

IMCA Safety Flash 12/16

May 2016

These flashes summarise key safety matters and incidents, allowing wider dissemination of lessons learnt from them. The information below has been provided in good faith by members and should be reviewed individually by recipients, who will determine its relevance to their own operations.

The effectiveness of the IMCA safety flash system depends on receiving reports from members in order to pass on information and avoid repeat incidents. Please consider adding the IMCA secretariat (imca@imca-int.com) to your internal distribution list for safety alerts and/or manually submitting information on specific incidents you consider may be relevant. All information will be anonymised or sanitised, as appropriate.

A number of other organisations issue safety flashes and similar documents which may be of interest to IMCA members. Where these are particularly relevant, these may be summarised or highlighted here. Links to known relevant websites are provided at www.imca-int.com/links. Additional links should be submitted to webmaster@imca-int.com

Any actions, lessons learnt, recommendations and suggestions in IMCA safety flashes are generated by the submitting organisation. IMCA safety flashes provide, in good faith, safety information for the benefit of members and do not necessarily constitute IMCA guidance, nor represent the official view of the Association or its members.

Summary

All the incidents here are related to the release of stored energy, and/or to the failure of equipment, whether through corrosion, metal fatigue, or poor design.

In the first incident, a crewman ‘in the line of fire’ was injured when a wire became taut. In the second, a crewman was injured through unfamiliarity with high pressure jet washing equipment. The remaining three incidents cover equipment failure; two of them involving release of stored pressure. Corrosion (from dissimilar metals) caused failure of fire extinguishers; vibration lead to a condensate leak; and metal fatigue caused a fatal incident when a tower crane collapsed.

1 First Aid Injury: Person Struck by Wire under Tension

A member has reported an incident in which a crew person was struck by a wire under tension. The incident occurred when a rigging crew were preparing to transfer a piece of subsea infrastructure – an inline tee (ILT) - from a supply vessel to the installation vessel. The tagging tower wire was transferred and connected to the ILT on the deck of the supply vessel. At this point the rigging supervisor requested the winch operator to ‘pay-in’ in order to take up the slack. The wire, which had been slack at this point, became taut and struck a person involved in the operation. An “all stop” was called, and the area made safe. The injured person was sent to see the medic for a check-up. First aid was administered for minor abrasions.

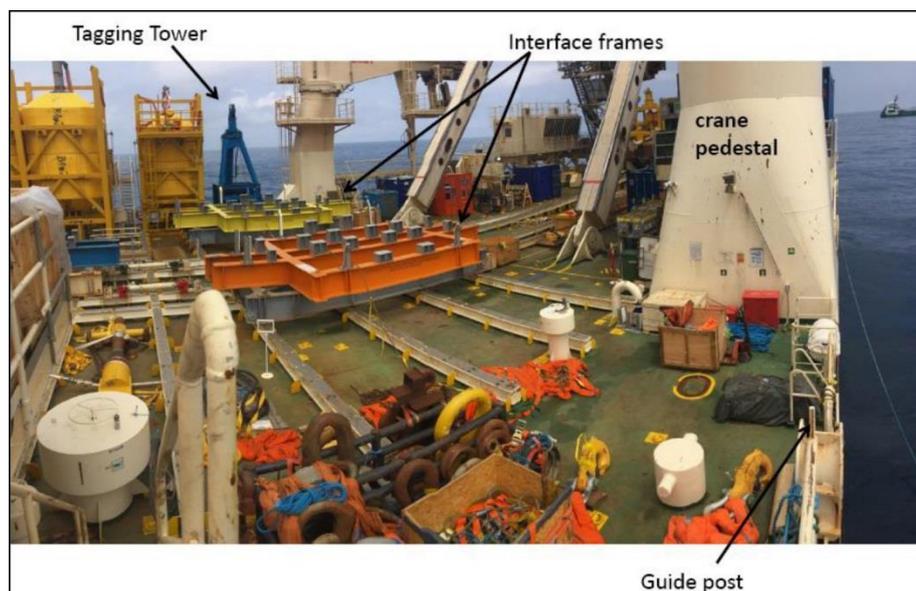


Figure: Showing worksite after incident

Our members' investigation revealed the following:

