

IMCA Safety Flash 12/14

July 2014

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.

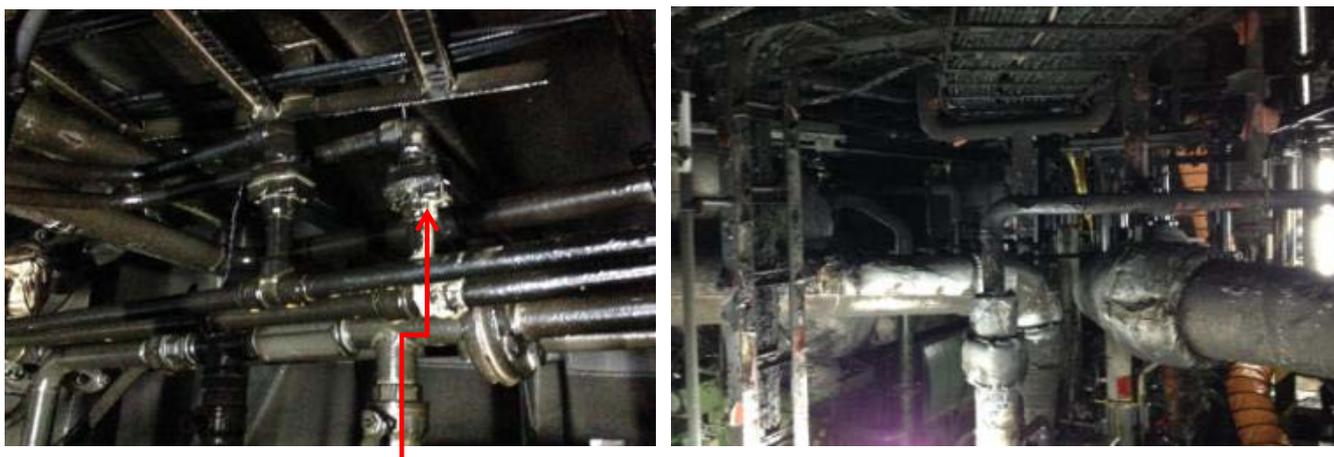
A number of other organisations issue safety flashes and similar documents which may be of interest to IMCA members. Where these are particularly relevant, these may be summarised or highlighted here. Links to known relevant websites are provided at www.imca-int.com/links. Additional links should be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

I Engine Room Fire

A member has reported an incident in which an engine room fire occurred onboard a tug. The incident occurred after an unberthing operation of another vessel which had been alongside in port. The tug was safely moored alongside with three duty personnel onboard (chief officer, second engineer and deckhand). The master and chief engineer were ashore.

The chief officer in the wheelhouse sighted smoke coming from both the engine room side vents, towards the bows of the tug. Subsequently, the second engineer called the wheelhouse requesting for the starboard main engine to be shut down immediately. Both main engines were then stopped by the chief officer. At this point in time, the second engineer had made his escape from the engine control room to the main deck.

The fire was brought under control with assistance from local shore-based fire-fighters. Whilst the incident resulted in extensive localised damages to the tug's engine room, there were no injuries.



Figures (L): Hydraulic power pack unit flange (R) Engine room

Our members' investigation revealed the following:

- ◆ The hydraulic power pack unit for the tug's deck winch and windlass operations was initially leaking lightly; this became a sudden heavy leakage on the day of the incident (fuel source);
- ◆ The port main engine exhaust manifold insulation was leaking with the hot surfaces exposed (heat source);
- ◆ The darkened state of the engine room due to the exhaust gas was a hazard that the crews were not aware of;
- ◆ Crews did not execute the necessary actions to control the fire such as:
 - Stop engine room blowers from continuously feeding fire with oxygen
 - Stop all oil pumps in engine room from running and feeding the fire with hydraulic oil
 - Close all engine room fire flaps on deck (many were found seized)
 - Activate the fuel oil quick closing valves (generators were running throughout).

The following lessons were learnt:

- ◆ Engine room equipment defects rectified as soon as possible;

- ◆ Insulation checks/repairs carried out;
- ◆ Ensure all oil lines are in satisfactory conditions;
- ◆ Ensure engine room is sufficiently lighted to maintain safe working conditions;
- ◆ Ensure all engine room fire flaps on deck are in safe working condition;
- ◆ Ensure all emergency shutdown trips are tested at regular intervals by the ship's crew;
- ◆ Ensure monthly fire drills are carried out on board and that all crew are familiarised with the emergency duties/equipment's operations.

