IMCA Safety Flash 10/11

September 2011

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 Oxygen Regulator Explodes Causing Injury

A member has reported an incident in which an oxygen regulator exploded when the oxygen was turned on, causing a second degree burn injury to someone's hand. The incident occurred during the changeover of high pressure (HP) oxygen diving gas quads. The gasman was tasked with going on deck to change over a supply of oxygen from one gas quad to another. Company procedures for isolating the oxygen quad, venting the line, disconnection of the regulator and then reconnection onto the new quad were all carried out correctly. Once the regulator was reconnected onto the new gas quad the gasman turned on all 16 individual bottle valves. He then ensured the oxygen regulator was fully wound back and then proceeded to open the King Valve to allow the oxygen to flow into the regulator. It was during this process of turning the King Valve and releasing oxygen at 200 bar into the regulator that the explosion took place.

After the explosion it was not possible to isolate the escaping oxygen from the King Valve due to possible damage to the valve seat. Each of the 16 individual cylinders then had to be turned off to isolate the flow of oxygen.

Oxygen gauge

Gas quad and King Valve

Burn injury to hand

Following investigation, the following points were noted:

- Unsuitable personal protective equipment (PPE) was worn for the task. A glove which would restrict heat exchange to the skin would have been more suitable, and consideration should be given to the use of a full face mask;
- Possibility that there may have been some debris or substance such as grease or oil left in the King Valve by the supplier prior to delivery to the vessel;
- The practice of opening all 16 cylinders at once proved to be hazardous in isolating the flow of escaping oxygen.

The following actions were put in place:

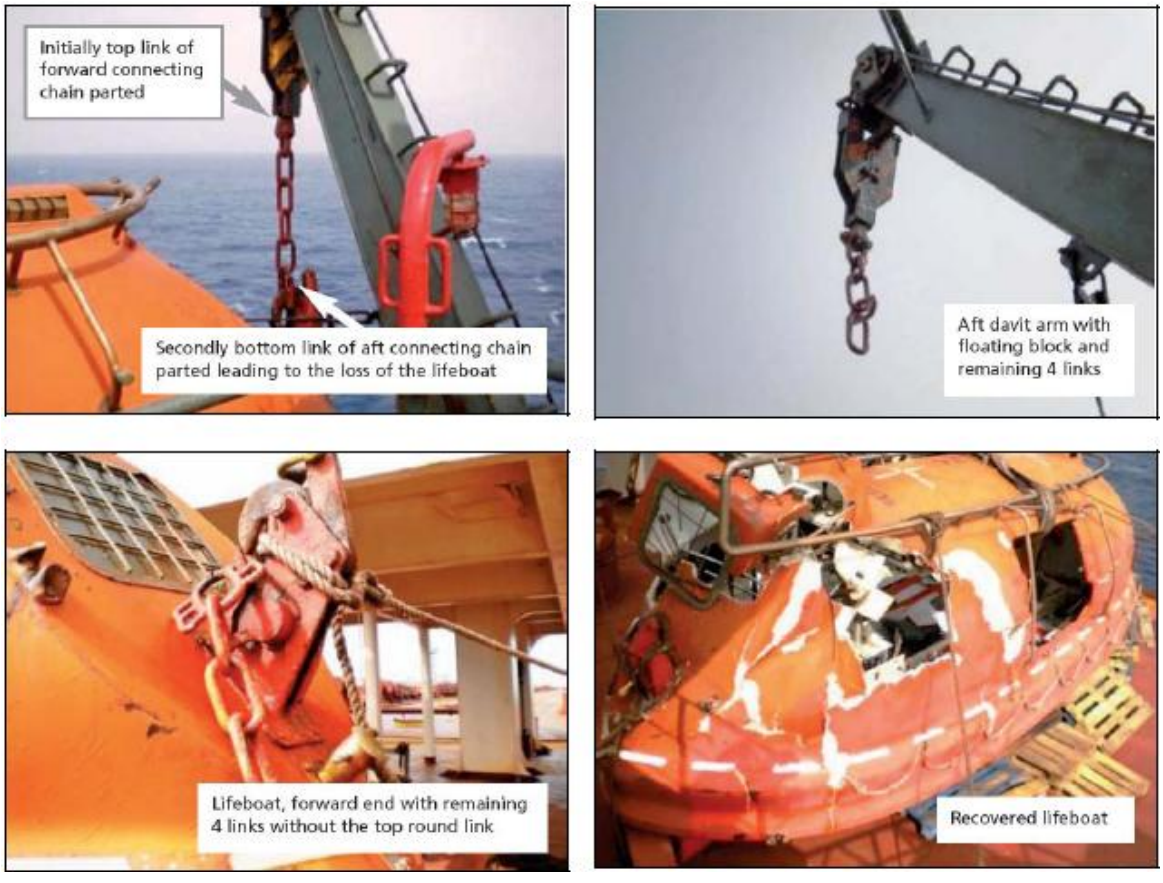
- Ensure all connection points are free from grease, oil and dirt prior to connecting any regulators or hoses;
- Ensure oxygen storage areas are sited such that they will not be contaminated with oil or grease, for example beneath an ROV platform;
- Conduct checks of all in use and serviceable regulators used for transfer of oxygen, including those not connected with diving, for example deck welding/burning operations;
- The risk assessment for the connection and disconnection of gas quads and equipment should be suitable and sufficient, and should be understood by all;

