IMCA Safety Flash 07/07

August 2007

These flashes summarise key safety matters and incidents, allowing wider dissemination of lessons learned 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 Wire Inserts in Anchor Line Parted

A member has reported an incident in which wire inserts parted in two anchor lines of a semi-submersible accommodation unit connected to a fixed platform during extreme weather conditions (9 m seas, 70 knot winds). Non-essential personnel were taken off the semi-submersible accommodation unit until the mooring system could be safely recovered and replaced.

During recovery of the mooring system it was discovered that the wire inserts in both the affected mooring lines had slipped out of the socket at the rig end. The wire inserts were taken ashore for investigation.

Following investigation the following was noted:

- the failed wire inserts had not been moulded on to the sockets using proper procedures;
- the supplier of the failed wire inserts was not aware of the procedure and its personnel were not formally trained in the moulding operation;
- the supplier of the wire inserts and other contract-specific anchoring equipment had not been audited by this or any other customer;
- similar incidents regarding wires slipping out of sockets had occurred but had not been brought to public attention;
- there was a detailed investigation of the design of the mooring system. The system used mooring lines supported by buoys, but it was not possible to ascertain that this was directly causative.

The company recommended the following:

- higher awareness of procedures for moulding sockets on to wires and increased training for personnel engaged in such work to ensure that personnel involved are properly qualified for the work;
- audit of suppliers of contract specific mooring equipment for appropriate quality management system;
- free sharing of similar incidents to prevent recurrence of incident;
- research into testing wires with moulded sockets.

2 Failure of Chamber Door Hydraulic Actuator

A member has reported the failure of a transfer under pressure (TUP) door hydraulic actuator. After divers had transferred from the chamber into the bell, an attempt was made to close the upper door using the hydraulic hand pump. The hydraulic actuator failed, causing the door to drop. Safety procedures in place prevented any injury to the divers.

Failed actuator

Upon further investigation it transpired that the heliox gas mix had managed to migrate past the seals inside the rotary actuator and had pushed the hydraulic fluid out of the hydraulic lines, losing hydraulic control of opening and closing the door.

The actuator was removed from the chamber and stripped down completely. All the seals inside the actuator were found to be completely perished inside.

This particular actuator had never been removed, stripped and seals checked for over ten years due to the inaccessibility of the unit and being hidden under deck plating.

Members are reminded of the importance of identifying critical components and the subsequent inclusion of these components into the planned maintenance systems.

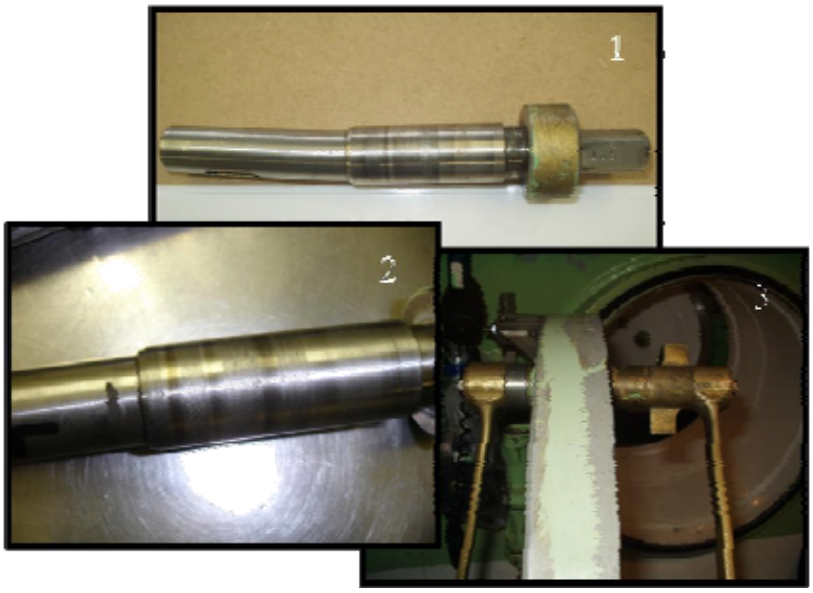
3 Failure of Chamber Door Spindles and Seals

A member's diving support vessel (DSV) had recently completed a period of maintenance with some minor work on the saturation chamber system, which included door hinge realignment.