Our member reiterated that:

- ◆ Crew members are all responsible for their own safety;
- ◆ Crew members need to be willing to approach others about working safely and 'stopping the job';
- ◆ Crew need to be properly informed about risk and control measures.

Engine room fires form a recurring theme in IMCA safety flashes. Typically the root causes of such fires are failures in house-keeping or planned maintenance, or failure to recognise fire hazards and address the risks. Members may wish to refer to the following similar incidents (key words: *engine, room, fire*)

- ◆ [IMCA SF 08/03](#) – Incident: 4 *Cracked fuel line results in engine room fire*;
- ◆ [IMCA SF 10/05](#) – Incident: 2 *Engine room fire*;
- ◆ [IMCA SF 12/11](#) – Incident: 8 *Engine room fire on offshore vessel*.

2 Punctured Welding Hose Flash Fire

An incident has come to IMCA's attention in which a punctured welding hose caught fire. The incident occurred during routine use of an air operated grinder on an offshore vessel. The pipefitter/fire watch saw flames coming from the acetylene hose, told his colleague to stop grinding, isolated the gas supply and used a fire extinguisher to put out the flame.

No-one was harmed, the worksite was secured, and the incident was reported to the supervisor who stopped the work. A safety stand down was immediately held. There was no injury and no property damage other than to the hose.



Showing punctured and burned hose.



Showing new galvanized blinding to control sparks added.

The investigation revealed the following **immediate causes** of the incident:

- ◆ Poor practices of routing and protecting hoses had subjected them to damage;
- ◆ The acetylene hose was connected and run out in the vicinity of a workshop and subjected to uncontrolled sparks. Escaping gas was ignited resulting in a flash fire.

The **root causes** identified were:

- ◆ The nearby workshop was not designed to prevent or control heat and spark release;

- ◆ The hose was of inferior quality and had been poorly treated;
- ◆ The hose was recently brought into service and already sustained damage resulting in the escape of acetylene gas;
- ◆ Pre and post inspections had not been adequately carried out. Had they been completed, this would have raised concerns about the structural integrity of the hose.

The following corrective actions were suggested:

- ◆ Provide adequate blinding/coverings in the nearby carpentry workshop to prevent sparks and heat from going outside of the contained area;
- ◆ Training and toolbox talk reviewing the incident and stressing cable and hose management, pre and post task inspection and removing damaged equipment from service;
- ◆ All hoses and equipment to undergo routine maintenance inspections and be colour coded to enable personnel see the equipment is valid to use;
- ◆ Several other damaged hoses were removed and replaced;
- ◆ A pre- and post-task welding hose checklist was created and made part of the permit to work process.

Members may wish to refer to the following similar incidents (key words: *fire welding*):

- ◆ **IMCA SF 09/09** – Incident: 1 *Poor Maintenance and Subsequent Failure of Welding Equipment*;
- ◆ **IMCA SF 02/14** – Incident: 1 *Hose Fire Caused by Flashback in Oxygen & Acetylene Hoses*;
- ◆ **IMCA SF 08/14** – Incident: 4 *Cutting torch separates from flame arrestor*.

