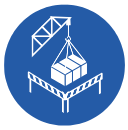
IMCA Safety Flashes summarise key safety matters and incidents, allowing lessons to be more easily learnt for the benefit of all. The effectiveness of the IMCA Safety Flash system depends on members sharing information and so avoiding repeat incidents. Please consider adding **safetyreports@imca-int.com** 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 Near miss: lift bag released unintentionally from crane hook

Applicable Life Saving Rule(s)


Bypassing Safety Controls


Safe Mechanical Lifting

What happened?

During a saturation dive, deck crew connected a lift bag to the crane to subsequently send it down to the diver. When the crane hook went through the splash-zone, the lift bag came free from the crane hook and floated on the surface. As the vessel was in DP mode there was the potential for damage to the vessel´s thrusters and potential loss of the vessel's position – while divers were subsea. No damage or harm occurred, but the event had the potential to cause considerable damage.

What went right

Deck crew noticed the danger and informed the bridge and dive control immediately. The current pushed the lift bag away from the vessel.

What went wrong

- The lift bag was not correctly attached to the crane:
  - The lift bag was not folded correctly;
  - It was connected to the crane through one of its webbing slings instead of being connected in such a way that would prevent the lift bag from being positively buoyant;
  - The positive buoyancy of the lift bag allowed it to slide out through the safety hook passing the self-locking latch.

What were the causes

Our member identified the following causes:

- Lack of awareness: Inadequate safe rigging practice;
- Procedures not implemented: Double-check rigging before sending it subsea;
- Low-risk perception of the task.

Lessons and actions

- Ensure thorough risk assessment and double-checking of the means for subsea lifting, before starting work. Our member recommended the use of a tool basket.

Members may wish to refer to:

- Near-miss: Dropped torque tool
- Lift bags broke free
- IMCA D 016 *Guidance on open parachute type underwater air lift bags*

2 Nitrogen cylinder ruptured

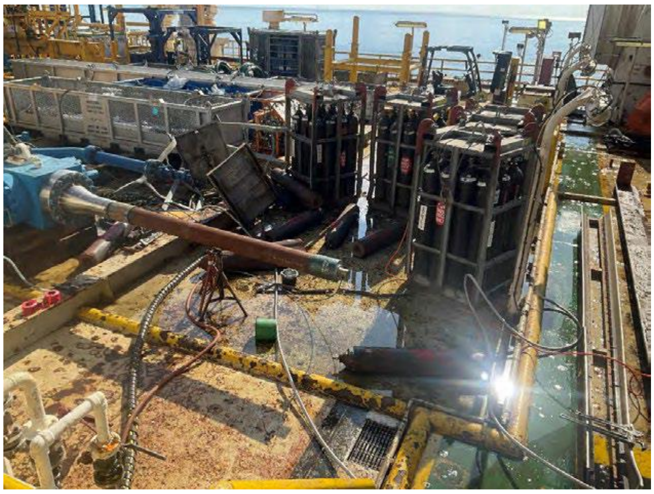
What happened

A high pressure Nitrogen cylinder in a quad of 12 cylinders located on a drill rig floor ruptured without warning. The cylinders were charged to 2,400psi and were not connected to anything else at the time of the incident. The rack was destroyed and the other cylinders in the quad were propelled by the blast up to 15m away.

Part of ruptured bottle

Base of bottle showing corrosion

Difficult to access middle cylinder



Where the rupture occurred

Why did it happen

The base of the cylinder that ruptured was heavily corroded. Other cylinders in the quad had evidence of similar but less severe corrosion.

The cylinders were 9 years into their 10-year hydrotest cycle, and had been visually inspected by the supplier in accordance with applicable industry guidance, when they were refilled some three months before the incident, before being loaded out to the rig. However, the severe corrosion that caused the rupture was not spotted during this inspection;

The cylinder that ruptured was located in the middle of the quad and therefore not easy to properly inspect without disassembly of the quad.

