Safety Flash

26/23 – November 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: Crane part fell to deck

Location of the limit switch at the time when it was noticed

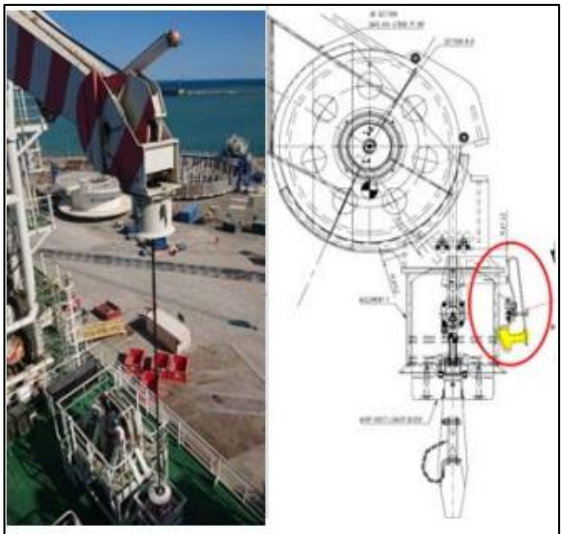
What happened

During a vessel transit during which the crane was unused in its boom rest, a crew member observed a piece of metal debris lying under the crane boom tip. It was discovered that one of the three Crane Whip Line Block Catcher Limit Switches (3.6kg) had fallen off and had fallen 6.5m to the deck. There were no injuries.

What went wrong

Our member noted the following:

- Inadequate design verification - the cross-sectional area of the broken plate was not sufficient to bear the stress applied to the limit switch;
- The bolt spring was acting as a strong point and was creating unbalanced forces on the limit switch plate;
- There was insufficient preventive maintenance or inspection of this area.



Actual location of the limit switch

What was the cause

Our member noted the following:

- The equipment was not being used as it was originally designed;
- The maintenance schedule recommended by the crane manufacturer, was not adequate.

Lessons

- Testing of the limit switches during a third-party thorough examination, though providing satisfactory results, could prove misleading;
- Complicated access to the boom tip does not allow proper inspection of these and other integrated elements of this 900T crane.

Actions

- Work with the crane manufacturer on a new design of the limit switch plate;
- Amend preventive maintenance schedule and inspection program to include more frequent assessment;

- Look at other vessel cranes for any signs of potential weak points on the limit switches.

Members may wish to refer to:

- Dropped object from crane
- Dropped object near miss – crane boom bumper stop falls off
- High potential near miss: dropped object – buffer plate fell from crane boom
- Dropped object: Signage dropped from crane boom
- Dropped object near-miss: small parts falling from crane rest

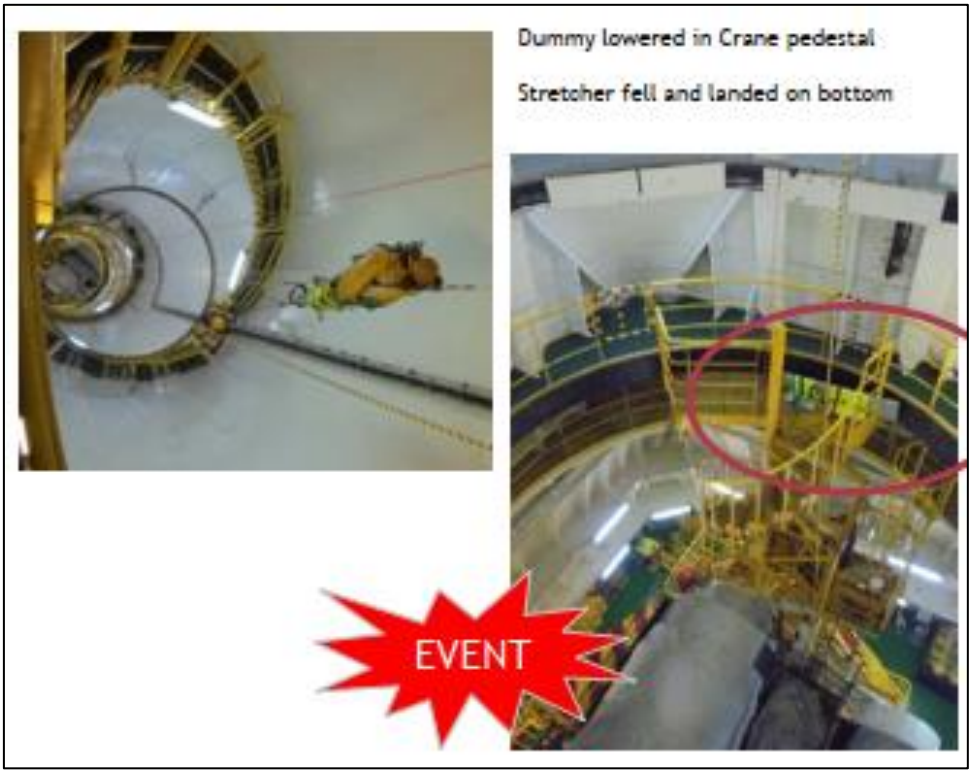
2 High potential near miss: Dropped Paraguard stretcher during drill