3 Lost Time Injury (LTI) – Winch Base Plate Failure

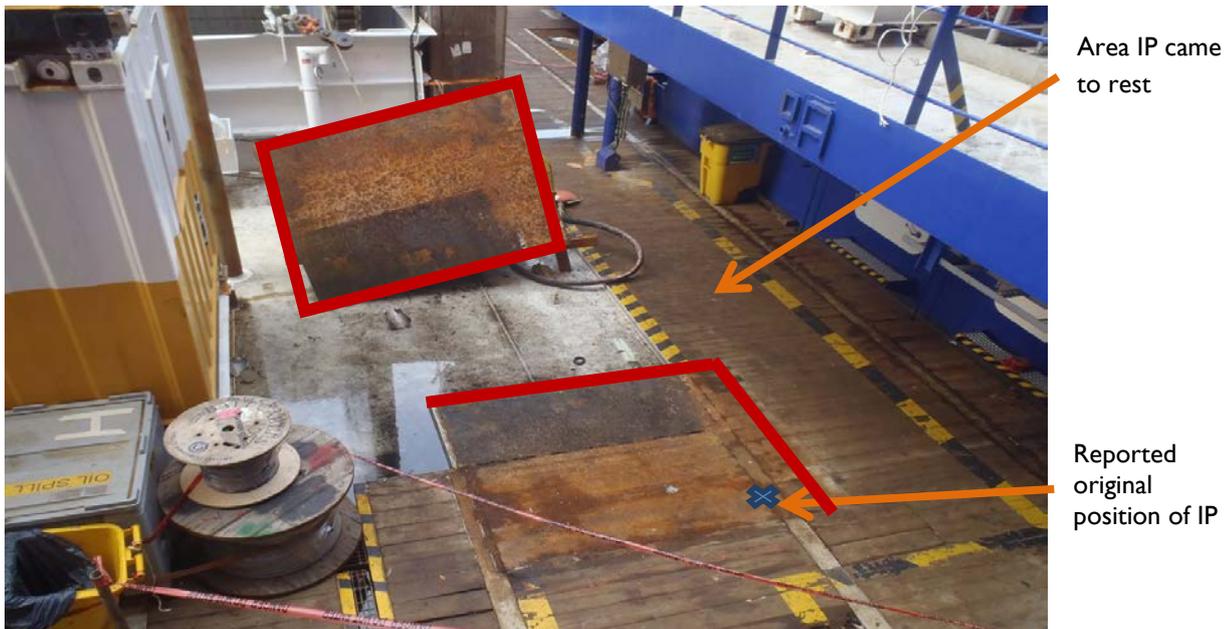
A member has reported an incident in which a winch base plate failed catastrophically, causing serious injuries to a nearby crewman. The incident occurred when the vessel was stern to shore, unreeling pipe from an onboard reel onto the shore. During this process, a winch was used to disconnect the end of the pipe from the reel, and tail the head from the reel while the Vertical Lay System (VLS) tension machine paid out the pipe. When the end of the pipe reached the top of the VLS aligner a 'controlled stop' was called for by the winch operator. The winch operator relayed to his supervisor that he felt the winch base plate flexing. After the winch came to 'all stop' the welds on the winch base plate securing it to the deck failed; the winch was forcefully pulled forward and up and came to rest forward of the reel well. The winch operator had his right foot on the base plate and was thrown up by the force suffering a serious injury to his left knee and lower leg.



The rental winch installed before the incident



Magnetic particle inspection (MPI) checks done between winch and base plate before the incident



Rental winch and base plate after the incident

Our member's investigation revealed the following:

- ◆ A repeatedly malfunctioning 32t constant-tension lay system winch had been replaced with a 10t air tugger non-constant tension winch for use in offloading pipeline. The 10t winch had been initially installed for loading purposes, and then maintained for offloading, as the 32t winch had not been repaired;
- ◆ Approximately two months before the incident the winch base plate and winch attachments deflected under load. Additional fastenings were welded from the winch frame to the base plate;
- ◆ Eight days prior to the incident the rental 10t winch had been installed, and MPI (magnetic particle inspection) checks [of the welding] were done between winch and base plate fastenings.

Our member noted the following causal factors:

- ◆ A 32t constant-tension winch repeatedly malfunctioned, was removed from service, and had been replaced with a 10t tugger winch;
- ◆ Management of Change (MOC) procedure raised but did not include design calculations for welded installation of base plate, attached between main deck and 10t winch;
- ◆ Replacement winch was not constant tension nor fitted with a tension measurement device;
- ◆ Cause of base plate deflection occurring two months prior to incident was not investigated and corrected;
- ◆ Inability of aligner load cells to accurately check tension at smaller tower angle (less than 80°);
- ◆ Calibration validation process had not been completed due to a load cell failure incident.

Our member's recommendations and corrective actions were:

- ◆ Identify and correct shortcomings in MOC requirements;
- ◆ Ensure that non-destructive testing be carried out on all welds between winch base plates and decks whenever a winch is installed onto a base plate;
- ◆ Review and revise Pipe Loading and Offloading procedures to eliminate identified causal factors;
- ◆ Ensure vessel management and crew are fully apprised of 'Stop the job' or 'Stop Work Authority' policies and procedures;
- ◆ Re-design the lay system so that aligner load cells can be calibrated to allow tension checks for lower tower angles;
- ◆ Revise applicable procedures to include 'Hold Points' when load cells must be calibrated before undertaking any installation work involving the tower, including any work that requires the tower to go below 80 degrees.