Calculations showed that the fatal blast zone for a single cylinder of this size pressurised to 2,400psi would be around 1.5 metres. The severity of the blast caused the rack to be destroyed and the other cylinders to be propelled across the deck.

Lessons learned

- Are the cylinders on your facility or vessel certified and in good condition?
- Are you able to see the condition of all cylinders in every rack?
- Are all cylinders located on a free draining base to minimise corrosion?
- Do you know what level of visual inspection of cylinders/quads is provided by your supplier?
- Are all cylinders on your facility stored and located in accordance with the relevant industry regulations?

Members may wish to refer to the following events, all relating to challenges in accessing areas for maintenance:

- Lifeboat air cylinder explosion on an empty installation
- Damaged Electrical Cable
- Corrosion of hollow section members on offshore drilling structures
- Lifting frame detached from fast rescue craft (FRC)

3 Offshore platform decommissioning near miss

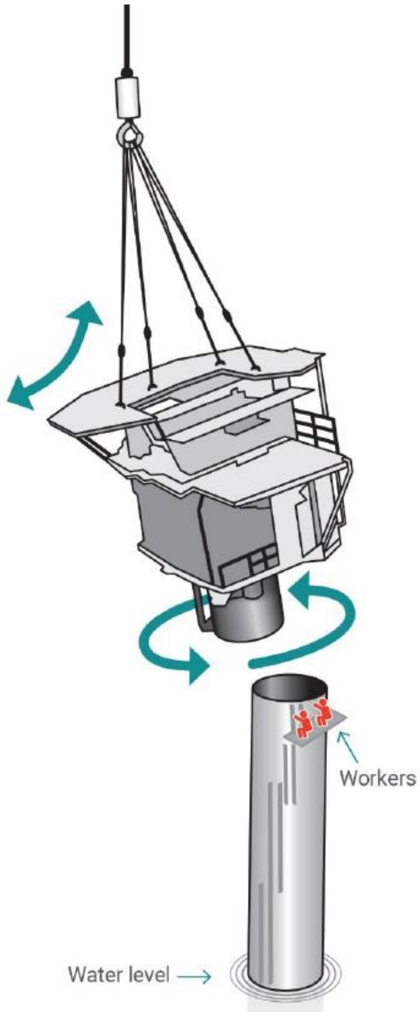
The Department of Energy, Mines, Industry Regulation and Safety of Western Australia (DEMIRS) has published Significant Incident Summary No. 6 relating to the unexpected movement of the Sinbad topsides during its removal in 2021. The summary can be found here.

Applicable Life Saving Rule(s)

Bypassing Safety Controls | Line of Fire | Safe Mechanical Lifting

What happened

In 2021, there was a near miss incident for two workers beneath a swinging suspended load while decommissioning part of a monopod offshore platform in the northern waters of Western Australia. The workers were cutting through the monopod's main leg (caisson) when the topside, which was rigged to a crane on a vessel, unexpectedly moved and detached from the supporting monopod and swung over the workers. The crane operator quickly manoeuvred the topside away from the workers, lowering it into the water to control its motion. The workers disembarked from the main leg to the designated crew safety vessel without incurring any injuries. The topside platform was safely retrieved onto the crane vessel.



Contributory factors

Factors assessed as having contributed to the incident included:

- Dynamic forces that could be applied to a rigged load while a crane was in auto-tensioning mode were inadequately understood or considered when developing the lift plan;
- The requirement for pre-load tension was not subject to adequate technical assessment;
- The platform rotated on separation; the engineering assessment did not identify the turning motion induced by pre-load tension;
- An over-reliance of previously successful methodologies rather than the analysis of their suitability to the specific tasks of this activity.