What happened

During a rescue from height /evacuation drill within the top of the main crane pedestal, a Paraguard stretcher (12kg) slipped out from the dummy and fell approx. 50m to the crane winch room below. The incident occurred just as the descent was starting. The area below the drill was a restricted access area; there were no injuries.

What went wrong

For the first transfer through the top hatch, using the tripod, the lifting point on the stretcher itself was correctly used. However, after the transfer to the descending davit, the descending cable was attached to the Dummy harness, ***not*** to the stretcher lifting point. This led to the stretcher and dummy not being secured to each other, and the stretcher slipping during the descent.



Our member noted the following:

- The rescue plan was too generic and did not address specifically the process by which the injured person in a stretcher would be lowered;
- Despite the presence of several rescue team members, nobody noticed that the rope was connected to the wrong attachment point.

Lessons learned and actions

- Rescue teams ought to be familiar with the stretchers used on board, and follow the manufacturer' instructions;
- Rescue plans should be specific and contain detailed information related to the equipment used (Stretcher, Tripod, Davit) and the descent/lowering process, load transfers and connections. The Plan should be reviewed at the toolbox talk before the drill, and this should include as much as possible hands-on practice with the specific stretcher;
- The Potential DROPS area below the area where the drill is occurring should be barricaded, marked, and vacated during the descent. Special attention may be required to ensure that the medical team stood by, are kept outside of the potential line of fire.
- Review the rescue plan in this case to
  - Ensure that suitable rescue equipment is used (if space is limited, the use of a stretcher can pose additional hazards and use of a harness may be an acceptable alternative);
  - Incorporate more specific details on the process of lowering the casualty.

Members may wish to refer to:

- All of a sudden – "this is not a drill" – person injured during a drill
- LTI: person fell down hatch inside crane pedestal
- High potential near miss: dropped object from turbine tower

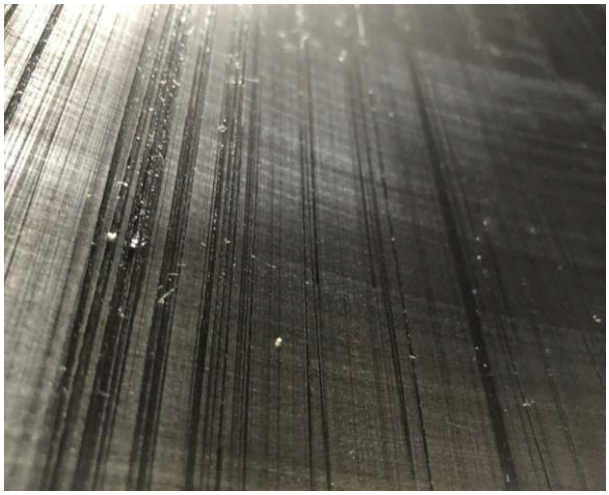
3 Failure of AHC cylinder causing oil leak to deck

