Safety Flash

04/23 – February 2023

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 High potential near miss: Uncontrollable movement of auxiliary whip line

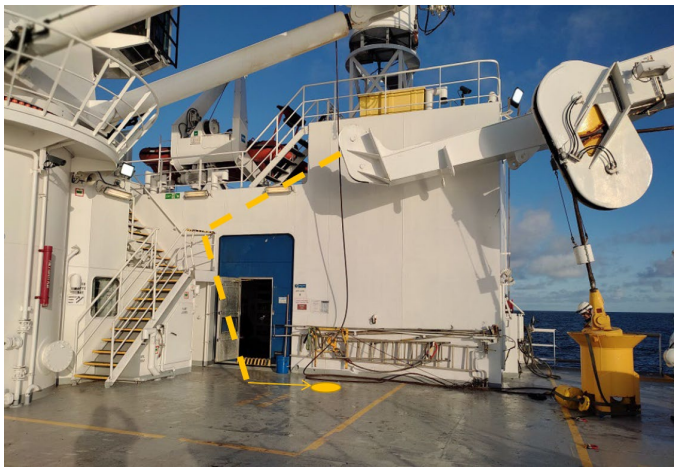
Applicable Life Saving Rule(s)

Line of Fire

Safe Mechanical Lifting

What happened

When starting up, a vessel main crane started behaving in an uncontrollable and potentially hazardous way. The block and hook were hoisted up to the sheave, when the auxiliary wire parted due to the forces applied. The block and hook were ejected forward until they hit a stair railing, approx. 4m forward of the sheave. Then the block and hook fell approx. 3m down to deck, and bounced before coming to rest. Six people were involved in the operation and found to have been at high risk had conditions been slightly different. Two crew were involved in un-hooking; three were in a nearby deck workshop with no barrier in place between them and where the block and hook landed, and the crane operator was in the crane cabin. When realizing something was wrong, the two personnel on deck quickly vacated the immediate area. No-one was harmed.



Yellow dotted line showing estimated movement of hook/block during the event

damaged hook, block & wire

What was the cause

The main crane auxiliary line encoder unit was damaged due to water ingress, and gave the wrong input to the crane, causing uncontrolled movements of the auxiliary wire as the crane was started up.

Pictures of damaged encoder

What went right

After the incident there was an “All Stop” and “time-out for Safety” held. All personnel involved took part in a debrief and were looked after by the on-board medic – in the context of emotional and mental health rather than physical injury.

What went wrong

- The door to the deck workshop was open with no barrier in place to the main deck, leaving the three persons in the workshop exposed to the risk of walking into a hazardous/line of fire area;

- There was also additional risk for personnel not part of the operation to have accidentally being hit, as there were no barriers in place at the stair from the mezzanine deck to the main deck.

What lessons were learnt?

- Barriers should have been in place to prevent personnel from accessing the area;
- Crane start up routine was not optimal leaving personnel exposed to uncontrolled movement;
- The design of the old encoder did not provide drainage possibilities. The encoder was fitted in a sealed component housing and onboard vessel crew maintenance was not permitted.

Corrective/preventative actions

- Repairs:
  - The faulty encoder was replaced with a new encoder with drain plug;
  - The crane was repaired and inspected by the crane manufacturer. In addition, an inspection by a competent and independent third-party expert was carried out;
  - A safety bucket was installed on deck for the auxiliary crane hook. This will prevent use of anchor point which will then prevent need for personnel to un-hook at crane start up.
- Procedures and risk assessments
  - The risk assessments and procedures for crane operations (including barriers) were reviewed and updated;

Members may wish to:

- Check their own lifting equipment to check for potential similarities related to crane type and encoder, such as exposure of encoder housing, degradation of unit, risk of water egress;
- Look into risks at crane start up, checking if personnel can be removed from hazard / line of fire area;
- Ensure barriers are in place to ensure personnel are kept out of line of fire zones, not only for deck operations but also for start up of crane and effects of crane failures, as applicable.

Members may wish to refer to:

- Crane whip line parted during hook stop testing *[badly corroded encoders, 2021]*
- High potential DROPS near miss: failed crane component

2 Uncertified lifting gear found in use

Applicable Life Saving Rule(s)

Bypassing Safety Controls

What happened

A number of shackles and other lifting equipment were observed in use onboard a vessel with no certification or inspection reports available. Some equipment was colour coded by the crew and deemed as being in good condition; other equipment was not included in the vessel lifting gear register, nor was it colour coded. Further investigation revealed that lifting equipment had been left onboard and not removed after the end of the previous project, on which client-supplied lifting equipment was used.