- The following revised procedure was developed for connecting to an oxygen quad:
  - remove suppliers' dust cap
  - crack King Valve to confirm there is no pressure behind the valve
  - open King Valve and install regulator for gauging and analyses
  - confirm regulator is backed off
  - the first cylinder is to be opened with the technician standing to the side or rear of the quad
  - allow pressure to equalize slowly in the manifold and proceed to open remainder of cylinders.

2 Lifeboat Drill – Near Casualty

An incident has been brought to IMCA's attention in which a lifeboat was accidently dropped into the sea. The incident occurred during a lifeboat drill at sea in good weather conditions. The starboard lifeboat was lowered to the embarkation deck. In this operation the top link of the forward chain for the connection between the davit floating block and the hook on the lifeboat parted, such that the entire load of the lifeboat was transferred to the aft hook/chain. As the aft chain could not withstand this weight, it parted and the lifeboat was dropped into the sea. At the time of the incident no crew members were onboard the lifeboat and thus there were no injuries. However, the lifeboat itself was considered a total loss due to extensive damage caused by the fall.

As lifeboats are often the primary method of evacuation from many vessels, the importance of maintaining the lifeboats to the highest standard cannot be over-emphasised. This safety flash highlights the importance of thorough inspection and maintenance of lifeboats and their associated launching equipment.



Sequence of images illustrating the equipment failure

Following investigation, the following probable cause of the incident was identified:

- It is likely that the top link of the forward chain parted due to corrosion or damage of the welding of the link such that the load was no longer distributed to both sides of the link. As the links/chain were painted it was probably difficult to detect the fracture that had developed over time.

The following lessons, applicable to all vessels using chain links as part of the load transmission from the davit or davit block to the lifeboat hook, were drawn from the incident:

- Chains should be replaced at regular intervals and/or tested by DPI/Ultrasonic testing at regular intervals to eliminate/detect parts with potential risk (although not required by the International Convention for the Safety of Life at Sea (SOLAS)), and this should then be included in the vessel maintenance system;
- The lifeboat chain, hooks and release system should be inspected and maintained according to manufacturers' recommendations, and should be included in the vessel maintenance system;
- It is recommended that lifeboats are lowered without personnel onboard and boarding then carried out after the boat has been lowered, unless the boat is to be used for an emergency situation as directed by the master.