What happened

A hydraulic cylinder on an Automatic Heave Compensated crane failed. The incident occurred when an offshore vessel was engaged in the installation of a jumper line in 690m of water. The vessel was stood off at a safe distance from a drill centre; the crane was stationary at the time and waiting in AHC mode. A bang from the crane was heard from inside the crane cab and the crane automatically switched to normal mode (AHC off). A leak was spotted from the cranes right hand side. As soon as it was observed that there was an oil leak from the bottom of the AHC cylinder the crane was stopped, and the alarm raised to contain the oil.

The client's jumper was lost as unrecoverable. Our member noted that had the incident occurred exactly over the drill centre, major damage could have been caused to subsea assets.

The bottom of the AHC cylinder before the work started on a temporary repair to seal it



Scoring seen inside the cylinder

What went right

- The leak was spotted promptly, and the alarm raised;
- No oil was spilled to sea, all of it (4approx. 150 litres) was contained on board;
- Engineers were able to remove the remaining bolts from the bottom plate on the AHC cylinder, create a temporary seal and secure the plate with new bolts, which enabled the crane to be recovered to deck.

What went wrong

Our members' investigation noted the following:

- Poor design of AHC cylinder – Lack of pressure sensor on vacuum side drain line;
- Lack of maintenance – there was no planned overhaul of the cylinder in the manufacturer's manual or specification;
- Lessons had not been learned from a similar incident the year before involving a high pressure HP seal on a cylinder on a sister vessel;
- The root cause of the AHC failure on the low-pressure side of the accumulator was contamination of the hydraulic system, either from the system itself or from particles that had entered the system when it was first connected.

What was the cause

During normal active heave operation, the piston travels up and down inside the cylinder and this movement controls the movement of the hook wire in relation to the vessel's roll. This ensures that subsea, the hook remains in the same place as the vessel is rolling.

The low pressure seals became worn. This allowed oil to leak past the piston into the vacuum side. At the time of the incident the seal had failed so badly that the leak oil choked the drain lines and oil built up in the vacuum space behind the piston. The vessel then rolled; the piston began to travel compensating the hook wire. As the piston moved down the cylinder, it hit the wall of built-up oil, this transferred the force through the incompressible oil onto the small surface area of the cylinder end cover, shearing the bolts and blowing the oil out onto deck. The cylinder is not designed to take any pressure on this side of the piston.

Why did this happen

Investigators believe that at some point, contaminated oil has passed through the cylinder causing damage to the seal and scoring the cylinder. The source of this contamination could have been during an overhaul of other components and has entered the oil and found its way to the active heave cylinder. It was not known at what point in the cylinder's lifetime this damage was sustained because the cylinder had never been inspected inside. In its lifetime the piston and seals have travelled many thousands of kilometres inside the cylinder as the active heave will move every time the ship is rolling during crane use.

The actions proposed were:

- Crane manufacturer to incorporate pressure sensor with alarm in crane computer to highlight a leaking seal before unplanned breakdown occurs;
- Crane manufacturer to review manuals and incorporate new maintenance for an inspection of the low pressure seal, check of return filters and overhaul time for the AHC cylinder.

Our member notes that a failure of the low pressure side of this equipment had never been seen before by the crane manufacturer.

Members may wish to refer to the following incidents, both of which were as a result of the failure of worn-out seals.

- Flooding in steering gear compartment
- High potential near miss: dropped line pipe after vacuum lifter failed

4 Vehicle incident – driver tiredness

Applicable Life Saving Rule(s)

Driving

What happened

On completion of work on a project site, a company team were driving back to their home base. Approximately 1hr 45mins into the journey the driver started to feel tired, however he continued to drive onto the scheduled rest stop, approximately 10 km away.