During pressurisation of the divers, a leak was identified from the lock between the two occupied chambers. Pressurisation was halted at 5 msw and the system surfaced for repair. On completion of the repair the system was again pressurised when a different leak on the same door caused the pressurisation to be halted at 8 msw.

Both leaks were identified as being at the seals in the door spindle shafts that passed through the chamber doors to enable the retaining 'dogs' to be operated from both sides of the chamber door. The two leakages prompted an inspection of all the door spindles in the system, identifying the following:

- There was no history available on the spindles or seals, as they were not part of the planned maintenance system.
- Almost 70% of the door spindles were found to be unserviceable due to surface damage in the sealing area or bending of the shafts and required replacement.



1. Shaft damage. 2. Shaft surface damage. 3. Door spindles in place in chamber door.

The following points are highlighted to members who have diving systems configured with spindles through chamber doors:

- The door spindles and associated seals should be identified as critical components.
- Inspection and replacement of the door spindles and seals should be included in the planned maintenance system.

4 Loss of Subsurface Buoys

A member has reported an incident in which a number of subsurface buoys – used as part of the anchoring system for a semi-submersible accommodation unit – broke loose and drifted away. Due to operational restrictions on certain fields it had been necessary for certain operations to add fibre inserts, wire inserts and/or subsurface buoys to keep anchorlines over pipelines and the concrete base structure of fixed platforms.

For two such operations the field layout was such that these buoys were underwater when the submersible accommodation unit was stood off from the platform, whereas when the submersible accommodation unit was alongside, the rigging of the anchor chains meant that some of these buoys came close to the surface.

Mooring of submersible accommodation units needs to ensure sufficient clearance to pipelines both in alongside, gangway-connected mode and in stand-off position when the rig is winched away from the fixed platform.

Since the submersible accommodation unit was in the alongside position most of the time, these buoys were subject to wave loads throughout the operation. As a result, on both these operations some of the buoys close to the surface broke loose and drifted away.

The company developed an alternate technique using 'chain through' type buoys, which improved the operation of buoys close to the surface. The mooring chain passes through the centre of the buoy and is secured on each side. This removes the need for a pennant,which is often a weak link, and also places the buoy much deeper and clear of surface wave action.

5 Failure of an Air Lift Bag Attachment Point

A member has reported that a diver lost control of an air lift bag being used as a diver aid during construction activities.

The lift bag had a lifting capacity of 500 kg and was attached to a spool-piece by both its rigging and an inverter line which was in place to invert and deflate the bag should the rigging have failed.

The inverter line was attached to one of the handling loops on the top of the bag. When the lift bag was required to be deflated, the bag dump valve was unable to be operated, leaving the lift bag inflated. The decision was taken to cut the rigging attaching the bag to the load in an attempt to invert the bag using the inverter line. When the rigging was cut, the inverter line came under tension and the attachment point (handling loop) on top of the bag failed. This allowed the lift bag to freely ascend to the surface.

Handling loop attachment point failure

The subsequent investigation by the member company highlighted the following:

- Some lower capacity lifting bags in use do not have a dedicated inverter line attachment point.
- Many lift bags in use have webbing loops and handles which are intended to assist with manual handling and may not be suitable for use as attachment points for lines and rigging.
- Some lift bags that do have dedicated fit-for-purpose inverter line attachment points may not be clearly marked as such.

Members are reminded that air lift bags from different manufacturers may vary in configuration and that inverter line attachment points may vary further, depending on the size and capacity of the lift bag.

Members are reminded of the importance of identifying the inverter line attachment point on lift bags and that this point is certified fit for purpose and clearly identified as such.

Members are also reminded to refer to guidance document IMCA D 016 Rev. 3 – *Underwater Air Lift Bags*.