The following actions were taken:

- Identification and inspection of all lifeboat equipment using chain links as part of the load transmission from davit or davit block to lifeboat hook;
- Review of adequacy of inspection level and frequency as part of planned maintenance routines.

3 Gimballed Frying Pan – Handle Assembly Failure

The Marine Safety Forum has published Safety Flash 11-21 (attached) regarding the failure of the handle assembly on a gimballed galley frying pan. The incident had a very high potential of injury as the cook may well have been scalded or burnt. As the incident occurred during cleaning, it was fortunate that no injury occurred.

Members are encouraged to check the integrity of fittings on gimballed frying pans.

Further Information can be found from: www.marinesafetyforum.org/upload-files//safetyalerts/msf-safety-flash-11.21.pdf

MSF marine safety forum

Marine Safety Forum – Safety Flash 11-21

Issued: 27th June 2011

Subject: Gyro Frying Pan – Handle Assembly Failure

Further to Safety Flash 01-2006 another similar incident has been recently reported. During the cleaning of the Gyro Frying Pan, the handle came away from the fryer as it was being tipped to empty the cleaning fluid as per normal cleaning routine. This caused the fryer to swing uncontrolled and spill water across the galley.

Nut and Bolts sheared causing uncontrolled swing. These have been replaced

This Incident has a very high potential of injury as the Cook may well have been scalded, once again it was extremely fortunate that no injury occurred.

All ships fitted with Gyro Frying Pans are to check the gimbal pin and handle assemblies immediately.

4 Serious Injury as a Result of a fall from Height

The Marine Safety Forum has published Safety Flash 11-23 (attached) regarding a serious injury which occurred as a result of a fall from height. A worker slipped and fell 3.5 meters onto concrete and suffered compound fractures of the left tibia and fibula. He was wearing a safety harness but had not hooked off.

Further information can be found from: www.marinesafetyforum.org/upload-files//safetyalerts/msf-safety-flash-11.23.pdf

Marine Safety Forum – Safety Flash 11-23

Issued: 5th July 2011

Subject: Potential Fatality

We have received notification of a serious injury event at an external organisation. During pipework erection activities on a site an operative received serious injuries as a result of a fall from height. The IP left a safe working platform and climbed out onto a pair of parallel 30cm pipes with the intention of fixing a beam clamp and chain block to a beam. The IP was wearing a safety harness but had not hooked off. He slipped and fell 3.5 meters onto concrete. The IP suffered compound fractures of the left tibia & fibula.

Lessons learnt and preventative measures

Key Findings:

- The IP wore a safety harness in good condition complete with lanyards but failed to clip off while outside the safe working area.
- The IP failed to request scaffolding access to the new work area.
- Two other men in the work gang observed the IP climbing out of the safe working platform and failed to intervene.

Preventive Actions to be Taken

- Never work outside a safe working platform without an approved R/A, M/S & PTW.
- Always hook off when outside of a safe working area.
- Always use scaffolding as a first choice. Working outside of a safe working area with a harness is a last resort and subject to PTW.
- Supervisors must enforce safe methods of work.
- Always intervene if you witness an unsafe act. Don't walk by.

5 Fatality during Rope Access Work

The Marine Safety Forum has published Safety Flash 11-24 (attached) regarding a recent fatality which occurred during rope access work.

An investigation into this incident is currently in progress; as more information becomes available we will publish an update.

Further Information can be found from: www.marinesafetyforum.org/upload-files//safetyalerts/msf-safety-flash-11.24.pdf

Marine Safety Forum – Safety Flash 11-24

Issued: 5th July 2011

Subject: Rope Access

On June 16th, 2011 a fatal accident happened on the Shell Platform Brent Charlie in the North Sea. The victim was a rope access technician who was working for BIS Salamis.