- ◆ Direct causes:
 - uncontrolled movement of wire when it became taut
 - injured person 'in the line of fire';
- ◆ Possible underlying causes:
 - lack of concentration or failure to pay attention to the slack of the wire at the critical moment
 - injured person was the only person watching the activity
 - the task was perceived as preparatory work – there was a lack of personnel/supervision
 - the order to stop was received too late. The winch operator may have been surprised or confused
 - the winch was at constant tension – but the tension settings and/or pressure indication were unknown until the wire went into tension
 - poor design of the winch panel: the winch hydraulic power unit (HPU) and emergency stop were initially next to the operator but had been relocated to make more space. The emergency stop was on the HPU, which was a 10m walk (not in a straight line) away from the control panel in a remote location
 - the winch operator used unknown pressure to pay in, then moved the stick to neutral when he received the all stop, which applied the brake and locked the tension in the wire
 - there was incomplete familiarity and inadequate training for the personnel in the use of this type of winch in constant tension mode
 - variations in tension in the wire were created by the relative movements of the two vessels, which were connected together by the wire;
- ◆ The following preliminary root causes were identified as:
 - lack of attention/concentration, lack of supervision and lack of additional support and organisation
 - failure to intervene at the critical moment
 - poor risk perception – the risks in this specific task, with this specific level of crewing, were not identified;
 - poor design of winch control panel and HPU
 - inadequate training with this winch & HPU operation, leading to a lack of understanding on how to use the equipment safely.

Actions, recommendations, and lessons learnt:

- ◆ technical inspection of all the potentially impacted areas
- ◆ function test of the winch;
- ◆ review and update risk assessment;
- ◆ further appropriate training for these particular types of winches to raise awareness;
- ◆ ensure sufficient personnel are available to make any given operation safe;
- ◆ relocate emergency stop to appropriate location;
- ◆ ensure personnel:
 - ALWAYS intervene when they see an unsafe act or condition
 - ALWAYS perform a UK Health & Safety Executive (HSE) toolbox talk and work with a permit or safe system of work
 - NEVER perform tasks for which they are not trained and competent.

Members may wish to refer to the following incidents (search words: *winch, wire, tension*):

- ◆ [IMCA SF 07/14](#) – Incident 5 – *Injury caused by movement of wire rope under tension*;
- ◆ [IMCA SF 13/15](#) – Incident 2 – *LTI – rigger struck by rigging under tension*.

Members should be aware that IMCA has published a safety promotional DVD called 'In the line of fire' which can be downloaded or streamed online through the IMCA website.

See [IMCA SEL 036](#)– *In the line of fire*.

2 Lost Time Injury (LTI): Serious Hand Injury during High Pressure Washing Operations

A member has reported an incident in which a crewman was injured during high pressure jet-washing operations. The incident occurred during wash down operations inside a ballast tank. An able seaman (AB) sustained the injury as his finger was accidentally positioned in front of the water jet nozzle. The subsequent hand injury required helicopter medivac to an onshore hospital for treatment. This resulted in a LTI.

During the operation, a 10cm (short) lance was in use. The high pressure washer being used at the time delivered 250 bar of water pressure. This instantly shredded the AB's glove, causing a severe cut to a finger on his left hand. After localised treatment on-board and contact with shore-side medical doctor, it was decided to send the AB in for treatment at the hospital onshore via helicopter.



Short Lance (used for enclosed spaces)



Two hand grip (as recommended by manufacturers)



Actual glove used

Our member's investigation noted the following:

- ◆ The AB had been holding the water jet short lance with one hand only;
- ◆ The glove chosen for the job was a simple nitrile glove with no mechanical barrier towards cut resistance;
- ◆ The manufacturer of the short lance recommended two-handed use in their own safety precautions.

Direct causes to the incident were:

- ◆ Incorrect use of high pressure washer with a short lance;
- ◆ Inadequate personal protective equipment (PPE);
- ◆ Risk assessment was insufficient and did not capture the direct risks of using this type of lance;
- ◆ There were no clear written instructions available for using high pressure washer systems.

