

IMCA Safety Flash 28/16

October 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 info@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.

Focus: Hand Injuries

This 28th IMCA safety flash of 2016 brings together a number of finger, hand or arm injuries:

- ◆ The first incident covers a cut to the hand which was mitigated by the use of personal protective equipment (PPE);
- ◆ The second is an incident in which a crewman suffered a serious crush injury to a finger during lifting operations;
- ◆ The third is an incident in which an engineer had to be medevacked after losing the tip of his finger in a closing valve;
- ◆ The fourth is an incident in which a crewman got his fingers crushed by getting them caught during mooring operations;
- ◆ The fifth is an injury to a worker whose arm was drawn into a machine during commissioning.
- ◆ The final incident relates to the importance of continued good and safe working practices when using portable hand grinders.

Members are encouraged to revisit hand and finger safety and reiterate the importance of fundamental safe practice – not taking short cuts, communicating properly, ensuring that the risks in any job are properly assessed, understood and dealt with, and doing the job safely with the appropriate PPE.

1 Crewman Suffers Cut to Hand – But Gloves Prevented It Being Much Worse

A member has reported an incident in which someone suffered a cut to the hand whilst steadying himself. The incident occurred during a dropped object sweep on the Tether Management System (TMS) in the ROV hangar. The system was split so the TMS was approximately 30 cm off the deck. A crewman stepped down from the TMS but slipped off the outer rim of the TMS. He put his left hand out to control his fall which came in contact with the sharp edge of a cut 'Jubilee' Clip. His glove was sliced through and his left palm had a wound of 2-3cm in length.



The following **actions** were taken:

- ◆ The Jubilee Clip was immediately removed and the system was checked for any other similar clips in the same cut condition;
- ◆ All ends of the Jubilee Clips were secured – all other ROV and Trenching systems were checked for cut Jubilee Clips which were appropriately dealt with.

Our member noted the following:

- ◆ His gloves prevented the cut from being deeper and wider, which would probably have lacerated his tendons with possible surgery and rehabilitation, leading to months off work and lost income;
- ◆ While every effort needs to be made to increase awareness and mitigate risks of this nature, we can never guarantee a hazard-free work environment;
- ◆ This incident is a perfect illustration of why the use of PPE – in this case, appropriate gloves – for the task is mandatory. The correct gloves for the task will prevent or greatly reduce the severity of a hand injury at work.

Members may wish to refer to the following incidents (search word: *cut hand*):

- ◆ [IMCA SF 07/12](#) – Incident 3 – *Two recent cases of hand and arm injuries;*
- ◆ [IMCA SF 05/15](#) – Incident 4 – *Routine task: badly cut finger changing mop head;*
- ◆ [IMCA SF 09/15](#) – Incident 2 – *“Routine” activities – non-routine result: finger injury during welding.*

Members should be aware that IMCA has a pocket card covering hand safety – [IMCA SPC 08 – Watch your hands.](#)

Watch your hands - You've only got one set

Your hands...

... the best set of tools you'll ever be issued with and the only ones you can't replace

- ◆ Don't put your hands where you can't see them
- ◆ Don't expose your hands to hazardous substances
- ◆ Don't use tools for the wrong purpose - use the right tool for the job
- ◆ Do wear gloves or PPE as appropriate
- ◆ Do stop or rearrange the job if your hands are at risk

THINK

What are you about to do?

- ◆ Do you know how to do it?
- ◆ Do you know when to do it?
- ◆ Do you need to tell anybody that you're going to do it?
- ◆ Think about the risks to your hands:
 - jewellery, pinch points, sharp objects
 - stored energy, live of fire, hazardous substances

CHECK

Have you made the necessary checks?

- ◆ Is it too heavy? Is it too light? Is it too dangerous?
- ◆ Do you need a permit to work (PTW)?
- ◆ Are you using the correct equipment?
- ◆ Have you got the correct PPE?
- ◆ Is it safe to proceed?

If in doubt - STOP!

- ◆ Follow best practice and remain within the limits of your authority. If the task changes, reassess the risk.

Remove jewellery
Wear gloves whenever safe and practical
Watch where you put your hands

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2 Line of Fire LTI: Finger Injury During Lifting Operations

A member has reported an incident in which a crewman suffered a serious injury to his left ring finger, resulting in lost work days. The incident occurred when a H-link (rope-rope type) was being relocated from a storage location onto an installation sled. The H-link was lowered horizontally onto the sled with the main crane. The H-link started swinging as it was being landed, and the injured person, who was a flagman during the operation, tried to get it stabilized and into place. As he was trying to stabilize the H-link, his hand got close to the shackle body and due to movement in the shackle, his left ring finger got jammed, leading to a crush injury.

After initial checks and first aid treatment from the on-board medic, the injured person was transferred to a hospital ashore for further treatment.