Prior to reaching the rest stop the vehicle gradually drifted onto the hard shoulder and crashed into the back of a stationary police vehicle. The driver and third party (the policeman in the stationary car) were not injured, however the passenger, who had an open laptop computer on his knees and was using his phone, sustained a fractured arm and broken nose when the airbag deployed during the crash.

What went right

- Documented procedures and controls were in place;
- The passenger was also licensed and authorised to drive.

What went wrong

- Documented procedures and controls were not strictly followed in terms of fatigue management;
- Though they could have swapped over, the driver did not initiate a driver change when he felt tired;
- Unsecured cargo or luggage including laptop computers can cause serious injury if not stowed away and secured;

The driver has the ultimate responsibility for their actions, however an observant passenger aware of their surroundings could have alerted the driver that the vehicle was drifting onto the hard shoulder.

Corrective actions

- Effectively manage journeys and speak up when circumstances change and /or we experience fatigue;
- Recognising your own tiredness and be aware of your limitations;
- As a passenger, be aware of your surroundings and keep a reasonable lookout for unsafe driver habits and conditions;
- Stow and secure luggage and/or equipment including laptop computers in designated compartments / pockets or the trunk or boot before starting journeys;
- As a passenger in a car, don't be using a laptop computer while the vehicle is moving;
- Make use of dashcams.

Members may wish to refer to:

- A focus on journey management
- Guidance on Journey Management Planning (Shell)

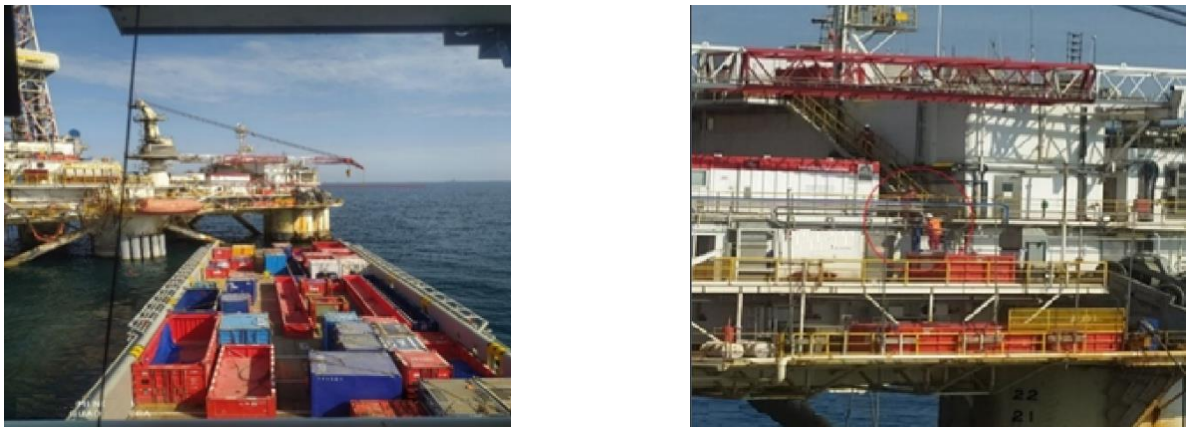
5 Positive: Master stopped unsafe fuel transfer whilst vessel alongside rig

What happened

During fuel transfer operations alongside a semi-submersible rig, the officer on watch on the supply vessel PSV observed welding work being undertaken on the deck of the rig. The vessel bridge immediately communicated this information to the rig control room using VHF, challenging why bunkering and hot work activities were being carried out simultaneously. Stop Work authority was applied; the vessel stopped fuel transfer.

What went right

- The vessel bridge team immediately intervened and challenged the unsafe condition of hot work (potential fire risk) taking place in close proximity to fuel transfer;
- The unsafe condition was reported immediately to the client and to company management. The client's rig management team positively recognized the vessel's intervention and initiated an investigation of failure of communication to prevent re-occurrences.



Hot work observed by crew (orange figure on deck, circled, right)

What went wrong

- That hot work was taking place, was not communicated to vessel;
- Confirmation by the rig that SIMOPs were occurring, was a mandatory part of the Safety Zone check list communication process.