IMCA Safety Flash 01/15

January 2015

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

1 LTI – Hand Injury during Mooring Operations

A member has reported an incident which a crew member injured his hand during mooring operations. The incident occurred when a bunker barge was beginning an approach to the port side of a Platform Supply/multipurpose Vessel (PSV) at anchor, for bunkering operations.

The crew of the bunker barge passed the "messenger line" to a crewman on the PSV, along with two mooring ropes. The crewman took the ropes and put the eyes of the two mooring ropes on each of the twin bollard on the aft and returned the messenger line to the bunker barge crew. The crewman on the PSV then considered that the mooring operation was over and started to walk away towards the accommodation. As he reached amidships the master of the bunker barge got his attention and indicated to him that he should go aft again and shift one of the mooring ropes to the other bollard. He returned to the aft bollard. The barge crew slackened the mooring rope a little and he tried to remove the rope. At that moment there was sudden tension on the rope (due to relative movement between the vessel and bunker barge) and his left palm got stuck between rope eye and bollard. He suffered severe laceration injuries to his left hand.

First aid was given, then the injured person was taken to the ship's hospital for further checks, before going ashore to hospital for further treatment.

Figure: showing injures to the crewman's hand

Figure: bollards were incident occurred

Our members' investigation established the following:

- The incident occurred when the injured person agreed to shift the rope from one bollard to the other without insisting on the rope being sufficiently slackened. He failed to take into account the relative movement of the vessels, which led to his hand getting stuck between the eye of the rope and the bollard;
- There was no very high frequency (VHF) communication established between the bridge of PSV and the bunker barge;
- The injured person was not in VHF communication with the duty officer and was taking instructions directly from the bunker barge Master and crew;
- There was no effective toolbox talk;

- The injured person was attending to the moorings alone, which was contrary to the job hazard analysis, which required attendance in pairs.

Our member identified the following lessons:

- Vessel's bridge to establish VHF communication with other vessel before agreeing to start the mooring/unmooring operation;
- Both forward and aft station deck crew to be in VHF communication with duty officer on the bridge;
- Ship crew to take instructions from the duty officer regarding number of ropes being passed and shifting of ropes and not from the barge crew directly;
- Additional control measures during mooring and bunkering operations should include the importance of risk assessment taking place before work starts;
- Review the company Manual of Permitted Operations specifically with regard to weather conditions;
- To ensure Buddy System at workplace especially during night time operation to work as a team to spot dangers.

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

- IMCA SF 02/08 – Incident 1. *Finger injury whilst casting off towing line*;
- IMCA SF 11/14 – Incident 2. *LTI – Hand severed during mooring operations.*

2 Near Miss: Safe Use of Chains in Rigging

A member has reported an incident which a chain link parted when a shock load was introduced to the chains. The inappropriate use of chains was a major failing in a series of events which resulted in a high potential near miss incident. The incident serves to communicate the safe and appropriate use of chains in rigging operations.

The incident occurred during pipelay operations onboard a vessel. A constant tension winch was being used to transfer the first end of the pipe from the reel to the pipelay system. Because of earlier winch and sheave failures, a temporary rigging solution using chains, shackle and snatch-block was used to control the winch wire's position. The chains in question were of the grommet type, grade 80 lifting chains. They had the required certification and had been inspected by a third party during the six monthly lifting inspections. Although the chains were rated for the loads involved in this operation, the complete assembly was not rated accordingly. This did not have a direct impact on the incident in question, although it was seen as bad practice.

During the operation, a shock load was introduced to the chains, leading to a chain link parting and in turn to a catastrophic series of events.

Figures: showing a reconstruction of how the chains were rigged

Our members' investigation established that the use of chains in this manner was hazardous because:

- The chain was exposed to a shock load;
- The chains were wrapped around edges which were the incorrect radius for the chain diameter;
- As the chains overlapped each other within the shackle they had no chance of equalising the load when it was applied.

Our member drew the following lessons:

- Never wrap a chain around a diameter which is less than twice the diameter of the chain link;

- Never twist, knot or trap chain slings;
- It is recommended to use packing on edges to reduce the side loading on chain links;
- When attaching more than one chain to a shackle/hook always avoid overcrowding or use a master link;
- Never use a chain where there is potential for it to be exposed to dynamic or shock loads.

Members may wish to refer to the following similar incidents (key words: *chain, link, failure*):

- IMCA SF 12/11 – Incident 1. *Offshore tank container rigging failure;*
- IMCA SF 06/12 – Incident 5. *Near miss: cable reel deck cargo broke loose.*

(Failures of very large mooring chains for floating offshore structures have been excluded, as being a slightly separate issue.)

