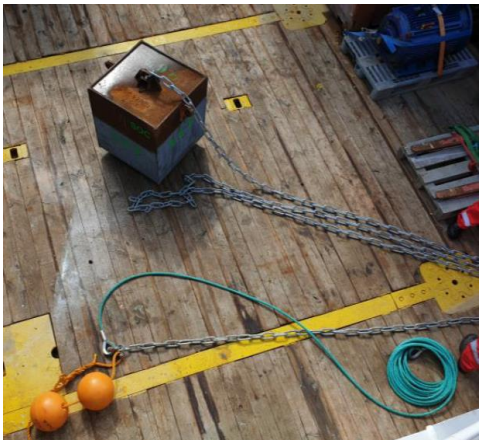
IMCA Safety Flashes summarise key safety matters and incidents, allowing lessons to be more easily learnt for the benefit of all. The effectiveness of the IMCA Safety Flash system depends on Members sharing information and so avoiding repeat incidents. Please consider adding safetyreports@imca-int.com 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 Rigging failure - clump weight dropped to seabed

What happened?

A clump weight used for anchoring a weather buoy was being deployed over the sea when the long link chain attached to the vessel crane hook failed resulting in the clump weight dropping to the seabed.

The 2.6t clump weight was the anchor component of a mooring arrangement for the weather buoy. The load was rigged using a supplied mooring arrangement, which followed the manufacturer's drawing in the weather buoy manual. Instead of a 450kg weight it was decided to use the 2.6 tonne clump weight already available and which had been shipped to the location for deployment. A service specialist prepared a deployment procedure which was discussed with those involved in the task. Shortly after the load was submerged in the sea the chain link attached to the quick-release mechanism snapped, and the load dropped to the seabed in an uncontrolled manner.

		
Clump weight and the long link chain used for lifting	*Chain link snapped on the quick release mechanism while deployed over the sea*	*Applicable Life Saving Rule:* ***Safe Mechanical Lifting***

The findings revealed:

- The rigging failed because a larger clump weight (2.6t) was selected than the design allowed for (450kg). This decision was based on previous experience where the standard weight (450kg) did not adequately secure the weather buoy;
- The design and installation procedure were not revised to accommodate the heavier clump weight;
- The chain selected was not suitable for lifting. Declaration of conformity by the chain manufacturer confirmed that the working load limit was "2.5 Tonne Not for lifting".

Actions

- All planned deviations from procedures should be subject to a formal Management of Change (MoC) process, the risk of the change adequately assessed and the change authorised by a competent person before the work proceeds;
- Reinforce to the riggers and personnel involved in lifting operations:
  - The need for thorough lift planning, and,
  - That they make a thorough check that lift rigging is certified, fit for purpose and appropriate for that specific lift.

Members may wish to refer to

- SEL 001 Guidelines for management of change
- SEL 019 Guidelines for lifting operations
- Short IMCA videos “Are you prepared to work safely?”:Lifting operations Lifting equipment
- Near miss: Dropped taut wire clump weight
- Weight dropped to the seabed narrowly missing diving bell
- Near miss: Single wire strand protruded from original lay

2 UK HSE: fatal incident using high pressure water jetting equipment

What happened?

Applicable Life Saving Rule:  Bypassing Safety Controls  Line of Fire

The UK Health and Safety Executive has prosecuted a company after a worker suffered a fatal injury using high-pressure water jetting equipment for industrial cleaning purposes. An employee was using a high-pressure jet washer to clear paint residue from pipes. During the process he was struck by the end of the flexi-lance, causing a fatal injury.

What were the causes?

HSE investigation found that the company recognised the risks of operating high-pressure water jetting equipment, but they had *failed to put in place appropriate measures to mitigate the risks* [IMCA emphasis]. They had not implemented or enforced the use of various control measures such as a pressure regulator or an anti-ejection device, which were missing at the time of the incident and, training and supervision were also not up to standard.

Members may wish to refer to

- Serious Injury Caused By High-Pressure Washer
- Lost Time Injury (LTI): Serious Hand Injury During High Pressure Washing Operations
- Diver Sustains Water Jetting Injury
- Code of practice for the use of high pressure jetting equipment by divers (IMCA D 049)

3 Air cylinders - differences in working pressure and valve types

What happened?

Applicable Life Saving Rule:  Bypassing Safety Controls

There was confusion when the wrong kind of cylinders for SCBA sets were supplied. A vendor supplied 6.8 litre 300 bar cylinders instead of 9 litre 200 bar SCBA cylinders (as ordered). There was no explanation.

There is only a small difference in overall size of the two types of cylinders and the size of thread for the air delivery is the same on both vent valves (v/v) heads. Fortunately, a

300 bar filler (from a compressor) will not properly fit a 200 bar cylinder vent valve, so a 200 bar unit cannot be over-pressurised. However, a 200 bar filler and SCBA backpack will fit a 300bar cylinder vent valve. This meant that the 6.8 litre cylinder could be filled to 200 bar (providing only 1360 litres of air rather than 2040 litres as designed).

The wrong type of SCBA cylinder v/v were also ordered, the heads come in two types – an 'in line' type and a '90 deg' type (see photo).