Although the investigation into this tragic accident is currently in progress the following memorandum from the HSEQ manager of BIS Salamis has been forwarded to us by Shell:

Worksite Planning

When planning work scopes particular attention should be paid to the selection of anchors to ensure that all anchors selected are suitable and within the requirements of section 2.7.9 (anchors) of the IRATA ICOP.

Where working lines have the potential to come into contact with or be abraded by an edge, thought should be given to the use of rigging techniques such as deviations or re-anchoring (re-belay). Techniques to consider are the use of specific knots to control angles to within safe working limits.

If anchors do not allow for deviation then, both ropes should be suitably protected with the supplied canvas rope protector.

The rope protector should be suitably attached to the backup line using a suitable prusik knot or similar, this is to ensure that the rope protector is securely attached to the backup line and remains in the position intended for the duration of the task.

Both ropes should then be placed into the rope protector and the rope protector closed using the Velcro fastener.

In addition to fitting a rope protector edge protection should be fitted to the structure where the risk assessment identifies an increased risk of damage to the rope, due to the nature or condition of the edge or the ropes moving out of the rope protector.

Future Updates

As soon as more information becomes available we will publish an update.

6 Collision between Vessel and Installation Resulting in Damage to Both

The Marine Safety Forum has published Safety Flash 11-25 (attached) regarding a recent collision between a vessel and an installation which caused some damage to both vessel and installation.

Further Information can be found from: www.marinesafetyforum.org/upload-files//safetyalerts/msf-safety-flash-11.25.pdf.

Marine Safety Forum – Safety Flash 11-25

Issued: 6th July 2011

Subject: Vessel / Installation Contact Investigation Findings

Recently an ERRV made contact with a fixed installation causing some damage to the vessel and minor damage to the installation.

The ERRV involved was configured with port and starboard 360°azimuth main propulsion units forward and an electrically powered 360°azimuth secondary thruster aft, The ERRV had been on location for 3 days before the incident occurred. The vessel had given over side work cover to the installation on numerous occasions over these 3 days. The vessels master had 25 years' experience as Master and the previous 9 years had been on ERRV. The Master had served on that particular vessel for 5 trips previous and was familiar with the arrangements. The ERRV had been set up with one main port azimuth thrusters and the after thruster, the starboard main thruster had been shut down and although ready to start was not running.

The ERRV was informed that over side cover would be required immediately after the departure of a Platform Supply Vessel (PSV) which was working alongside the installation. The Master of the ERRV decided he would have adequate time for a vessel initiated Man Overboard exercise, before the over side cover was required, and commenced the exercise. An FRC engine fault was identified and it was recovered. The exercise was completed with the deployment of the second FRC although due to the extended length of the exercise the ERRV had drifted substantially further from the installation than was originally intended.

Within minutes of the conclusion of the FRC exercise the PSV had left the 500 meters, and the ERRV was requested to attend for over side cover. Due to the greater than anticipated distance from the 500m zone the balance of probabilities would suggest the Master decided to engage the auto-pilot for ease of transit and seemed to carry out this action subconsciously.

On approach to the 500m zone the Master then tried to stop the vessel using the manual control and turned the directional control and reduced thrust expecting the vessel to alter course and reduce speed so he could then stop on the outside edge of the 500 meter zone with the intention of carrying out the pre-entry to 500m checklist. It was noted that the act of turning the thrusters control had no effect and the vessel was still approaching the installation head on.

The Masters initial perception was he had lost directional control of the azimuth thrusters. His initial reaction was to come astern, which would have been a suitable action on a conventional propulsion vessel to alleviate the situation. He turned the thrusters control astern and applied more power to try and counteract the head way momentum of the vessel, still not realising the auto-pilot was engaged which in effect overrides the manual directional control of the azimuth propulsion; this did the opposite of the required affect and the vessel increased speed straight ahead toward the installation. The Masters next reaction was to contact the engine room to inform them he had no control and sent the chief officer to the engine room to inform the Chief Engineer. In the meantime the Master had applied the vessels after electrically powered thruster, which has much less available power than the forward propulsion units, to try and counteract the forward momentum and this resulted in the after thrusters overloading the electrical supply source and "blacking out".

