser joints and a lower marine riser package (LMRP) and polluted the Gulf of Mexico with 88 barrels of miscellaneous fluids in its failed attempt to evacuate the area and evade Hurricane Ida.

The BSEE investigation concluded that:

(image: Marine Insight)

- The operator and contractor representatives failed to promptly start Temporary Abandonment (TA) procedures. The temporary abandonment was delayed as the operator and contractor jointly decided to conduct a crew change during an operation and reduced staffing and time constraints;
- Over-torqued bolts and equipment breakdowns prevented the drill crew from retrieving the marine riser and LMRP, causing further delays;
- The MODU's Master stopped work so the crew could make storm preparations, such as placing covers on riser hatches. The Master and marine crew maneuvered the MODU with 12 riser joints and LMRP still hanging under the moonpool at speeds between 1 and 3.5 knots. Still, they could not evade Category 2+ hurricane-force wind and high/rough seas. The riser subsequently broke just below the rotary sending 11 riser joints and LMRP to the seafloor.

The Coast Guard and BSEE have issued the Safety Alert jointly to highlight the importance of risk-based operational planning and preparation when addressing extreme weather events. Among the recommendations offered by the USCG and BSEE are:

- Ensure all considerations and associated risks are documented and discussed with the operations team;
- Determine a "decision time" to act in the face of an extreme weather event. The decision to continue operations should not depend on a forecast track to the asset location. Don't wait on a definitive weather forecast to react;
- Document contingencies for when extreme weather conditions cannot be evaded or when evacuation is impossible. Ensure Hurricane Plans or Extreme Weather Plans are up to date; identify search and rescue assets available to conduct a mass evacuation of personnel;

- Review Extreme Weather Plans before hurricane season to verify which plan takes precedence and reflects actual company operations and practices. Also, discuss documents with involved personnel, and identify and correct any training gaps.

Members may wish to refer to:

- USCG: Unexpected heavy weather dangers
- NTSB: The sinking of the El Faro – an illustrated digest
- Serious incidents involving the weather

2 American P&I Club: Extreme bollard pull

The American P&I Club, as part of it's "Good Catch" safety series, has published learnings from an incident where bollards were pulled right out of the ground of the dock by the vessel.

What happened

A large container vessel had just begun cargo operations. Approximately two hours later, the bollard holding the bow lines was pulled out of the dock. At the time of the bollard failure, the wind was mild, and the current was minimal. The bow of the vessel swung outboard slightly, and the stern swung into the dock. The stern of the vessel contacted the fendering system but neither the vessel nor the fenders were damaged. There were no injuries nor damage to the vessel. The repair to the bollard exceeded $37,000.

What went right?

The forward spring lines held and stopped the swing of the vessel after the bollard failure. The crew was subsequently able to resecure the bow lines to different bollards.

What went wrong?

Upon investigation, the four bow lines from the vessel had all been attached to the same bollard, the one that failed. The two forward spring lines were both attached to a different bollard. The two aft spring lines were both attached to yet another bollard. The four stern lines were paired to two different bollards astern of the vessel.

The normal practice of the crew was to place no more than two mooring lines on each bollard, but the pilot and line handlers had attached all four to the same bollard because a container crane was partially blocking access to the next bollard forward that would have otherwise been used.
Some of the bolts attaching the bollard to the dock had sheared and some of the bolts were pulled out of the mounting intact. Each of the four bow lines was on a self-tensioning mooring winch. The combined load of the four winches together exceeded the bollard's rated load.

Actions

- Do not overload bollards with multiple mooring lines. If the load capacities of the bollards are not known, find out, and then adjust the mooring plan accordingly so the bollards will not be overloaded;
- Management of Change:
  - When deviating from a normal mooring practice such as only putting two mooring lines on a bollard, the specific risk of overloading a bollard should be evaluated based on the capacity of the bollard, the number of mooring lines that will be placed on that bollard, and the settings on the self-tensioning winches;

- If cranes or other dockside equipment block access to bollards that would normally be used, or if bollards that would normally be used are already being used by other vessels, the options should be discussed, and the risks should be identified and assessed before proceeding.

Members may wish to refer to:

- Mooring incidents video
- Mooring practice safety guidance for offshore vessels when alongside in ports and harbours
- USCG: bollard failures at marine facilities
- Corrosion: failure of bolts on a cargo barge bollard

3 Lost Time Injuries due to a failed mooring line

Applicable Life Saving Rule(s)

Line of Fire

What happened?

