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 LTI Incident – Crew Struck by Cargo During Lifting Operations

What happened

During routine cargo operation on the main deck, crew were unlashing the load (an empty pipe container) when the crane operator lifted the load without warning. One crewman was struck in the chest and flung backwards approximately a metre.

Applicable Life Saving Rule:


Bypassing Safety Controls


Line of Fire


Safe Mechanical Lifting

The situation was made worse as immediate medical attention could not be provided because the load became stuck between containers. Once the load was lifted away the injured person was moved to a safe area and provided with medical attention and medevac was arranged by chopper to hospital for further treatment.

Injured person attempting to unhook load

Injured person instructing crane operator to lower the boom

Crane suddenly lifted load striking the injured person in the chest

What went wrong?

- The crane operator did not follow the instructions of the vessel lifting team;
- The injured crew member was in the line of fire during lifting operations;
- The vessel cargo plan not followed;
- Neither the other crew members or the crane operator thought to stop the job and use their Stop Work Authority.

Actions/lessons learned

- Immediate Stand Down for Safety and discuss the importance of crew members staying out of the line of fire during lifting operations;
- Reiteration of importance of Stop Work Authority which should be implemented if:
  - Crew see incorrect procedures being used or people working in unsafe manner

- Unsafe conditions are observed in the work area
- Crew are seen standing in a dangerous position

- Lifting operations should not be conducted unless clear communication channels are in place between crane operator and lifting team.

Members may wish to refer to

- LTI: Finger Injury During Lifting Operations
- Uncontrolled Movement Of Crane Block And Pennant During Lifting Operations At Sea
- LTI: leg fractured while loading tubulars

Members may also wish to refer to

- IMCA *Guidelines for lifting operations*
- *Line of fire* ('Be prepared to work safely' video)
- *In the line of fire* (IMCA SEL 036, classic safety video)

For more information, please contact @imca-int.com

2 Serious LTI - deck crew member struck by termination head/flexible

What happened

During a flexible jumper installation operation, the 1st end termination head had been transferred over the Open Vertical Laying System and deployed through the vessel moonpool ready to initiate laydown. The rigging crew was unpacking the 2nd end termination head (3Te) from the reel in order to lower it onto a deck trolley (Fig.2). The 2nd termination head was secured to the reel by 8 off rigging assemblies, each consisting of a round sling and a lever hoist. Each lever hoist was secured to the reel by a combination of chains, wires and round slings.

Applicable Life Saving Rule:

Line of Fire

The rigging team were removing plastic protection when the termination head suddenly moved downwards approximately 0.15 to 0.5 m, causing the termination head jumper to swing in towards the reel cradle. The injured party was struck by the jumper and squeezed towards the reel cradle and sustained life threatening injuries. He was med-evaced to the onshore medical facilities for immediate care.

Fig. 1 - Image from CCTV 15s before the incident

Fig. 2 - View looking forward (post incident)

What went wrong?

- The sudden downward movement of the 2nd end termination head is believed to have been caused by slippage and reorganization of the rigging securing the termination head to the reel;
- Drawings and procedure did not have sufficient details related to unpacking of the reel.
- The line of fire was not identified prior to starting work.

Lessons learned

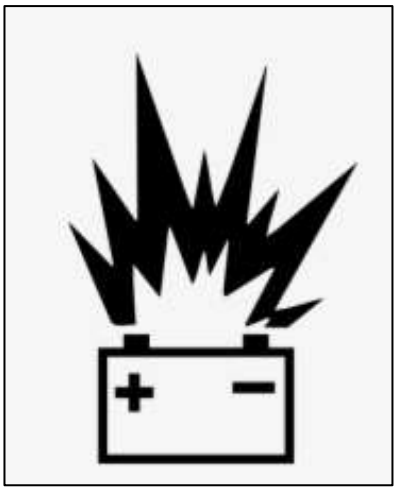
- Termination heads on reels should be treated as suspended loads; with the potential to drop and swing.
- Drawings, procedures and risk assessments with sufficient detail are to be produced for unpacking of reels.
- Identify and discuss all possible line of fire situations and ensure personnel are in safe positions prior to starting a task.
- Slippage / reorganisation of the rigging is difficult to identify and can occur without warning;
- The potential for termination heads/suspended loads dropping and swinging should be mitigated. They should be treated as suspended loads with the potential to drop and swing;
- Unpacking of reels should be be proceduralised and risk assessed;

Members may wish to refer to

- Uncontrolled rotation of 9.6m reel
- High potential near miss dropped object [During trans-spooling]
- IMCA short video Line of fire
- IMCA longer video In the line of fire

3 LTI: Person injured by a battery explosion on vessel deck

What happened



A battery blew up, causing the lid of the battery housing to shoot upwards and hit one of the persons working on it, causing significant facial injuries. The incident occurred when a diver and dive technician were on deck checking the condition of the battery packs of portable subsea MPI (magnetic particle inspection) equipment.