What was the cause

- Company lifting equipment inspection processes were not followed: *"Authorized competent person to conduct the lifting gear inspection process on an 6 monthly basis with further issue of inspection report";*
- Client-supplied lifting gear was not removed from vessel, nor quarantined;
- This same equipment was not presented to the vessel lifting gear inspection onboard, conducted by the lifting inspection contractor;
- There was a lack of awareness of both relevant lifting equipment regulations and of local and corporate safety management system standards.

Actions taken

- An overall check of the lifting gear and relevant equipment was initiated and all identified non-compliant equipment was quarantined;
- Onboard discussion arranged for crew to better understand:
  - There should be no use of lifting equipment unless it has been thoroughly examined, tested and certified;
  - Colour coding of lifting gear or equipment should not be applied by crew without there being a relevant certificate or inspection report available.
- All lifting equipment available on board to be presented during testing and examination provided by competent authorized party.

Members may wish to refer to:

- IMCA HSSE 019 *Guidelines for lifting operations*
- Control of sub-contractor personnel: Unplanned and uncertified lifting operations
- Near-miss: Anchoring of rigging to uncertified points

3 Dropped objects in dry dock

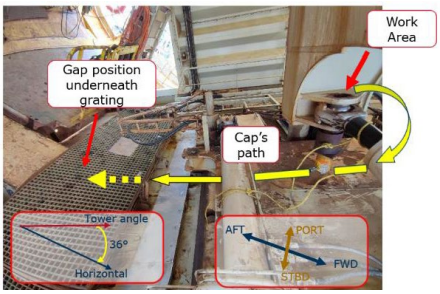
A member reports two dropped object incidents during a vessel dry-dock, both with serious injury potential.

Incident 1: **What happened?**

During a thruster overhaul, the hold-back rigging for the steering pipe failed and the pipe subsequently dropped to the dry dock bottom directly below the vessel keel. An original equipment manufacturer (OEM) was contracted to oversee the removal of a thruster pod lower gearbox, drive shaft, telescopic tube, and steering tube to allow the steering tube bearings to be removed. The rigging was installed and managed by the shipyard. To assist in the freeing of the tube the OEM lead decided to slacken the chain blocks about 18cm to aid the release of the tube. The shipyard team were unaware of this adjustment. The OEM lead gave the shipyard team instruction to release the tube which caused the tube to drop 18cm. The slack in the chain blocks enabled a shock loading on the chain blocks causing the tube to slip and fall 1.8 metres to the dock bottom.

Incident 2: **What happened?**

A hydraulic cylinder clevis pin "cap" slid from the tower during workstation maintenance and fell 14 metres into the dry dock. A team of technicians were working to remove a hydraulic cylinder on the workstation of the vessel tower. To remove the cap, seized to the cylinder pin by rust, one of them used a hammer; the cap bounced outwards and fell 40cm down onto a platform below. Due to the tower angle of 36° the cap then slid towards an uncovered gap and fell to the dock bottom. A



Path of 1.1 kg cylinder pin cap

third-party work team were in the dock bottom near to where the dropped cap landed.

What went wrong – findings

In both incidents, aspects of the work were not considered or assessed within Task Risk Assessments (TRA), Permit to Work and Tool-Box Talk discussions. There was insufficient consideration of:

- Changes occurring to the worksite;
- Crew working on different levels – this was not identified as presenting a DROPS risks;
- Third-party crew being allowed on the dock bottom without complete notification;
- Precautions specified in a permit to work not being followed;
- The OEM personnel were working beyond agreed authority levels.

The activities in both incidents were subject to Safety Management System interface between the shipyard and the OEM. The dry dock project team and vessel management team were following the Control of Work process to manage these interfaces and determine the required controls and supervision to manage several simultaneous operations (SIMOPS). This is a common aspect of shipyard/dry dock activities.

Lessons learned

- Ensure appropriately controlled safety barriers are maintained to provide adequate protection and prevent an incident;
- Ensure pre-job planning and risk assessment is robust enough, detailed enough and specific enough for the task in hand, and that sufficient familiarization time is allowed for those involved. Non-routine activities such as dry docks should be subject to greater focus on hazards and risks;
- Ensure and confirm that there are robust interface arrangements in place and understood between all the different parties in a dry dock or shipyard situation. This should include the yard, OEMs and third-party contractors, vessel management and project team;
- Ensure there are regular Control of Work meetings to communicate and control all activities at the site. These are a necessary and effective means to confirm the robustness and accuracy of the safety management system and ensure things are done safely;
- Ensure you know the procedures for the job you are doing. If you need to go through the procedure again with the team, take the time to do so. Check that everyone clearly understands their role and responsibility within the planned activity;
- Anyone in doubt should stop and *take the time to think and talk it through* with the team.