A vessel was mobilising and was moored stern to the quayside. It was moored with one aft mooring rope at each side and thruster control from the vessel, to maintain position while the load-out operations were carried out. During a pause in the work, three crew members were gathered at the stern of the vessel discussing the next part of the job, when the port aft mooring line failed. The line 'snapped back', striking and injuring two of them. They were taken to hospital.

The incident resulted in two LTIs, in which the injured persons were off work for over three days. One person suffered severe concussion at the scene (was awake but confused) and needed four stitches on the ear and experienced muscle pain in neck. The other person suffered muscle pain in the back and neck and dizziness in the days after the incident.

The incident was considered high potential as it could have resulted in more severe injuries including at least one fatality.

What went wrong

- The mooring line failed as a combination of several factors described below;
- The stern to berth mooring was not covered by the Risk Assessment for the mobilisation.

What were the causes

The following causes all contributed to the incident:

- It was believed that the right amount of thrust was being applied to the vessel by the bridge team;
- There was friction on the rope from the rail on the quayside;
- The crew involved thought they were standing in a safe area;
- The length of the port aft mooring line had been shortened to take up the slack;
- It was easier (less work, more convenient) to moor via the dolly rather than the Panama fair lead.

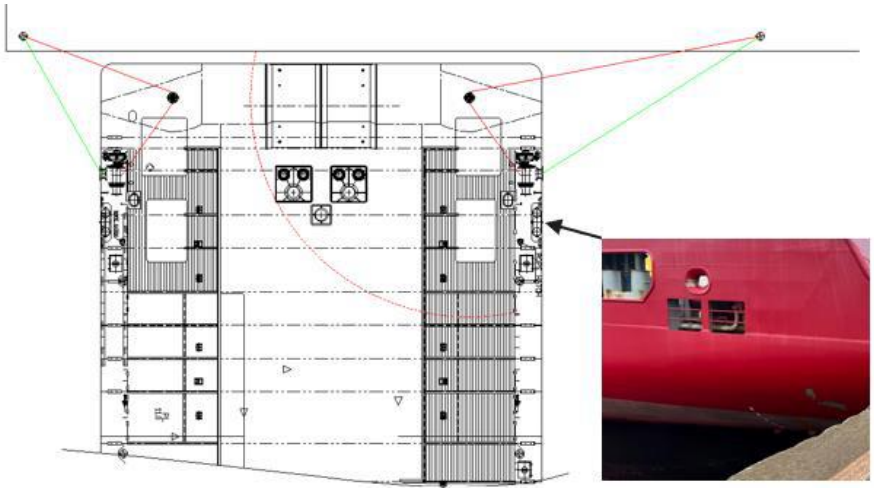
Lessons learned

- Upgrade CCTV cameras used for monitoring the mooring lines with cameras with better resolution, and if possible, with zoom capability, to improve the visual overview presented to the bridge team;
- There should be risk assessments to cover the safest means of stern to quay mooring including:
  - suitability of quay facilities and mooring arrangements for future loading of mooring spread
  - identification of snap back areas and ensuring personnel are aware of these areas (line of fire)
  - use of protection for mooring lines
  - Use of gangway.

- Decide which mooring line protection materials will be needed and provide a supply of these on the vessels (NB use of protection will be determined by risk assessment).

Our member took the following actions

- Ensure that the stern to berth mooring operation is fully and suitably risk assessed to cover all relevant scenarios;
- When arrangement on quayside allows, route the mooring line directly to chock on hull side (green line) instead of over guide roller on the stern (red line) to avoid line of fire/snapback zone on working deck. (see illustration)



Members may wish to refer to:

- Swedish Club: Lessons learned – crew member loses leg in mooring injury
- Dutch Safety Board: fatality when mooring line snapped
- Mooring line failure resulting in serious injury
- Lost time injury (LTI) during mooring operations

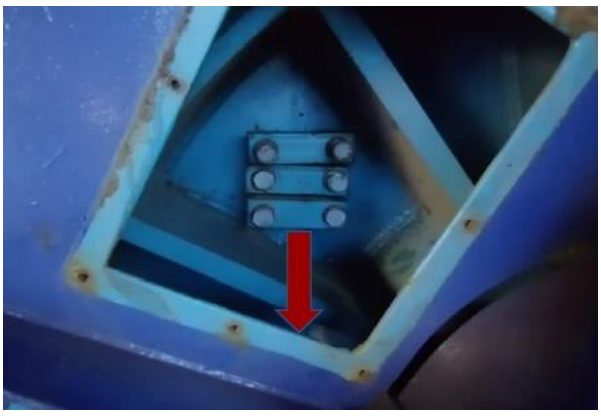
4 LTI – Struck when anchor wire end pulled free of drum clamps

Applicable Life Saving Rule(s)

Line of Fire

What happened?