The Chief Engineer managed to reach the engine room and stop the port propulsion unit and start the Starboard one, this was not realised on the bridge and due to the auto-pilot still being engaged, if the Starboard thrusters had been engaged it may have only aggravated the situation. The Chief Engineer then proceeded to restore the electrical power arrangement. During this period the vessel which was now coasting on her own momentum, proceeded to make contact with the installation and came to a stop with the forward area underneath the platform. During the approach period the Master had maintained composure to inform the installation on the VHF prior to contact that contact was imminent.

Post contact the ERRV launched and FRC and went round the vessel looking for any signs of hull / Installation damage and found no signs of pollution or hull breach. At this time the Chief Engineer regained the electrical power configuration for the after thruster and it was engaged to "back" the vessel out from under the installation. The Installations umbilical's were still wrapped around the vessel mast and some damage was caused to both the mast and the umbilical's on withdrawal. The vessel was then noted to be shipping water from the port thrusters unit, due to the impact and on "patching" the leak and confirming the pumps were coping was released to undergo an emergency dry docking and allow a full investigation to take place.

Critical Factors were identified as:

1. Perceived loss of functionality of steering and power to the Primary Steering / Propulsion System.
2. Non-use of emergency steering/propulsion system
3. Vessels track over the ground was influenced by tidal set and led directly towards the installation

The findings of the investigation were:

- The initial heading towards the standoff point outside of the 500 metre zone should have had a greater offset from the installation to take account of the tidal effect. Looking at the vessels tracks there was a slight heading offset on approach that was cancelled out by the tidal effect. Had there been no environmental effects the vessel would have passed approximately 30 - 50m clear of the installation.
- The vessels heading was being controlled by the autopilot, although the Master was not aware of it.
- Finding himself in a quickly developing situation the Master concentrated on trying to slow down and stop the vessel by applying the stern thrust. Other option available to avert collision were
    1. Switch off autopilot and revert to manual control
    2. Apply the emergency steering which would override the pilot and an off course alarm would have sounded an alerted the Master that the auto-pilot was engaged.
    3. Apply the port propulsion unit's emergency stop, which would have allowed the vessel to have been controlled from the stern thruster.

In light of the investigation recommendations the following actions have been implemented.

1. Issue alert to the industry of the lateral learning's from the investigation
2. Formal Induction process for all bridge watch keeping officers should include familiarisation of all propulsion units and manoeuvring systems including actions to take in an emergency
3. Regular hands on practise to be carried out using emergency propulsion and emergency steering controls.
4. Vessels approach procedures to be reviewed to confirm that the vessel should have sufficient offset to prevent incursion into the 500m zone until the checks can be undertaken.
5. Review power management configurations to ensure that in the event of a primary system failure, alternative or backup systems are available.

7 Mooring Line Operational Safety

The United States Coast Guard (USCG) has issued Marine Safety Alert 01-11 (attached) regarding the operational safety of mooring lines, which covers recent injuries and fatalities that have occurred during mooring line operations on vessels in US waters.

The safety alert can be downloaded from the USCG's 'Homeport' portal.

UNITED STATES COAST GUARD
U.S. Department of Homeland Security

MARINE SAFETY ALERT

Sector Houston-Galveston

May 26, 2011
Houston, TX

Alert 01-11

Mooring Line Operational Safety

Mooring line handling continues to cause serious personnel injuries and fatalities on the Houston Ship Channel.

During the month of April, Sector Houston-Galveston marine investigators closely examined two significant line handling deaths aboard foreign flag commercial vessels. The investigation following each death determined the incidents were unrelated in the manner in which they occurred; however, these seasoned mariners lost their lives while involved with routine operations onboard their respective vessels. Investigating two significant events in such a short time frame, and nine injuries over the past two years, has prompted Sector Houston-Galveston to remind mariners and operators of the inherent dangers involved with line-handling operations.