3 Near Miss: Anchoring of Rigging to Uncertified Points

A member has reported a near miss incident in which rigging was anchored to uncertified points. The incident occurred during pipelay operations onboard a vessel. A temporary rigging solution using chains and shackle and snatch-block was used to control the position of a winch wire. This temporary rigging arrangement was then anchored to deck rails which were not designed to take side loads. The use of deck rails or other uncertified structures as an anchorage point is hazardous.

An unapproved anchorage point had the potential to lead to injury to personnel and/or damage to the equipment. Although this rigging arrangement did not, in this case, lead to an incident, our member considered that it was bad practice which could easily have done so.

Figure: snatch block anchored to deck rail

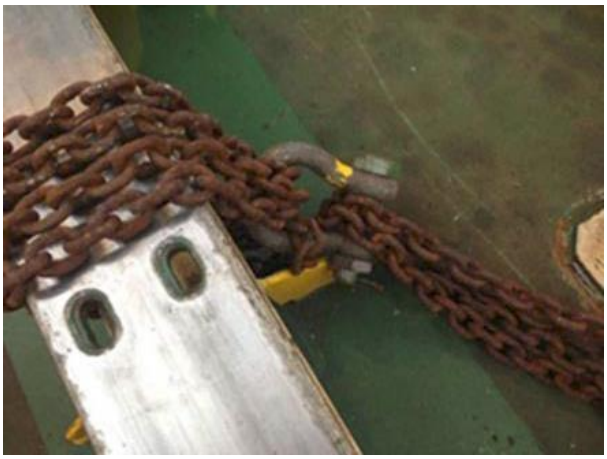

Figure: chain secured inappropriately

Our members' investigation established the following:

- The deck rail was not designed to take side loading and as a result could have led to injury to personnel and/or damage to the equipment;
- The deck rail was not a certified rigging/lifting point; such lifting points are or should always be appropriately marked as such;
- The deck rail did not undergo statutory periodic thorough examinations as required by local regulatory requirement.

Our member reiterated the lessons that:

- Only certified rigging/lifting points should be used for this type of operation;
- Anchorage points should be clearly marked with the safe working load before they are considered safe to use;
- The use of existing ship structures for this type of operation should not be permitted.

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

- IMCA SF 12/09 – Incident 2. *Dropped object near-miss;*
- IMCA SF 01/11 – Incident 6. *Failure of home-made equipment*.

Members should also refer to IMCA SEL 019 *Guidelines for lifting operations* www.imca-int.com/media/73202/imcasel019.pdf.

4 S92 Helicopter Pressure Refuelling Incident

Oil and Gas UK (OGUK) has circulated a report of a near-miss incident involving refuelling of helicopters. The incident occurred when the fuel supply to the aircraft was interrupted and introduced fuel/air mix delivery to the aircraft, which caused the tank vent valves to close and build-up of pressure causing the sponson to rupture.

Please see the attached for further information. Any additional questions can be directed to Rebecca Borresen, OGUK HSSE Senior Business Analyst, rborresen@oilandgasuk.co.uk.

HELIDECK OPERATIONS SAFETY ALERT Oil & Gas UK

REF:	HSSE/Aviation/2014-02
ISSUE TITLE:	***S92 HELICOPTER PRESSURE REFUELLING INCIDENT***
DATE:	5th December 2014
OGUK Directorate	Health, Safety and Employment Issues Directorate
OGUK Owner:	Robert Paterson

INCIDENT DESCRIPTION:

A recent Sikorsky S92A offshore re-fuelling event on the North Sea has served as a reminder for the potential issue that may occur during pressure refuelling when the fuel supply is interrupted and introduced fuel / air mix delivery to the aircraft causing the tank vent valves to close and build-up of pressure - causing the sponson to rupture.

HAZARDS ENCOUNTERED:

- Helideck team observed fuel was not being delivered and took correct action by stopping the refuel and advising the pilots. The refuel was completed using gravity refuel.
- View below showing Sikorsky S92A to illustrate severe damage evident on sponson - which has buckled and ruptured.

Picture courtesy of Bristow Helicopters

LESSONS TO BE LEARNED:

- Closely monitor actual (not estimated) fuel stock levels in transportable & bulk tanks.
- Ensure that sufficient stock available prior to commencing the refuel to avoid losing suction.
- Remain vigilant that sloshing (movement of fuel in the supply tank) can cause loss of suction at a higher fuel level than normal.
- If suction is broken, ensure system is purged of any air prior to next or continued helicopter refuel.
- In all instances, if any anomalies are observed during refuelling operations, stop the refuel and advise the Pilots.