Lowering of H-link into the sled



H-link started swinging when being lowered into sled



Showing gap between shackle body and H-link



Showing pinch point

Our members' investigation revealed the following:

- ◆ **Technical findings:** the design of the H-link sled gave the deck crew little tolerance to handle the load. The design of the H-link and shackle body was such that it allowed a wide enough gap to get a hand inside;
- ◆ **Management and supervision:** roles and responsibilities on deck were unclear. The injured person, who was a dedicated flagman and should have been supervising the operation, stepped in to stabilize the load;
- ◆ **Safety controls and systems:** the risk assessment used was neither suitable nor sufficient for the task – it had been used a month before, but this earlier risk assessment did not capture the change in method, i.e. using the main crane instead of the rail crane, and it did not highlight the risk of pinch points;
- ◆ **Methods and procedures:** there was no Management of Change (MoC) process for the deviation from the original task plan. This would have included an updated risk assessment, which might have captured the associated risks;
- ◆ **Attitude and behaviour:** insufficient safety awareness from the injured person with regard to the potential risks he faced – he paid no attention to where he put his hand when he was trying to stabilize the load;

- ◆ **PPE:** the deck crew handling the load – all except for the injured person – were wearing impact resistant work gloves. There were no gloves of suitable size available for the injured person, so he was wearing standard gloves. It is not clear whether or not these gloves would have completely eliminated the injury, when such forces have been applied. However, it might have mitigated the injury;
- ◆ The **underlying causes** for the incident were:
 - The injured person stepped in to help with stabilizing the load, when he was assigned as flagman for the task and should have been supervising the lift
 - The injured person did not pay attention where he put his hand
 - The H-link was lifted with the main crane rather than the rail crane. There had been no MoC in place for this change
 - Pinch points were not identified before the start of the operation
 - Design of the H-link sled – tight tolerances;
 - Neither procedures, nor task plans, described the hazard of these pinch points;
- ◆ The **root causes** for the incident were:
 - Lack of safety awareness and understanding of roles and responsibilities on deck
 - Inadequate planning of operation, insufficient design, risk assessment and compliance (with MoC process).

The following **lessons were learnt:**

- ◆ Clearer understanding of roles and responsibilities on deck would have ensured that the flagman only supervised the operation and did not handle the load;
- ◆ Regular inspection of project equipment on deck would have increased crew familiarity with it and identified pinch points and other potential hazards;
- ◆ A more robust MoC process and a suitable and sufficient risk assessment might have prevented this incident.

The following **immediate actions** were taken once the injured person had been dealt with appropriately:

- ◆ Inspection of deck area and H-links to identify other hazardous areas and potential pinch points;
- ◆ H-link marked with red paint to highlight potential pinch point areas;
- ◆ Method for lifting and landing of the H-link was reviewed;
- ◆ Updated task plan/made MoC for the operation, and developed a more detailed risk assessment;
- ◆ PPE – evaluate supplying impact resistant work gloves for all deck crew;
- ◆ Evaluate and assess design of H-link and H-link sled.

Members may wish to refer to the following incidents (search words: *finger, injury*):

- ◆ [IMCA SF 04/12](#) – Incident 1 – *Lacerated finger during rigging operations*;
- ◆ [IMCA SF 19/16](#) – Incident 2 – *Lost Time Injury (LTI) – loss of end of thumb*.

Members may wish to refer to [IMCA SEL 019](#) – *Guidelines for lifting operations*.

IMCA publishes a wide range of [safety promotional material](#) which is applicable in this instance, including videos, pocket cards and safety posters.

3 Serious Finger Injury During Valve Installation

A member has reported an incident in which a second engineer suffered a serious injury leading to the loss of the tip of his left middle finger. The incident occurred during valve operation function tests on a remotely operated

pneumatic controlled valve for a vessel fuel system. There were some issues with the opening and closing of one particular valve. The decision was taken to change out the valve.



A second engineer and the motorman wanted to test the new valve before it was mounted. The actuator and valve were on the engine room deck, and the air supply to the system was disconnected, but cables for remote control of the actuator were connected.

The second engineer used an air-gun to supply low pressure compressed air to the valve, instead of reconnecting the valve to the system air controlling pneumatic valves. During this pre mounting test, the valve did not open properly and got stuck in a half-open position. The engineer tried to move the valve-flap with his fingers. At the same time, he supplied air to the actuator with the air-gun. The valve-flap suddenly closed, and the tip of his left middle finger was cut off by the valve-flap. The engineer was medevacked.