Our member drew the following lessons:

- ◆ The strong spray from a pressure washer can cause serious wounds that may first appear minor. Wounds that appear minor can cause a person to delay treatment, increasing risk for infection or disability;
- ◆ If the stream of water lacerates tissue, there is the risk of cleaning fluids being injected into the soft tissue;
- ◆ This type of operation is commonly seen as a routine task performed on numerous occasions;
- ◆ An increased awareness is required at the risk assessment stage as well as in selection of adequate PPE for the task and training/awareness for operators. Our member held a full review of suitable PPE for the task and a review of the company risk assessments for high pressure washing operations.

- ◆ This incident could have been avoided with simple measures such as correct use of the tool, adequate PPE and appropriate training – as a result our member will implement formal training in the use of high pressure washers.

Members may wish to refer to the following incident (search words: *jetting*):

- ◆ [IMCA SF 03/15](#) – Incident 5 – *Diver sustains water jetting injury.*

3 Failure of Fire Extinguishers Owing To Corrosion

A member has reported a near miss incident in which a fire extinguisher failed due to corrosion of the internal stem. The failure was discovered during inspections of fire extinguishers during a mobilisation. Corrosion had taken place where the brass fitting connected to the aluminium stem. The extinguisher was relatively new and this was its first inspection. On removal of the pillar valve, the technician noticed an unusual amount of corrosion around the internal female brass fitting connecting the aluminium stem to the internal male thread of the pillar valve. The technician touched the stem and it fell apart at the corroded area. The internal inspection of the cylinder found that it was in good condition with no signs of corrosion.



Members are reminded of the corrosion potential with dissimilar metals, particularly in the case of pressure vessels. Our member notes that had the fire extinguisher been required for use in a hyperbaric chamber all that would have happened would have been a release of gas when operated. Our member is in direct contact with the supplier to try and resolve the issue.

Members may wish to refer to the following incidents (search words: *extinguisher*):

- ◆ [IMCA SF 03/07](#) – Incident 1 – *Near miss: hyperbaric fire extinguisher incident;*

- ◆ [IMCA SF 16/15](#) – Incident 1 – *Older "Norfolk range" powder extinguishers from before 2009.*

4 Condensate Leak

The UK Step Change in Safety has published a 'safety moment' regarding a condensate leak. Whilst there were no injuries, this was a high potential incident and some of the issues and recommendations will be of interest to IMCA members.

Before the incident, plant flowrates had changed, and there were high levels of vibration on the pipework on the main outlet of the condensate separator. This vibration caused a crack in the 2" line connected to the condensate outlet. Condensate leaked out at around 8 kg/second, and took 90 minutes to stop.

Issues identified include:

- ◆ there was a design failure;
- ◆ crew had become accustomed to the vibration;
- ◆ there was a lack of specialist competence;
- ◆ there was a lack of operations input to projects on valve issues and design.

Step Change recommendations for learning included:

- ◆ vibrating pipework is a warning sign – don't ignore it;
- ◆ vibration can result from original design as well as changing plant conditions;
- ◆ slow or creeping change can be difficult to spot – people can become accustomed to defective conditions;
- ◆ managing vibration requires engineering advice – constraining vibrating pipework can cause failure.

Step Change found that contributing factors to the incident were:

- ◆ complacency;
- ◆ poor control of work;
- ◆ lack of competence.

Further information, including a useful powerpoint presentation on this incident for use in 'safety moments', is available for download [here](#).

5 Fatalities Caused by Crane Collapse Following Metal Fatigue

The UK Health & Safety Executive (HSE) has published information on a crane hire company that was fined following an incident that led to the death of two men as a crane collapsed.

A worker died after falling from the crane as it collapsed. The crane fell onto a member of the public, killing him also. Sections of the tower crane separated when 24 bolts failed due to metal fatigue. The 24 bolts were a significant safety feature on the crane's slew ring, which connected the mast (tower) to the slew turret. This allows the arms of the crane (jib) to rotate through 360 degrees. When the bolts failed the slew turret and jib separated from the mast and fell to the ground.

A similar earlier incident, when the bolts failed on the same crane and had to be replaced, had not been investigated by the crane company. The company was found to have an inadequate system to manage the inspection and maintenance of their cranes. Further information can be found [here](#).

Members may wish to review the following similar incident:

- ◆ [IMCA SF 21/15](#) – Incident 4 – *Near miss: corrosion caused crane boom failure during heavy lifting.*