Actions

DEMIRS outlined the following measures to minimise the risk of a similar incident while conducting decommissioning activities:

- A technical assessment of lift plans to identify and consider all forces acting on a load, including forces which may be unintentionally applied due to automatic settings and crane modes;
- Use of castellated cut designs where a possibility of rotation (turning moment) of the load exists;
- Consider and assess the whole of life design, including commissioning and decommissioning procedures;
- Ensure workers are not under suspended loads.

Members may wish to refer to:

- Serious incident: topsides started swinging during lifting

4 NTSB: Fire on vessel - stray electrical current during welding

Applicable Life Saving Rule(s)

Hot Work

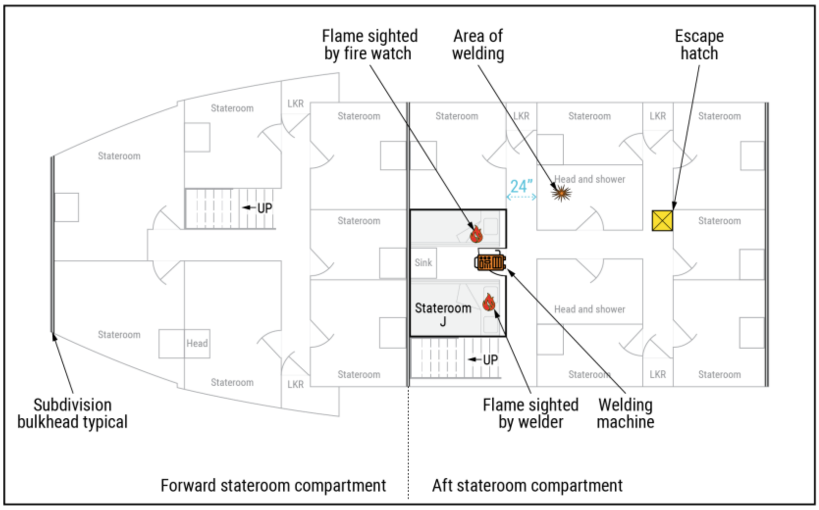
The National Transportation Safety Board of the United States (NTSB) has published report MIR-24-15 relating to a fire aboard a vessel which may have been caused by stray currents flowing during electrical welding work.

What happened

A fire started in a cabin below the main deck of the small passenger vessel *Qualifier 105*, which was being stored in a yard for the winter, on blocks. The local fire department responded and extinguished the fire. No pollution or injuries were reported. The vessel was effectively destroyed at a cost estimated to be $1.2 million.

Qualifier 105 on fire in the boatyard

At the time the fire started, welders were on board performing Aluminium hot work. While hot work can generate sparks and molten material that can ignite combustible materials, the two welders, who were working close to where the fire was discovered by the fire watch, did not find any signs of a fire during or after their work. Therefore, the hot work itself was *not the source of the fire*.



The fire watch and one welder each saw a small flame on two different bunks in a cabin. Those small flames were likely caused by ignition of combustible materials—including carpet, wood framing, and plastic sheeting—in the ceiling of the cabin and in the overhead bulkheads. This is dealt with in some detail in the report linked above.

Stray welding current—a fault condition where current goes through unintended conductors, such as metal framing or wires, and back to the return terminal of a welding machine—can result in heating and cause fires. On board the *Qualifier 105*, the welding machine work clamp (the return current clamp) was connected to an aluminium cross member below the deck in this cabin, about 3m from the point of welding. The return current had to travel through the vessel's aluminium structure and/or conducting wires from the spool gun's electrode back to the work clamp. The aluminium structure would have served as a conductor, and the resulting current in the structure may have found its way into the vessel's electrical system. An electrical wire in the overhead of the cabin could have served as an unintended conductor and become overheated and eventually led to a fire.

However, investigators could not definitively determine that stray welding current caused wires to overheat. Additionally, there were several wires and electrical boxes in the cabin that may have been energized and become a potential electrical ignition source due to a fault. Therefore, the exact ignition source could not be determined.