A person was seriously injured when he was struck by the end of a 58mm anchor wire. The incident occurred when crew were working on replacing out several 58mm anchor wires. The injured person was walking behind an anchor winch which had a single turn of wire remaining on it. The vessel moved off the quay. Tension came on the wire, which was connected to a spooler ashore. The stoppers in use failed, and the wire end pulled free of the already loosened clamps, whipping over the drum. He was struck across the shoulders/lower neck and suffered several skull fractures when he was pushed into an adjacent bulkhead by the impact, before falling to the deck semi-conscious.



What went right?

- The crew had safely replaced three of the 58mm wires over the previous five days without incident;
- The first aid and subsequent hospital care were excellent, and the injured person left hospital three days later with no lasting ill effects.

What went wrong?

- A generic 'mooring operations' risk assessment was being used. Toolbox Talks had been conducted and documented, but these were based around a clearly inadequate risk assessment (and nobody questioned it during the TBT);
- The stopper arrangement was inadequate. Wires must only ever be stoppered to a suitable strong point using chain stoppers, as detailed in the Code of safe working practices for merchant seafarers (COSWP) 2021;
- Safety chains had not been deployed behind the winch. At that stage of the operation, there was a 'Line of Fire' hazard (an alternative route would only have taken about twenty seconds more);
- Insufficient attention was being paid to the tension on the wire by the spooler operators;
- Perceived time pressures and fatigue may also have been factors.

Lessons learned

- More thorough planning and more thorough risk assessment would have eliminated most of the several factors which contributed to this incident.
- Adequate time and resources should be allowed in operational plans to allow for effective risk assessment; both vessel crew, project crew and shore-based management have responsibilities in this respect.

Members may wish to refer to:

- Failure of 64mm polyester rope in subsea mooring operations
- Rope under tension parted on deck

5 Damage to bulwarks during overboarding of mattresses

What happened

During the overboarding of a mattress stack (3x 150mm mattresses) using a mattress frame, the mattresses made contact with the port side bulwarks causing damage. Before and during the lift, the weather conditions were suitable for the operation.

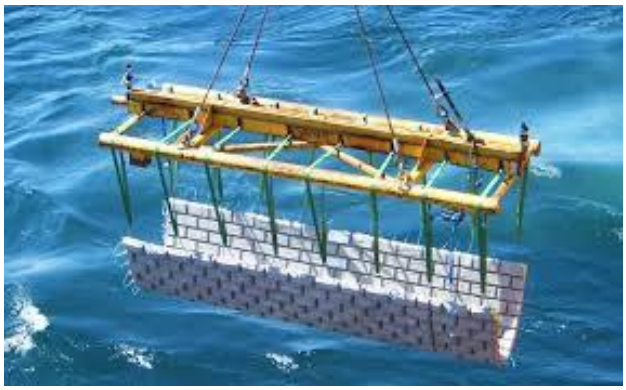


Image: subseauk.com

As the load was lifted outboard, a swell caused vessel motion which led to a pendulum effect on the mattresses. The mattresses then hit the port side bulwarks causing damage. No-one was injured.

What was the cause?

The immediate cause of the damage was that the mattress stack made contact with the port side bulwarks during vessel motion due to swell as the load was overboarded.

What went right?

The operation was conducted within defined parameters, all pre-lift planning activities were completed, tag lines for initial overboarding were used and safe personnel positioning was observed.

Actions

- Further engagement with deck crews to discuss worksite, crane / task specific challenges or difficulties they face during lifting operations. A series of “Times out for safety” were used to:
  - Present the scenario, explain that everything was done as it should have been
  - Explain the challenges associated with the lift because of deck / crane design including crane speed and limitations
  - Discuss anything the teams found challenging – with a view to proactive learning
  - Record and share as appropriate any concerns, challenges or ideas to improve things.
- Review lift plans and lift planning procedures to ensure prompts are provided to consider the limitations of the crane to be used including speed, line out, route for the lift etc.

Members may wish to refer to:

- Importance of safety by design: acoustic beacon damage in splash zone
- Mattress beam landed very close to divers