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 Unexpected Descent and Ascent of Mattress Lifting Frame

Applicable Life Saving Rule(s)

Safe Mechanical Lifting

What happened?

A subsea load close to working divers started moving with no intervention from the crane operator. The incident occurred during movement of concrete mattresses using a mattress handling frame and the Main Crane. The frame was held with the vessel crane set-up in Active Heave Compensation (AHC) mode, at approximately 3m above seabed. Divers were in the process of reconnecting the hooks to the mattress handling frame ahead of recovery to deck when the frame was seen to descend to 1m depth above seabed. An “all stop”, followed by a “come up on the crane” command was issued and within 3 seconds of the command the frame was observed to ascend at an unexpected rate back to its original position approx. 3m above seabed *without crane operator input on the joystick*. Both Diver 1 and Diver 2 were in close proximity to the frame just before it ascended. There were no injuries nor damage to equipment or subsea assets.

Position 1 – Frame at lowest point

Position 2 – Frame during ascent

Position 3 – Frame at end position

What went wrong

- The crane software design was such that pressing the controller lock when in AHC mode, had an unintended impact on winch motor displacement control. Engaging controller lock caused the load to slowly creep/pay out without joystick input. Disengaging controller lock caused the load to abruptly pay in and return to its original position;
- This software interaction was not amended through update/patching of the software when it was first identified, as it was considered to be controlled sufficiently through a Crane Operating Manual update only;
- There was a failure of the document control process for the Crane Operating Manual, such that obsolete revisions were in circulation and available for use - an incorrect revision of the manual was issued to the new Crane Operator. This revision advised that Controller Lock can be used when in AHC and that the load will remain stationary (subsequent revisions of the Manual highlight that it should not be used in AHC due to it causing abrupt movement);
- The familiarisation process did not trigger a discussion about known operating sensitivities, defects, or differences in the on-board crane systems from those the new operator may be familiar with.

What were the causes?

Our member drew the following conclusions regarding causes:

- Immediate cause – use of the controller lock function whilst operating in AHC mode;
- Underlying causes:
  - Unintended consequences of crane software design which had not been “patched” or updated;
  - Incorrect version of the Operating Manual issued to the Crane Operator;
  - Familiarisation did not inform Crane Operator not to use the controller lock function.
- Root causes:
  - Technical: System / software interaction issue;
  - Organisational: Deficiency in document control – resulted in obsolete revisions being in circulation and given to Crane Operator;
  - People: Decision making – matter was previously identified but considered to be controlled sufficiently by Crane Manual update only.

Lessons and actions

- Proper control of Operating Manual revisions to ensure that the latest revisions are in circulation and available for use, with obsolete revisions removed from service;
- Review and update familiarisation/handover process to include additional items to trigger discussion between new Operators and verifiers about operating sensitivities, known anomalies or system differences;
- Where there is a known mechanical and or procedural gap, ensure it is highlighted and addressed immediately to eliminate the issue. Ensure all on-signing Crane Operators are briefed on the incident, the causal factors and corrective/preventive measures;
- Installation of button flip-cover over Controller Lock function and additional signage to be placed within the Crane Cabin.

Members may wish to refer to

- Heave compensation software anomaly
- Near miss: divers umbilical drawn beneath a load
- Crane motion reference unit (MRU) malfunctions after overheating
- Uncontrolled release of walk to work gangway

2 High potential: dropped chain assembly

Applicable Life Saving Rule(s)

Line of Fire

Safe Mechanical Lifting

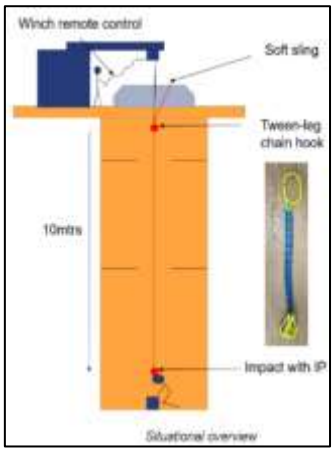
What happened

A chain assembly weighing 2.3kg fell 10m to deck, just glancing the helmet but potentially causing fatal injuries to a worker below. The incident occurred during lowering of a two-legged chain and a soft sling. The sling was flapping around due to the wind (9 m/s) and got caught on a railing. The hook flipped upside down and the master link of two legged chain was released from the hook. Consequently the chain fell 10 meters, grazing the helmet of the person working below. The person was shocked but otherwise unharmed.

What went wrong?

- The lifting technique was not correct: The fibre of the soft sling was caught in between the hook and latch preventing the safety mechanism from locking;
- People were in unsafe positions:
  - The person with the remote control on the external platform did not have view of the load he was lowering;

  - The worker was working within the lifting area under the load when the chain and sling was being lowered.
- Insufficient communication: There was no communication between the two work areas when the chain assembly was being lowered.