What was the (probable) cause

The NTSB determined that the probable cause of the fire was an undetermined electrical source that ignited a stateroom ceiling. Contributing to the extent of the fire damage was the substantial use of combustible materials composing the stateroom ceilings and bulkheads throughout the vessel's accommodation spaces.

Lessons Learned

- Take precautions against stray welding current: Stray welding current is a fault condition in which current goes through unintended conductors and back to the return terminal of a welding machine; it can cause fires by overheating wires. To avoid potential fires caused from stray welding current, maintenance personnel, owners, and operators should follow industry practice to place the work clamp (the return current clamp) of the welding machine as close as possible to the point of welding.

Members may wish to refer to:

- Shipyard worker receives electrical shock
- Overheated transformer activated fire alarm

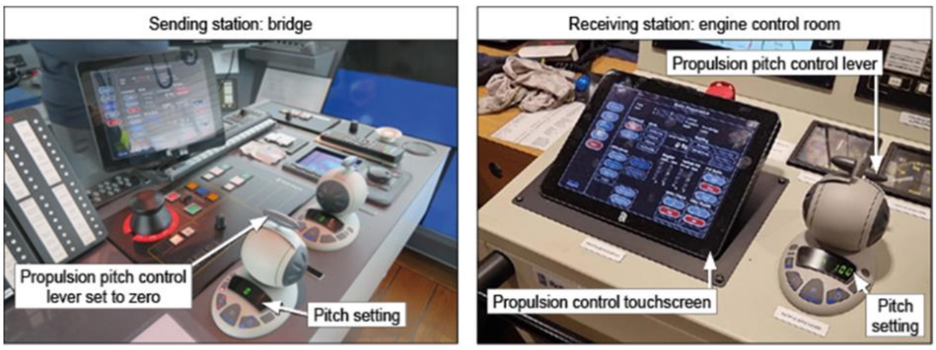
5 MAIB: vessel collision caused by mismatch between bridge and engine room control

The UK Marine Accident Investigation Branch (MAIB) has published a Safety flyer relating to a collision between two vessels caused by loss of propulsion control.

What happened

Fishing vessel *Kirkella* lost control of its propulsion system while berthing, and collided with the harbour tug *Shovette* in the port of Hull, UK. *Kirkella*'s bulbous bow breached *Shovette*'s hull and starboard fuel tank during the collision, causing the tug to partially sink and resulting in approximately 7,000 litres of marine diesel oil spilling into the dock. *Kirkella* was not damaged. There were no injuries.

Kirkella's propulsion system comprised a single main engine driving a controllable pitch propeller via a clutch and gearbox. The propulsion system could be operated from several stations located in the wheelhouse and from the engine control room (ECR). **The loss of control occurred when the propulsion control was passed from the bridge to the ECR with the clutch engaged.** At the time of the handover, the bridge propeller pitch lever was set at zero, while the ECR's propeller pitch lever was set at 100% ahead. The propeller pitch automatically advanced when control was accepted in the ECR, causing *Kirkella* to move forward on the berth.



The status of KIrkella's control system at handover of control

Kirkella and Shovette

What went wrong

- The pitch levers for *Kirkella*'s propulsion control system were not synchronised between the bridge and engine control room when control was transferred. The propulsion control system was not fitted with interlocks to prevent this from happening – these were not required;
- *Kirkella*'s engineer had not checked that the engine room pitch lever was matched to the bridge pitch setting when control was passed from the bridge to the engine room;
- There was no procedure for control changeover.

Lessons

The MAIB report drew the following lessons:

- The interlocks, which were optional, could be retrofitted by the engine manufacturer;
- Robust shipboard practices are essential to maintain propulsion control during handover, regardless of whether system interlocks are fitted. Documented procedures should contain a requirement for the operator of the sending station and the receiving station to check that propulsion systems pitch settings are synchronised at the time of transfer.
- To reduce the risk of propulsion thrust being applied inadvertently while alongside the MAIB suggests that it is advisable to declutch engines before transfer of control.