Members may wish to refer to:

- IMCA HSSE 032 *Guidance on safety in shipyards*
- IMCA M 203 *Guidance on simultaneous operations (SIMOPS)*
- Dropped object fell from crane – Poor communication/lack of awareness/control of work
- Electrician suffered flash burn to hand *[A third-party electrician on a vessel in dry dock]*
- SIMOPS – Smoke from hot work task enters confined space *[on a vessel in dry dock]*

4 Air hose connection failure

What happened

An air supply hose on an air-driven tugger winch snapped out under pressure from the cam lock adapter. A main deck air-driven tugger winch supplied through a 5cm air hose with a nominal pressure of 8 bar was connected by a cam lock coupling to the winch. This arrangement had been in place for several months. Shortly after using the winch the supply hose ejected from the cam lock adapter.

What went right

When the crew heard the noise from the air in the tugger winch area, the air supply to the tugger was immediately turned off. There were no crew members nearby; no-one was injured.

What went wrong

- The wrong type of adapter had been installed on the air hose. Why this was, could not be determined;
- Investigators assumed that the final check to ensure that the work equipment could be operated safely had been not performed properly, since a pre-use visual check should have highlighted the issue;
- The “male thread” adapter was inserted inside the hose and had been tightened by a hose clamp using a “homemade” connection;
- Whip checks, also known as safety whiplash arresters, to prevent serious injury from hose or coupling failure were in place, but not installed correctly;
- A company internal safe use of work equipment assessment checklist had not been used and filled in as required;
- There was inadequate maintenance, control and supervision on materials and equipment used.

Actions taken

- The crew installed the correct type of coupling as an immediate corrective measure;
- Install “hose barb” type cam lock adapters according to the manufacturer hose couplings and accessories specifications;
- Always use whip checks at each hose connection and from equipment to hose to prevent serious injury from a hose or coupling failure;
- Ensure regular, adequately resourced, and planned maintenance of equipment;
- Re-emphasise the hazards of stored pressure.

Members may wish to refer to:

- Hydraulic Oil Leak to Sea from Downline Fitting
- BSEE: Unsecured Pressurized Hoses Result in Hand Injuries
- Failure of high pressure fitting (2005)

5 Electrolytic corrosion: failure of fire hose couplings

What happened

During routine pressure/leak testing, a fire hose fitting failed at the neck of the stub inserted into the hose. As part of annual testing of the fire hydrant hoses, two crew were assigned to conduct leak testing of the main deck fire hoses. A Number 3 hose (20m x 52mm (2")) was connected to a fire hydrant valve and nozzle and visual inspections of the hose and valve conducted prior to testing. During the test it was noted that one end of the fire hose had disconnected. The test was stopped, and further investigation was conducted.

What went wrong

Electrolytic corrosion. Initial investigation indicated that this hose appeared to be of a different type from most of the hoses onboard which were made up with an aluminium 'floating' flange. This hose had a Storz 'C' coupling, which was thought to have flanges fixed to the hose neck. Removal of the rubber sleeve covering the seizing wire revealed conventional Monel seizing wire, and indications were present that water had been retained in the fabric outer sleeve under the rubber sleeve.

Inside the coupling, a steel retaining ring was found buried in the powdery aluminium oxides, confirming that the coupling was in fact the same as the others onboard. But due to corrosion, the floating part was tightly seized on the hose barb shaft.

Damage to failed fire hose coupling

Second end of hose, fitting in similar condition

Investigation of the coupling from the other end of the hose showed no immediate signs of concern. However, there were some small pitting marks evident on the inside of the hose neck and removal of the rubber sleeve showed more indications of corrosion. Attempts to free off the floating flange caused the fitting to fail. It was also noted that corrosion was almost as advanced on this coupling as on the fitting which failed.

Actions taken

- Examine existing fire hose couplings for corrosion, seized floating flanges, and any inability to rotate freely;
- If replacement is required, ensure appropriate fittings are specified – brass may be preferred over aluminium;
- Ensure planned maintenance systems cover appropriate detail for the inspection of fire hose fittings, with specific reference to examination for corrosion;
- Ensure that all personnel involved in the day to day use and maintenance of fire hoses are briefed on the potential issue of electrolytic corrosion.

Members may wish to refer to:

- Corrosion damage: Failed fire hydrant
- Flood light dropped to deck – corrosion
- Galvanic corrosion causes dropped object – satellite dome fell from mast