Lessons learned

- Always check the lifting accessories are placed correctly in the hook;
- Ensure there are no people under the load – including the rigging itself which is also to be considered a load;
- Always keep an eye on the lift.
- Communicate lifts and inform team members on restricted areas;
- Does the crew have sufficient experience to perform the given tasks safely?
- Supervise less experienced colleagues;
- Follow the Life Saving Rules; wear PPE.

Sling preventing proper closing of the hook

Members may wish to refer to:

- IMCA DROPS videos:
  - Technip DROPS
  - Saipem DROPS – choice not chance
  - DROPS *[shared by Subsea 7]*
- High potential dropped object – chains
- High potential near miss: dropped object from turbine tower
- Grease itself is a dropped object!

3 Electrocution incident – make sure electrical equipment is safe!

What happened

Applicable Life Saving Rule(s)

Energy Isolation

A vessel cook received a mains electric shock when he simultaneously touched a metal bain-marie (the metal electrically heated serving containers commonly used in messrooms) **AND** the messroom service window with both of his hands.

The cook received first aid onboard; the incident was classified as a high potential near miss.

Bain-marie in galley

Position of cook's hands when shock received

Showing earth fault of the electrical heating element

What was the cause?

- There was an earth fault in the electric heater element of the bain-marie due to a detached earthing wire;
- There had been no recent testing or maintenance of the galley electrical system;

Additionally it was found that

- There was no planned maintenance schedule for inspection of galley equipment;
- Onboard Risk Assessment for use of portable and other electrical equipment did not include PAT (Portable Appliance Testing) of Galley electrical equipment.

Actions taken

- Thorough inspection for and removal of, any damaged or deteriorated electrical equipment;
- Arranged unscheduled test of all stationary and portable electrical equipment on board vessels fleetwide;
- Added galley electrical equipment inspection and maintenance to planned maintenance system;
- Updated Onboard Risk Assessment for use of portable and other electrical equipment on board to include equipment in the galley and the mess.

Mains electrical safety may be more easily overlooked in areas such as the galley, the mess, the accommodation and on the bridge. The risks involved in improperly maintained electrical equipment are further illustrated in this news story here from 2014 in which a young person was killed in her home: insulation around a mains extension cable had become worn, and a live wire was exposed, causing her death by electrocution.

Members may wish to refer to:

- Galley electric shock – uncontrolled portable electrical equipment
- Near-miss: Exposed live electrical cable
- Electrician received electric shock from a bare cable
- Smouldering coiled extension cable
- Electrical shock from containerised portable office
- Short video: *Electrical hazards*

4 Near miss with high pressure gas due to incorrect procedures

What happened

A crew narrowly avoided potentially serious problems with a high pressure gas supply by **stopping and thinking things through**. The near miss occurred whilst a crew were setting up for pigging of high pressure gas mains lines. A change to the flow configuration on two high-pressure gas mains to test flow rate was required; on the second to last step of the procedure, they closed a valve at the valve set.

Since one employee was unfamiliar with the location because it was not in their work area, they questioned the operator at the location to clarify what closing the valve actually did to the system flow. After a brief conversation they realized that closing the valve would actually isolate the pipeline and prevent the flow of gas to a downstream valve set that they were intending to flow to.

Work was stopped immediately and the valve returned to its normal position.

What went right

After returning the valve to normal position, all parties involved at the location reviewed the procedure and figured out what went wrong. They discovered that the procedure was written using an old drawing of the valve set and did not represent the current valve configuration.

At that point all work was stopped, and valve sets were returned to normal until the procedure was updated using the correct drawings for the site.

Had they continued with following the incorrect and outdated procedure, they would have caused a compressor station to trip on low suction and possibly created other downstream supply issues.

Members may wish to refer to:

- Incorrect as-built drawing configuration
- Live sub-surface power cable inadvertently cut
- Equipment found live: drawings incorrect for Lock-out/Tag-out

5 MSF: person injured falling between decks

The Marine Safety Forum (MSF) has published Safety Alert 23-06 relating to someone who fell 2m between decks on an AHTS (Anchor handling vessel) alongside in port.