RECOMMENDED ACTIONS:

- Duty Holders of offshore installations including mobile units and vessels should ensure that HLOs and Helideck Crews are made fully aware of this Safety Alert and are instructed to exercise the following ***CAUTIONS*** when refuelling helicopters, in particular the Sikorsky S92A.

CAUTION: TO PREVENT DAMAGE TO EQUIPMENT, MAKE SURE THE REFUELLING SYSTEM DOES NOT EXCEED 55 PSIG AND 120 GPM.

HELIDECK OPERATIONS SAFETY ALERT Oil & Gas UK

CAUTION: TO PREVENT AIR FROM ENTERING THE AIRCRAFT FUEL TANKS WHEN PRESSURE REFUELLING; VERIFY THAT THE FUEL SUPPLY TANK CONTAINS AN ADEQUATE AMOUNT OF FUEL PRIOR TO PRESSURE REFUELLING. IF THE FUEL SUPPLY TANK IS LOW OR RUNS DRY PRIOR TO FUELLING COMPLETION, THEN AIR MAY BE INGESTED INTO THE AIRCRAFT FUEL TANK AND CAUSE DAMAGE.

INFORMATION SOURCES:

Notice of this Safety Alert courtesy of BP. If further information is required please contact David MacLean – BP Aviation Technical Advisor.

LINKS:

5 High Potential Dropped Object

A member has reported an incident in which an object fell 10m onto the main deck of a vessel. The incident occurred during pipe spooling operations on a vessel. Deck crew observed the object fall 10 metres from the ramp structure into the barriered area of the main deck. An "ALL STOP" was called and the object was found to be a 'Hilman Roller Chain' which weighed 60kg. This incident has been classified as having high potential and was reportable under local regulatory requirements.

Thorough risk assessment, in addition to the fact that crew followed the correct control measures, meant this particular incident was injury free. However, one roller, weighing 2kg, was found outside the barriered area and this alone, hitting someone from a 10m height, could easily have resulted in a fatality.

Figure: roller chain on deck

Figure: recovered roller chain

Figure: sheared '8' link plate

Our member's investigation revealed the following:

- The Hilman Roller Chain parted and dropped as a result of an '8' Link Plate failing and allowing the chain sections to part;
- A single roller weighing 2kg, dislodged from the chain assembly and was found to have landed outside the barriered area;
- The cause of the failure was not identified; however several factors including maintenance procedures, accessibility and seizure by corrosion may have been contributory factors.

The following lessons were identified:

- Dropped object surveys and sweeps should be proactively carried out, with secondary hold-backs installed (where required) and regularly checked;
- Control measures (e.g. Permits to Work, Risk Assessments and barriers) are important factors in reducing risks and should be followed;
- Further detailed inspection of vessel equipment, maintenance procedures and working practices were to be conducted;
- Pre-use user visual inspections of all equipment should also be carried out. These should not merely be a cursory glance but a thorough visual examination. This does take time but the consequences of not doing this, as evidenced by this incident, where the dropped object weighed 60kg, could be catastrophic. Where it is not feasible to carry out a close visual inspection (due to height or inaccessibility of equipment) it should still be possible to inspect the area and/or the equipment. For example, are there nuts, bolts etc, under the equipment that could have dropped from it? Is there something that doesn't look right i.e. equipment is distorted, or at the wrong angle etc?

Our member took the following actions:

- Area was made safe and a DROPS sweep conducted for further potential dropped objects, in immediate area and vessel-wide;
- Rope Access Team deployed to check integrity and function checking of all Hilman Rollers;
- Review of maintenance and other procedures and working practices to be reviewed and updated as necessary;
- All personnel reminded that not only can anyone call an ALL STOP, but they are obliged to call an ALL STOP if they see any act or condition they consider is, or may be, unsafe;
- When positioning barriers, the 'Cone of Exposure' theory should be used to account for all DROPS potential (including direct drops, items rebounding items from structures, etc).

Our member notes that in Q4 2014 it experienced three high potential dropped object incidents, and that dropped objects remain one of the most common causes of major injuries in the workplace. These lead to cuts, bruises, head injuries, back injuries and fractures but some prove to be fatal.

Similar dropped object incidents are covered in nine of the nineteen 2014 Safety Flashes published, as follows:

- Safety Flash 03/14;
- Safety Flash 04/14;
- Safety Flash 08/14;
- Safety Flash 09/14;
- Safety Flash 13/14;
- Safety Flash 14/14;
- Safety Flash 15/14;
- Safety Flash 16/14;
- Safety Flash 18/14.