Our members' investigation noted the following:

- ◆ The **immediate cause** of the incident was the engineer using his fingers directly on the valve-flap instead of using the correct tools;
- ◆ The job was considered routine by the engine crew;
- ◆ The valve was not secured whilst the engineer tested it;
- ◆ There was no rush when it came to replacing the valve; the crew could have used sufficient time to plan the operation in more detail and agree upon which equipment should be used;
- ◆ The engineer carried out simultaneous tasks – he was holding the air-gun with one hand, the valve with the left hand and simultaneously tried to move the valve-flap with his fingers, taking a shortcut;
- ◆ Our member considered that some of the **root causes** of the incident were:
 - inadequate or substandard planning
 - the use of short-cuts;
- ◆ Some of the **causal factors** were as follows:
 - Poor or inadequate risk assessment: the engineer should have been aware that the valve-flap could suddenly close, and have prepared for it
 - “Routine” – complacency and low awareness of risk: since the replacement of valves was considered a routine job and carried out regularly, it is possible that the engineer and motorman were not as alert as they ought to have been during this specific operation, nor did they have sufficient awareness of risk, and they did not properly assess the danger when it came to moving parts
 - PPE: gloves were not used by the engineer during the replacement of the valve. Company procedures require that gloves in the engine room should be *“readily available and worn as required in work permit/risk assessment”*
 - Failure to follow procedures: company procedures for Permit to Work state that work on the fuel system should be covered by a work permit. In order to replace the valve, the fuel system/pipe should have been isolated in order to avoid any risk of fuel entering the affected area, and the air system controlling pneumatic valves should have been isolated/disconnected. These would have been covered by the work permit and resulted in use of the Lock Out Tag Out procedure/checklist. The engine crew assessed the job to be a low risk routine job and took the view that a Permit to Work was not required.

Following the “safety stand down” and discussion, our member took the following **actions**:

- ◆ Further review of company's Permit to Work procedures, Lock Out Tag Out System procedures, and Risk Assessment procedures;
- ◆ A renewed focus to be on finger/hand injuries;

- ◆ Further review of risk assessment for work on fuel system and changing of pneumatic valves.

IMCA publishes a range of safety promotional material which will be useful to members in addressing this incident. In particular, members' attention is drawn to the pocket card "watch your hands" found [here](#).

Members may wish to refer to the following similar incidents (search words: *finger, hand*):

- ◆ [IMCA SF 02/11](#) – Incident 2 – *Serious hand injury during use of deck scaler:*
 - A **root cause**: "Failure to follow basic safe working practices";
- ◆ [IMCA SF 11/12](#) – Incident 1 – *LTI: hand injury:*
 - A **root cause**: "Risk was considered to be tolerable – the work party considered the work to be safe. There was inadequate understanding of the risks involved.";
- ◆ [IMCA SF 08/16](#) – Incident 2 – *LTI: finger injury whilst working in engine room:*
 - A **root cause**: "lack of hazard awareness/complacency – the injured person did not identify using the machine as a hazard and did not use the available safety guards and processes whilst operating [the machine]".

4 Unsafe Method of Rope Work Resulted in Severe Hand Injury

The Marine Safety Forum (MSF) has published safety alert number 16-22 regarding an incident in which a crewman suffered serious injuries to three of his fingers during mooring operations. The incident occurred when the crew of the vessel were preparing mooring lines for arrival in port. An Able Seaman was spooling a mooring line from the starboard locker to the starboard tugger winch aft. During this operation, a crow bar slipped and the seaman was forced against the guide roller. He caught his fingers between the crow bar and roller, leading to injuries to three of his fingers, including loss of one joint of a finger.



Side view showing spooling direction of mooring line.



Front view showing mooring line travel to the winch and the crow bar position.

The MSF safety alert records the following:

- ◆ **Immediate cause**: an unsafe method for spooling line onto the tugger winch;
- ◆ Basic **causal factors** included:
 - poor planning: there was no risk assessment conducted before the job, nor was a toolbox talk meeting held
 - the seaman performing the work was new on board the vessel.

The full report can be found [here](#).

Members may wish to refer to the following incident (search words: *unsafe, mooring*):

- ♦ [IMCA SF 04/09](#) Incident 3 *Mooring incidents*:
 - “Members’ attention is drawn to the attached document from the UK P&I Club which is of interest regarding potential accidents that can arise from mooring operations”.

Members may wish to refer to [IMCA SEL 029](#) – *Mooring practice safety guidance for offshore vessels when alongside in ports and harbours*.

5 Manufacturing Firm Fined After Worker’s Arm Injured in Roller

The UK Health & Safety Executive (UKHSE) has prosecuted a company responsible for an incident in which a worker’s arm was injured in machinery. The incident occurred when an installation engineer was commissioning a new conveyor belt system. The engineer suffered a broken arm when it was pulled into the machinery.

The investigation by the UK HSE found that there was a **lack of effective guarding and isolation procedures** on the machinery.

The company was fined £170,000.