After the previous dive the MPI unit in use had been recovered, taken on deck to check the condition of the battery inside its housing. The diver and dive tech were checking the battery voltage with a multi-meter via the waterproof bulkhead fitting. They had found that the battery in use was slightly low and needed to be charged. A second battery that had been charged the day before was brought by the dive tech and placed on deck. Whilst checking this second battery and its function, an explosion occurred. The force from the explosion caused the lid of the battery housing to shoot upwards as the base of the housing shattered. The lid hit one of the workers who suffered a laceration to his face and hands, and later, X-rays revealed a fracture to his lower jaw.

The diving supervisor and dive tech, who were both in proximity overseeing the work, were unharmed and were able to raise the alarm and administer first aid. Within thirty minutes the injured person was medevac'd ashore to a hospital for further treatment. Our member notes that this incident could have had a much more severe outcome.

What went wrong

- After charging the second battery pod was finished, the vent plug was screwed down, not allowing adequate time for off-gassing to disperse through the venting port;
- The manufacturer's instructions were followed during the initial charge, but the vent was secured too soon after this occurred;
- The controls identified in the risk assessment and the battery charging procedure were not verified by the supervising persons at the site;
- "Task seen as routine"- there was no task-specific Toolbox Talk conducted; a 'pre-shift' briefing was considered adequate. The persons involved saw the task as "routine and simple";
- Identified risks should have been given more emphasis during the TBT.

What were the causes?

- Not following the manufacturer's recommendations in regards to battery 'off-gassing' time prior to use. This lack of adequate venting and purging of the battery gases allowed an explosive atmosphere to build up;
- The investigation was inconclusive to the *exact root cause* of the explosion, as some of the original electrical parts were not in working order due to the explosion. Testing indicated that it was likely that turning on the "Lamp ON" switch provided the ignition source to the hydrogen-air mixture within the battery housing.

What lessons were learnt?

- Follow manufacturer's recommendations with specific requirements to times for venting or off gassing of batteries;
- Ensure any instructions for equipment are easy to understand. If translation is needed, ensure that all personnel that will be using the equipment understand it fully;
- Ensure team have been given instructions and understand the use and limitations of the equipment;
- **Stop the job!** Encourage personnel to be assertive in identifying and reporting operational discrepancies promptly to avoid inappropriate or unsafe conditions becoming the 'norm'.
- **Correct PPE:** Wearing the correct PPE in this incident most likely prevented further or worse injury;
- **Good emergency response plan (ERP):** The immediate response, subsequent medevac and further hospital treatment, followed by good immediate after care, shows the importance of a well-reviewed and drilled ERP.

Actions

- All units were taken out of service and quarantined, until the cause could be established;
- Full co-operation of manufacturer:
  - The manufacturer of the equipment was informed. This was the first incident of this type in 30 years since the product first came into the industry;
  - The manufacturer was involved in recommendations to help identify and isolate the cause, and provided preventative measure for the equipment for future usage;
  - The manufacturer doubled the post venting time on both models of this equipment and issued new operating manuals;
- Create battery charging checklists and communicate requirements to relevant personnel.

Members may wish to refer to:

- SPHL battery charging – build-up of hydrogen
- Near miss: fire/explosion thermal runaway – lead acid battery
- Emergency Lithium battery failed catastrophically in a diving bell

4 Unexpected truck movement caused rigger to fall off a ladder

What happened

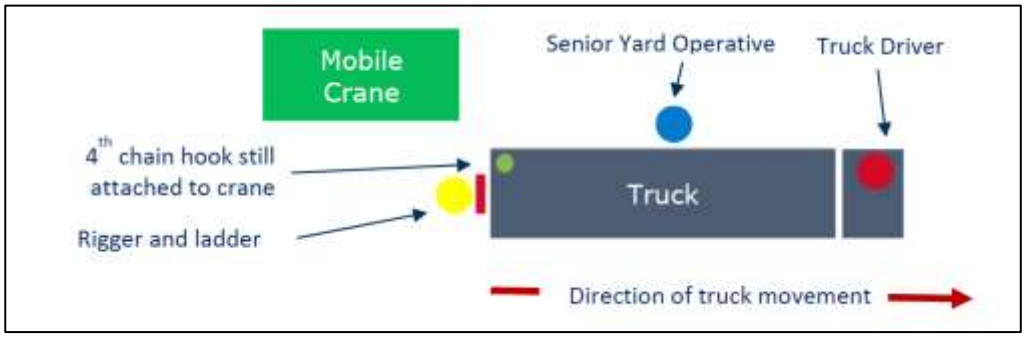
Applicable Life Saving Rule(s)

Bypassing Safety Controls

Work Authorisation

An unexpected movement of a container loaded truck during disconnection of the container's rigging, caused a rigger to fall off a ladder leaning against the container. Two containers were being loaded onto a trailer truck using a mobile crane. The supervisor conducted the toolbox talk before starting work. The riggers removed the container's rigging (chain hooks), using a ladder to access the connection points.