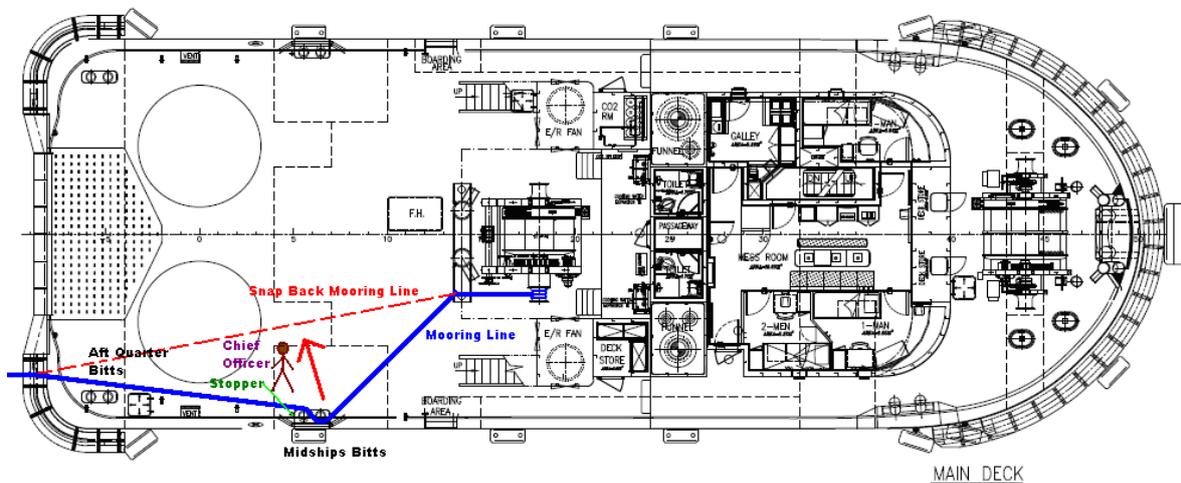
Members may wish to refer to the following incidents (key words: *weld, winch, base-plate, failure*):

- ◆ IMCA SF 09/01 – Incident: 3 ROV winch failure;
- ◆ IMCA SF 08/07 – Incident: 1 Failure of Welding on Hyperbaric Rescue Chamber Medical Lock Door Assembly;
- ◆ IMCA SF 09/13 – Incident: 1 High Potential Near Miss: Dropped ROV/TMS Leading to Equipment Damage [failure of welding].

4 LTI – During Mooring Operations

A member has reported an incident in which a crewman (the chief officer) suffered head injuries during mooring of a tug to a Single Buoy Mooring (SBM). The tug was mooring up to the SBM in order for the dive team to be able to complete routine surface maintenance. Once the tug was in position it was realised that the vessel needed to move around 15 metres in order for the divers' umbilical to reach the SBM. The configuration of the mooring equipment and arrangement being used required the injured person to enter a snap back zone in order to place a stopper on the mooring line, prior to securing it to the bitts.

As he was about to start stoppering off the line, the mooring line slipped off the bitt, striking him on the chest. This pushed him backwards and lifted him up, which resulted in him falling backwards and his head making contact with the deck. He sustained head injuries including a fractured skull. The incident was reported immediately, the vessel returned to port and the injured person was taken to hospital.



Plan view of back deck showing location of injured person



Showing mooring lines as in incident (reconstruction)

Our member's investigation revealed that the causes of the incident were as follows:

- ◆ The mooring arrangement used required the Chief Officer to work in the snap back zone;
- ◆ The mooring arrangement used facilitated a vertical movement upwards (The midship bitts have a slight inboard inclination, the height difference between the mooring roller and midship bitts created an angle and the length of the horizontal extension arm is not long enough to present a sufficient safety guard);

- ◆ There was a deviation from normal operating procedure – inadequate MOC.

Our member took the following lessons to prevent recurrence:

- ◆ Reiterated importance of being able to STOP THE JOB in case of unsafe operations;
- ◆ Took steps to ensure crew were fully informed of risk and control measures;
- ◆ In cases where deviating from an agreed plan of operations, stop the job, re-assess and communicate the additional hazards and control measures via a toolbox meeting;
- ◆ Ensured all personnel involved in the activity or completing simultaneous operations take part in the toolbox meeting;
- ◆ Ensured personnel were trained and have sufficient experience and knowledge to carry out a task;
- ◆ Implement formal MOC process for changes/deviations to normal operating procedures and changes to design of the ship.

Members may wish to refer to the following similar incidents (key words: *mooring, tension*):

- ◆ **IMCA SF 02/08** – Incident: 1 *Finger Injury Whilst Casting Off Towing Line*;
- ◆ **IMCA SF 04/09** – Incident: 3 *Mooring incidents* (a document from the UK P&I Club);
- ◆ **IMCA SF 07/10** – Incident: 2 *Crewman Fatally Injured During Mooring Operations*.

Members may wish to use IMCA’s safety promotional poster on mooring safety:

- ◆ *Mooring safety* <http://www.imca-int.com/media/114592/imcaspp12.pdf>.