- A Motorman on a deep draft vessel was KILLED when his head was hit after a line suddenly sprung/slipped off a roller button.
- An Able Bodied Seaman on a deep draft vessel was seriously INJURED when his knee was crushed against a bitt after a line was trapped on the capstan while slacking and suddenly tightened while shifting a line following mooring operations.
- The Second Officer on a deep draft vessel was KILLED when he was pulled into a rotating hydraulic mooring line drum during mooring operations while getting underway to shift berths.
- The Second Officer on a deep draft vessel was seriously INJURED when his leg was struck causing him to fall resulting in lacerations to his head when the stopper failed while getting underway.
- A Mate on a push boat seriously INJURED his thumb when a mooring line sprung loose as he was removing it from a capstan while getting underway.
- A Deckhand on a barge was seriously INJURED when his fingers were crushed between wire rope and a kevel while he was removing the wire rope.
- A Carpenter on a deep draft vessel was seriously INJURED when his fingers were de-gloved as they were caught between a line and a chalk during line handling operations with a tug while getting underway.
- A Deckhand on a barge was seriously INJURED and nearly drowned when he was knocked unconscious and fell into the water after being struck in the head & chest by a parted line during mooring.
- An Ordinary Seaman on a deep draft vessel was seriously INJURED when his leg was fractured by a mooring line that overlapped and rolled off the mooring winch spool while getting underway to shift berths.

Sector Houston-Galveston encourages operators to share the following information with their mariners:

Train, Train, Train: Mooring line handling is a basic, everyday component of the shipping industry. Formal line handling training and supervised on the job training is strongly encouraged. Being knowledgeable in your job is very important but learning does not stop with just completed training. A mariner must evaluate all tasks and identify the hazards related to these tasks daily. Complacency in assigned work is one of the most common factors in workplace deaths annually.

Go Slow to Go Fast: Mariners must understand doing whatever it takes to get the job done does not necessarily get the job done faster; and in fact, can actually create setbacks and hazardous situations. Past investigations have revealed mariners are likely to be injured when they are in a rush, willing to do whatever it takes to get the job done or fail to stop operations when they see a mooring line fouled on rotating machinery or other unsafe acts.

Identify Danger Areas / Zones: Some operators have elected to highlight known danger areas by painting Danger Areas / Zones on the deck. It is imperative that line handlers remain out of the line of fire of a mooring line. Stay in the safe areas and use common sense when working around lines under tension.

Review your Safety Management System (SMS): Operators may wish to review SMS procedures to ensure familiarization and roles & responsibilities are clearly articulated. Training and familiarization concerning deck equipment/machinery should be periodically reviewed and documented. More importantly, the value of proper supervision cannot be overstated. Supervisors should serve as observers and avoid the temptation of engaging in line-handling.

Basic Line Handling Principles:
Proper use of deck fittings i.e. buttons, kevels, cleats, rollers and bitts provide near unlimited mooring arrangements; they also create the potential for dangerous latent unsafe conditions. Casualty investigations have revealed the improper application of deck fittings has caused mooring lines to spring/slip free off the fitting. Specifically, arrangements lacked a substantial bend and/or had an excessive angle prohibiting the line from holding tight against the deck fitting.
Image: Note: This line sprung/slipped off the roller. The angle of the line requires a taller roller bit structure for proper fit.

Over or Under: Operators are recommended to examine mooring line position on a drum/spool to determine safest operation; specifically to determine whether the mooring line should be run from over the top or under the bottom of the drum/spool.

This safety alert is provided for informational purposes only and does not relieve any domestic or International safety, operational or material requirement. Developed and distributed by Sector Houston-Galveston, United States Coast Guard, Houston, TX. Questions can be addressed to the Investigation Division at 713-678-9025.

****