Members are reminded of IMCA promotional material as follows:

- Pocket card IMCA SPC 12 – *Avoiding dropped objects;*
- Poster IMCA SPP 04 – *Avoiding dropped objects.*

6 Disposal of Flammable Substances with Ignition Sources

A member has reported an environmental incident in which flammable substances were disposed of from a vessel in the same bags as potential ignition sources. Following a port call by the vessel, a large amount of waste was offloaded alongside. The

waste disposal contractor were advised by the vessel crew that they were offloading a number of hazardous substances including, aerosols, hydrocarbons, oily rags, oil filters and paint thinners. The waste disposal contractor was informed that the vessel crew would separate the special waste, in particular separate the flammable paint thinners into a metal drum to avoid contact with the other materials which provided a potential ignition source.

However, once the waste was lifted off the vessel and transported back to the yard of the waste disposal contractor, it was clear that vessel crew had in fact placed all the waste into black bags and had not segregated the special waste. As the bags were not transparent, a chemist was obliged to open it (which they should not have had to do) in order to identify and separate the flammable paint thinners from the other ignition sources.

Our members' investigation noted the following:

- The vessel crew had not followed their Garbage Management Plan and as a result placed a number of their colleagues and also waste disposal contractor personnel at significant risk of exposure to a fire by placing flammable paint thinners in the same bag as ignition sources such as oily rags and other hydrocarbons;
- There was poor communication about the on-board waste procedure between the various departments;
- The vessel also incurred an extra cost as a result of the disposal company having to segregate the hazardous waste.

Our member took the following actions:

- Ensure all personnel are aware of the dangers of storing/disposing of flammable substances with ignition sources;
- Ensure that clear plastic bags are used on board for all waste bins;
- Ensure bags containing hazardous substances for disposal are clearly labelled to indicate contents;
- Ensure flammable substances are not being stored/disposed with ignition sources. Crew should be vigilant of this fact, especially when disposing and storing hazardous substances;
- Powerpoint presentation delivered by vessel management to the crew on ensuring proper waste segregation on-board.

Members may wish to refer to the following similar incident (key words: *disposal, waste*):

- IMCA SF 14/14 – Incident 6. *Disposal of Pyrotechnics.*

7 Unplanned Release of 960 Litres of Hydraulic Oil

A member has reported an incident which there was an unplanned release to the environment of 960 litres of hydraulic oil. The incident occurred during piling operations when a hydraulic hose parted from the hammer being used for the operations. After successfully installing a driven pile, the hammer was removed from the pile fast frame and the vessel transited to the next pile being installed. As per company procedure the hammer was raised 50 metres above the seabed and suspended on the vessel main crane. During the transit the ROV pilot noticed the main hammer supply umbilical line, which runs from deck to the hammer, tighten rapidly. An "ALL STOP" was called and on closer inspection by the ROV it was confirmed that oil was leaking from the umbilical. The piling contractor isolated the hose and oil tank supplying the hammer. Both the hammer and it's supply umbilical were then recovered to deck.

Figure: showing damage to couplings

Figure: showing damage to hose

Our members' investigation found that the crane driver had unintentionally activated the crane controls resulting in the crane paying out the hook at 10 metres per minute. This caused the hammer to lower and in turn tightened the hose/umbilical running from the vessel to depth. The effect of the hammer being lowered caused the hose to tighten and part from the hammer at the coupling and also snapped the restraint chain in the process. This resulted in the loss of 960 litres of hydraulic oil.

The following mitigation measures were identified following the incident:

- Piling contractor to evaluate the use of biodegradable oil for future use;
- A standby switch for enabling crane controls to be activated when the crane was in prolonged periods of inactivity. Supervisor to inform crane driver when crane is likely to be inactive for a long period;
- During periods of crane inactivity random communications checks to be carried out with the crane driver;
- A reminder circulated that hydraulic hoses should be immediately isolated in the event of a loss in pressure;
- ROV to be effectively positioned to observe the hammer and hydraulic hoses;
- Clear and robust communications system installed to the pile spread control cabin (VHF and telephone back up);
- Pile spread supplier to investigate the use of a self-closing safety valve and alarm system;
- A sensor in the oil supply tank set to minimise the loss of oil (vessel movement taken into account);
- High-Vis tape/paint to be attached to the umbilical / hose to aid ROV visual identification.

Members may wish to refer to the following similar incidents (key words: *release, spill, oil, hydraulic*):

- IMCA SF 11/11 – Incident 6. *Oil spill in port whilst discharging waste oil;*
- IMCA SF 16/14 – Incident 5. *Ruptured hydraulic hoses.*