The first container was loaded without incident. The second container was loaded onto the trailer and the riggers began to remove the chain hooks whilst the supervisor and driver secured the twist locks. To access the 4th and last chain hook the rigger positioned the ladder against the rear of truck trailer. After securing the twist locks the driver went to the cab. He checked the side mirrors and could only see the supervisor, and so proceeded to drive forward, assuming the lifting crew had already de-rigged the container.



The rigger was approximately one meter above the ground and the 4th chain hook was still attached to the container and the crane, when the truck moved forward. The driver heard people shouting, and stopped the truck after it had moved around half a metre forward. Due to the truck movement, the rigger slipped off the ladder, sustaining bruising to his leg.

What went wrong?

Findings were:

- The supervisor did not provide the driver with an induction or briefing when he arrived at the yard.
- The Permit to Work for Working at Height indicated that a free standing work platform was to be used, but this was not used;
- The driver assumed that he was clear to drive forward;
- The Task Risk Assessment did not assess the risks introduced by or to the driver.

Actions/lessons learned

- Ensure clear and fully understood communication with third party plant operators – the truck driver in this case – before starting work;
- Ensure formal control of work, instructions, risk assessments and communications protocols are in place for third party drivers and other personnel;
- Consider keeping the driver away from the job completely until the lifting operations is complete. This prevents drive off and protects the driver from potential lifting issues impacting the driver's cab.

Members may wish to refer to

- Two yard-based fatal road traffic accidents (UK HSE)
- Crewman fatally injured while stood on the stern ramp of Seatruck Progress
- Near miss: Worker in dockyard almost struck by a 'cherry picker' crane

- Worker trapped and injured by reversing vehicle (IOGP)

5 Broken finger during ROV maintenance

What happened

A worker broke his finger whilst working on an ROV. The incident occurred during ROV maintenance when he was single-handedly removing a bumper bar located above head height. During the process, the bumper bar snagged on the ROV structure. This required the injured person (a short service employee) to free it by hand. The weight of the bumper bar (approximately 29kg) was more than the the employee had anticipated, therefore he was unable to support it. His right hand ring finger was bent backwards by the falling bumper bar, resulting in a metacarpal fracture.

Lessons learned

- Ensure your tasks are sufficiently risk assessed and planned – have you got the right people tools and equipment available? Are the work instructions clear?
- Ensure the task is adequately supervised to ensure it happens safely and under control;
- Ensure that everyone involved – especially short service employees or third party contractors are competent: fully inducted, supported and mentored, even if they have previous industry sector and/or company experience;
- **Communicate!!** task specific toolbox talks should be carried out before starting work.

Members may wish to refer to

- Hydraulic sample extruder - finger laceration
- Serious injury incurred while removing wire rope sling from a crane hook

6 How PPE works – a reminder

The Marine Safety Forum has published two recent incidents in whiuch failure to wear PPE was a factor. In the first, there was deliberate failure to wear PPE where it ought to have been worn; in the second, a person suffered injury when their foot was caught in a heavy water-tight door on the bridge. The person was not wearing safety boots/shoes at the time.

Applicable Life Saving Rule(s)

Bypassing Safety Controls

Incident 1

A vessel was alongside a break water berth in port, when two shore operatives who were engaged in connecting a diesel fuel hose were observed by the Officer of the Watch to be working on the edge of the quayside within the 1.0m PPE zone without inflatable lifejackets.

What was the cause: the operatives were fully aware of the 1.0m PPE requirement but decided to cross the painted line on the quay as they had left their inflatable lifejackets back at their base.

Actions: the vessel crew intervened, the job was stopped and the correct PPE was provided to the shore operatives, who were reminded of the port authority requirements to wear lifejackets when working within the 1.0m line. Once correct PPE was in place the job resumed.

Incident 2

The injured party stepped outside during his watch to investigate an error. On his return he entered the wheelhouse from the outer bridge deck through the weather tight door. At the time of entering the bridge, the vessel made a slight roll. Due to the weight of the door (approx. 350 kg), and holding the door while passing through, he control of the door, which trapped his foot as it slammed shut. He sustained some bruising, which was treated with a cold ice pack.

What was the cause

- While the weight of the door was widely acknowledged as a hazard, no risk assessment was in place;
- The IP was not wearing safety boots or safety shoes at the time.

Actions

- Wear safety boots or safety shoes when at work – even on the bridge;
- Conduct risk assessment on hazards and implement all reasonably possible preventative measures, including correct PPE;
- Improved design / automatic locking device for door, identified/ordered during subsequent risk assessment.

Members may wish to refer to:

- How PPE works: Fire and thermal protection
- Crewman suffers cut to hand - but gloves prevented it being much worse
- Personal injury following PPE violation and slip and fall on deck