See [here](#) for details. Members may wish to refer to the following incident (search word: *guard*):

- ♦ [IMCA SF 11/12](#) – Incident 1 – *LTI: hand injury*.

6 Portable Grinders – Hand Safety

A member has reported on a review of abrasive wheels on board a chartered vessel as a part of abrasive wheel training delivery, in which there were a number of significant faults found with portable hand grinders. These required urgent and immediate attention.

The three issues illustrated below cover the appropriate and proper safe use of power tools:



9” Grinder with heavily worn disc attached



Worn disc and as new disc



9” Grinder with 5” disc fitted

Our member noted the following:

- ♦ Grinders and grinding discs should never be used in this manner;
- ♦ Grinding discs should be inspected before use to ensure that they are in acceptable condition and are the correct size, type and rating for the grinder;

- ◆ There have been many fatalities caused by incorrect discs being used – many due to the disc shattering at speed;
- ◆ Only trained and competent personnel should use abrasive wheels;
- ◆ **If you aren't sure, ask!!**

Stay Safe at the Wheel - Cutting & Grinding Safety	Stay Safe at the Wheel - Cutting & Grinding Safety
<p>Before Use</p> <ul style="list-style-type: none"> ◆ Always examine power tools before use and check that they have been inspected and maintained within the last six months ◆ Ensure that power tools are fit for use: check that electrical power cords, pneumatic hoses and isolation switches are all in good condition and that the proper guard is in place. Any suspect or damaged equipment must be quarantined and tagged 'Unsuitable for Use' or similar ◆ Always inspect wheels/discs. Lightly tap the wheel with a non-metallic object. If the wheel does not 'ring' or sounds dead, do not use it ◆ If a permit to work is required, ensure that you have it and that safety issues have been explained during the toolbox talk prior to starting the task <p>Procedures</p> <ul style="list-style-type: none"> ◆ Always use the correct wheel for the right tool and the right job ◆ Never try to use over-sized or under-sized wheels/discs ◆ Do not over-tighten the spindle nut ◆ Do not use a wheel/disc without a maximum RPM marked on it ◆ Handle grinding wheels/discs with care and store them appropriately ◆ Ensure conditions are appropriate for use of portable electrical equipment ◆ Keep hands away from moving parts ◆ Ensure the auxiliary handle, if attached, is used ◆ Do not modify or remove factory fitted guards <p>Handling</p> <ul style="list-style-type: none"> ◆ Always carry power tools by the handle ◆ Do not pull the power cord or pneumatic hose to disconnect from the power source 	<p>PPE</p> <ul style="list-style-type: none"> ◆ Wear eye goggles and a full-face shield to protect your face ◆ Wear properly-fitting work gloves and safety shoes in good condition ◆ Remove jewellery. Avoid loose clothing and tie long hair back ◆ Wear long-sleeve heavy-duty coveralls ◆ Use a dust mask when appropriate and wear ear defenders during extended periods of operation ◆ Where possible, place barriers around the area where grinding/cutting is taking place to prevent other people from entering <p>During Use</p> <ul style="list-style-type: none"> ◆ Check your footing and maintain a good balance at all times to avoid losing control of the grinder; particularly if working on a vessel ◆ Keep power cords away from the grinding wheel, from heat, oil and sharp edges and ensure that they do not present a trip hazard ◆ Remain aware of the direction the sparks are going and ensure they do not present a hazard to people or equipment ◆ Wait until the grinder reaches full speed before bringing the grinding disc or cutter into contact with the job ◆ Do not apply excessive pressure on the wheel or the disc - this will reduce your control and could stress the wheel or disc, leading to premature failure ◆ Always disconnect and isolate the equipment from the power source before installing or changing wheels or discs ◆ Do not lay down a tool while the disc or wheel is still turning <p>After Use</p> <ul style="list-style-type: none"> ◆ Always switch the power off and disconnect electrical tools or bleed residual air from pneumatic tools after use ◆ Report any defect with the tool to your supervisor
<p>No. 11 in a series of pocket safety cards issued by the International Marine Contractors Association Issue 1 - October 2005</p>	<p>For more information on IMCA's safety-related initiatives, please visit our website at www.imca-int.com</p>

Members may wish to refer to the following incidents (search words: *grinder, grinding*):

- ◆ IMCA SF 06/01 – Incident 3 – *Use of hand-held disc grinders;*
- ◆ IMCA SF 06/05 – Incident 1 – *Hand grinder injuries;*
- ◆ IMCA SF 05/11 – Incident 2 – *Improper use of tools: bruising;*
- ◆ IMCA SF 11/11 – Incident 3 – *Grinding disc with defects.*

Whilst no cause for complacency, it is instructive to note that incidents involving inappropriate use of hand-held grinders tend to be further in the past, possibly indicating that lessons have been learnt in recent times. Returning to those lessons is nevertheless an entirely appropriate use of time and resources.