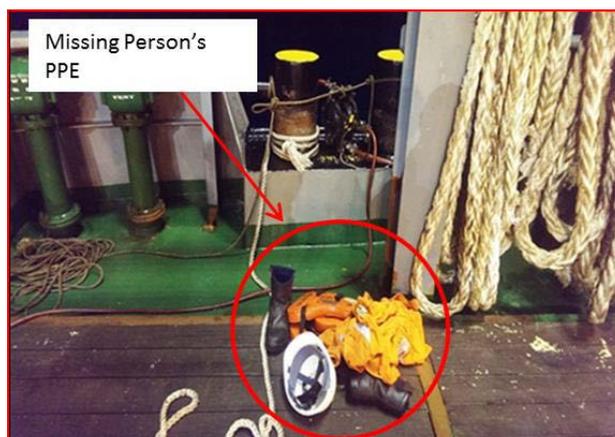
5 Fatality – Man Overboard

A member has reported an incident in which a crewman was lost overboard. The incident happened during the hours of darkness. A rigger onboard a material barge was assigned to keep a watch on the workboat moored alongside the port stern of the barge. The rigger observed the workboat drifting away from the material barge and panicked. He was approached by a mechanic who was also working on the material barge. The mechanic advised him to wait till he informed his supervisor. As both were not carrying a radio, the mechanic proceeded to the construction barge to contact his supervisor. Meanwhile the rigger decided to enter the water from the tow tug moored along the port side of material barge in order to attempt to recover the drifting tug. Before doing so, the rigger removed his personal protective equipment (PPE) and work vest on the main deck of the tow tug.

He disappeared shortly after entering the water, and in spite of extensive search and rescue operations over a wide area, involving Fast Rescue Craft, tug boats and helicopters, could not be found and is presumed dead.



Showing workboat moored alongside material barge



Showing missing person's PPE

Our member took the following actions to prevent recurrence of this tragic incident:

- ◆ Ensure deployed workboats are crewed by a minimum of two persons or retrieved back onto deck. If this is not practical, ensure workboat is properly secured;
- ◆ Ensure personnel deployed on material barges and remote sites carry a radio at all times;
- ◆ Deck watch and gangway watch with access to radio to be maintained at all times;

- ◆ Ensure life rings are available on material barges and being used in a man overboard situation;
- ◆ The existing 'buddy system' to be reinforced to prevent lone working on material barges and/or remote areas;
- ◆ Review MOB procedures and ensure crew are fully familiar with it;
- ◆ Ensure crew are aware that entering the water overboard the vessels/structure is strictly prohibited unless there is a life threatening situation.

Members may wish to refer to the following similar incidents (key words: *overboard, MOB, fatality*):

- ◆ [IMCA SF 16/13](#) – Incident: 2 Fatality – *Man Overboard*.

6 Near Miss: Loose Life Jackets Caused Man Overboard (MOB) Alert

A member has reported an incident in which a man overboard alert was caused on a vessel when life jackets were spotted floating in the sea. The duty officer sighting life jackets floating in the water, called the master, who then called the nearby floating production storage and offloading unit (FPSO) and asked if there had been any reports of man overboard or similar distress. There was no such emergency.

The life jackets were recovered, whereupon it was discovered that they came from the vessel itself. Five empty life jackets were recovered. An inventory of on-board life jackets was made and it was found that the five jackets came from a storage box located near the muster station. Owing to gusting winds, the lid of the box had been blown open.

Members are reminded to ensure that objects on the open deck – particularly boxes or storage containers – are properly secured against the effects of heavy seas causing movement of the vessel, and against all possible winds, including the effects of helicopters. At the same time, it is important to ensure that life-jackets and other emergency equipment remain available and easy for crew to access in the event of a genuine emergency.

Members may wish to refer to the following similar incident:

- ◆ [IMCA SF 08/14](#) – Incident: 2 *Unsecured Object Lifted by Helicopter Downwash*.

7 LTI – Trapped Finger

The Marine Safety Forum has published the following safety flash regarding an incident in which a crew member lost the tip of his finger when it was crushed between the ship's rail and a bulk hose connection on which he was working.

The safety flash can be downloaded from www.marinesafetyforum.org/upload-files//safetyalerts/msf-safety-flash-14.27.pdf.

Injuries to fingers, hands and feet are amongst the more common incidents reported to IMCA. We focus here on crush injuries to fingers caused during cargo or mooring operations. Members may wish to refer to the following similar incidents (key words: *crush, injury, fingers*)

- ◆ [IMCA SF 03/05](#) – Incident: 1 *Finger Injury During Loading Operation*;
- ◆ [IMCA SF 02/08](#) – Incident: 1 *Finger Injury Whilst Casting Off Towing Line*.