Cylinder head v/v same size thread for both 200 bar and 300 bar

300 bar cylinder vent valve fits 200 bar SCBA backpack

Incorrect orientation of vent valve head knob

What were the causes?

- The supplier did not respond properly to the request for a quote (RFQ) and made assumptions about what was being requested rather than checking the RFQ carefully;
- The purchasing department did not notice or recognise that the quote provided by the supplier was not in line with the RFQ, as there was no explanation of the variation between the RFQ and the quote. At a glance, the quote looked like it related to the RFQ;
- The person originally generating the request specified the size and pressure rating of the cylinder but did not specify the type of cylinder head vent valve.

Actions taken? Lessons learned?

Ensure more thorough communication between procurement/purchasing department, vendors and persons actually generating requests.

Members may wish to refer to

- Bailout Cylinder And Pillar Valve Compatibility Failure
- Substandard Nitrogen Quads Delivered To Shipyard
- Sustained Load Cracking In Aluminium Cylinders Manufactured From Aluminium Alloys
- Use Of Pre-Mixed Nitrox Gases

4 Man overboard incident (not fatal)

Applicable Life Saving Rules:


Bypassing Safety Controls


Line of Fire

What happened? A man overboard incident occurred, in port at night. A rigger on the main deck, walking around spools secured to the main deck, stepped off the side of the vessel and fell to the sea. During mobilization of large spools, the vessel crew had removed a section of the starboard bulwark to accommodate the spools, for they were bigger than the main deck area - the spools extended over the side of the vessel. During sea-fastening of the spools a rigger decided to walk around the outside of the largest spool (see picture), without realizing this was over the side of the vessel. The rigger passed through a chain barrier and subsequently stepped over the side of the vessel. The rigger was not observed falling, but his calls for help were heard. He was rescued unharmed through the effective response of his colleagues, using life buoys and the pilot ladder.

What went wrong? What were the causes?

- No rigid barriers were erected at the time of incident, only a temporary chain barrier, which the rigger passed through;
- Darkness, shadows, light transitions and poor weather (drizzle) made it difficult to see the difference between the deck and the water;
- The rigger had been on board for two weeks (with the bulwarks removed throughout that period due to multiple spool sets being mobilized) and had participated in the toolbox talk before he started work. He still did not understand the full hazard;
- There was no explicit specification that gaps should be barriered off on the starboard side (the task plan did specify a barrier for a similar situation on port side of the vessel).

Actions taken? Lessons learned?

- Verify that all temporary gaps and openings which create a fall hazard are equipped with rigid barriers;
- Never use access control barriers (plastic chain or barrier tape) as the single barrier for fall protection hazards;
- Review appropriateness of the use of access control barriers in particular:
  - Only using these barriers for access control and not for control of fall hazards;
  - Warning signs used with the barrier;
  - Authorization of access and egress from the barriered area.
- Check that back deck lighting is sufficient, with particular reference to areas of deep shadow;
- When project activities involve the removal or disabling of permanent safety equipment on a worksite, such as bulwarks, handrails and fire detectors for example, the project team has a responsibility to plan for an alternative and equally effective means of protection, confirming this with the worksite.

Members may wish to refer to

- LTI – rigger tripped over quayside obstacle in the dark and fell
- LTI: Feet trapped in motion compensated telescopic gangway *[one immediate cause: There was insufficient lighting on the gangway]*

- Fatality: Man overboard [during the hours of darkness]

5 Injury caused by closing fire flap

What happened?

A crewman was injured when there was an uncontrolled and unplanned closure of a fire flap. The crewman was filling an expansion tank through the engine room ventilation trunking, when the release mechanism for the fire damper was activated unintentionally, causing the fire damper to close on his left wrist, resulting in a wound.

Position of crewman during incident (reconstruction)

Pump rigged for procedurally correct transfer operation

Wrist injury

Life Saving Rule:

Bypassing Safety Controls

Line of Fire

What went wrong?

The injured person filled the expansion tank in a way not detailed in procedures, via the filler cap from above, through the induction fan trunking. There was a company standard operating procedure for this and he did not follow it. The procedure for filling/topping up the high-temperature cooling system was via a portable pump with suction direct from a 20/25 litre drum. This system was in place due to the problematic location of the expansion tank filling cap in the engine room.

What were the causes?

- No physical action was taken on board to locate the pump;
- There was no risk assessment into this nonstandard way of conducting the activity;
- The available transfer system available in the engine room was not used;
- Uncontrolled release of the fire damper;
- The man's arm was in the line of fire.

Actions taken? Lessons learned?

- Ensure no improvisations are replacing designed, approved systems on board. Where not functional, work orders/defects should be documented and if in doubt, assistance sought for clarification or suitable management of change process;
- Risk assessment should be conducted for non-routine tasks;
- **Don't cut corners -** crew should be reminded of the dangers of skipping or avoiding steps important to a task.

Members may wish to refer to the following injuries, both arising from taking short-cuts.

- Serious Finger Injury During Valve Installation
- LTI: Finger Injury During Work With Rotating Machinery

See also:

- *IMCA HSSE 001 Guidelines for management of change*

- *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 safetyreports@imca-int.com