What happened

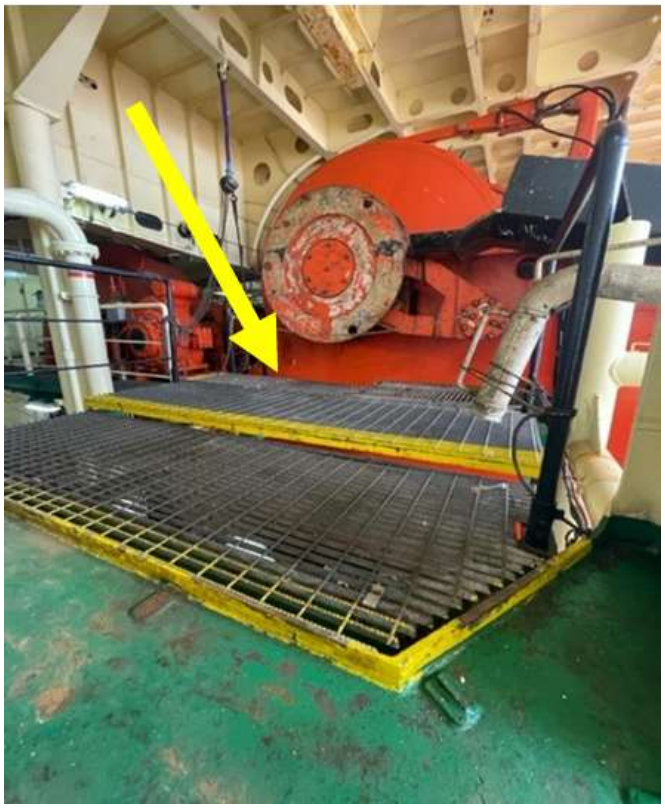
The injured person fell approximately 2m from A-deck to the port chain chute on the main deck. The injured person was conscious but disoriented and had a small cut to the head. First aid was given and the person was transferred to hospital. The injured person suffered one broken vertebrae, several broken ribs, a fractured wrist, a cut to the back of the head and internal bruising to the kidneys.

Findings

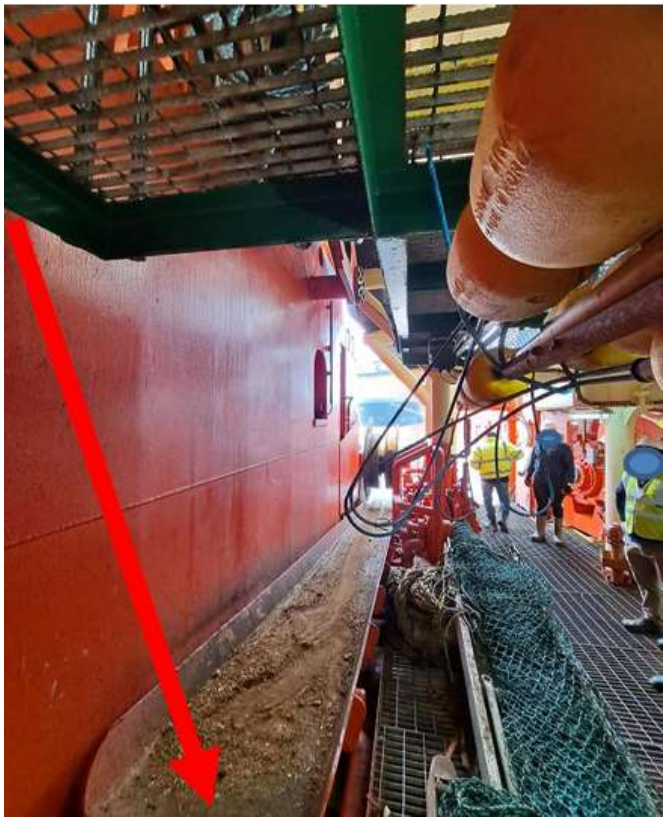
Inspection of A-deck found that the safety chain was not in place. Safety chain could not be confirmed to be in place as it was found in the down position with a link missing. A carabiner was still in place at one end and a welded link in place on the other. Missing link on welded end could not be located.

The MSF report also notes the following:

- The injured person - an experienced (30 years offshore) client's representative - was fully rested prior to the Incident and was not distracted at the time;
- The injured person was off duty at the time and had proceeded to the winch hanger to check on activity on deck and have a cigarette, use his mobile phone, and return to his cabin;
- The grating on A-deck has a raised edge approximately 76mm high that is highlighted with yellow paint. The injured person may have tripped over it. As he was "off shift" no PPE was being worn;
- It could not be determined if the safety chain at the edge of the deck grating was actually in place prior to the incident.



'A' deck showing the area around the gypsy and grating walkway including different levels highlighted by yellow paint. The yellow arrow denotes the space in which the IP fell between winch gypsy and grating.



Main deck showing chute where IP landed from the grating above (height of approximately 2m). Red arrow depicts the drop zone and area where IP landed.

Actions

- Improved barriers to be installed around port and starboard gypsies;
- Update Shipboard/Contractor Familiarisations and Inductions to include identification of restricted and working areas;
- Replace all chain barriers with gates or solid railings. All restricted/working areas to be identified and signage posted. Temporary chain barriers and signage were put in place as a short term measure until solid hand rails could be fabricated and fitted;
- Install barriers and signage to clearly identify working areas.

Members may wish to refer to:

- Slips, trips and falls – raising awareness
- Man overboard incident (not fatal)