IMCA Safety Flash 03/09

March 2009

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 Diver Entrapment

A member has reported in incident wherein a diver became trapped by a water jet weight coat removal (WCR) tool, which he was attempting to secure to a twenty inch subsea pipeline.

The WCR tool had been landed directly onto the pipeline, rather than the seabed as had been originally planned. During operations to secure the WCR tool, the tool moved on the pipeline, trapping the diver.

An airbag was attached to the WCR tool and inflated to allow the WCR tool to rotate on the pipeline and free the diver.

The diver was freed without sustaining any injury.

The resulting investigation identified the immediate cause of the incident being the failure to adhere to the prescribed task plan/operational risk assessment, with underlying causes identified as follows:

- The management of change procedure was not followed;
- There was a lack of understanding of possible hazards related to positioning of the WCR tool;
- The task plan was not followed;
- The risk was not fully assessed.

Members are reminded of the importance of following procedures; taking time out for safety and following management of change procedures.

2 Dive Bell Gas Loss During Internal Bell Checks

A member has reported that the aft dive bell onboard a dive support vessel suffered a gas loss while pre-dive bell internal checks were being carried out.

One diver (the bellman) was carrying out the bell checks while two of his colleagues remained in the compression chamber. During the internal checks, a bell flooding valve was accidentally opened as the diver's umbilical made contact with it, allowing dive gas to escape from the dive bell. The dive bell pressure dropped from 75 msw to 52 msw. The diver (bellman) managed to locate and close the open flood valve.

The dive bell was re-pressurised and the bellman transferred to the compression chamber and, together with the rest of the diving team, underwent re-pressurisation to 95 msw as per the company's diving emergency tables.

After investigation by the company involved, the immediate cause was attributed to a sudden gas loss and decompression of aft dive bell caused by the flood valve being accidentally opened allowing gas release. Underlying causes were identified as follows:

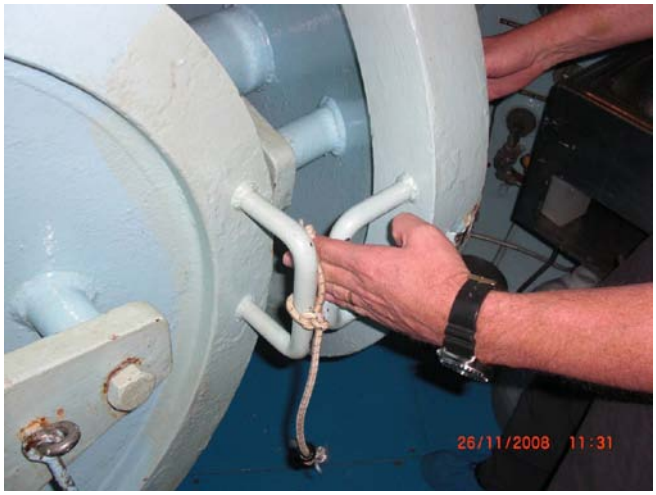
- Confined and restricted space when carrying out dive bell internal checks;
- Valves, valve panels, gauge panels in dive bell difficult to access;
- Bell ergonomics unsatisfactory;
- Secondary hull penetration valve left open;
- Flooding valve sensitive to touch;
- Dive bell interior cramped and short of space;
- Dive umbilical heavy and difficult to move;
- Heavy condensation and high noise when gas escaping making finding of the open valve difficult and the dive bell interior hazardous;
- Diver's familiarisation should be more structured and vessel specific;
- Bad practice of leaving bell internal penetration valve open.

The company has put procedures in place to ensure that the flood line is fitted with two valves, that both are closed and that the hull stop has a securing mechanism to avoid accidental opening (the securing mechanism also goes to the bilge drain in the bell).

Members are reminded of the importance of correct checklists being carried out in line with company procedures.

3 Crushed Finger

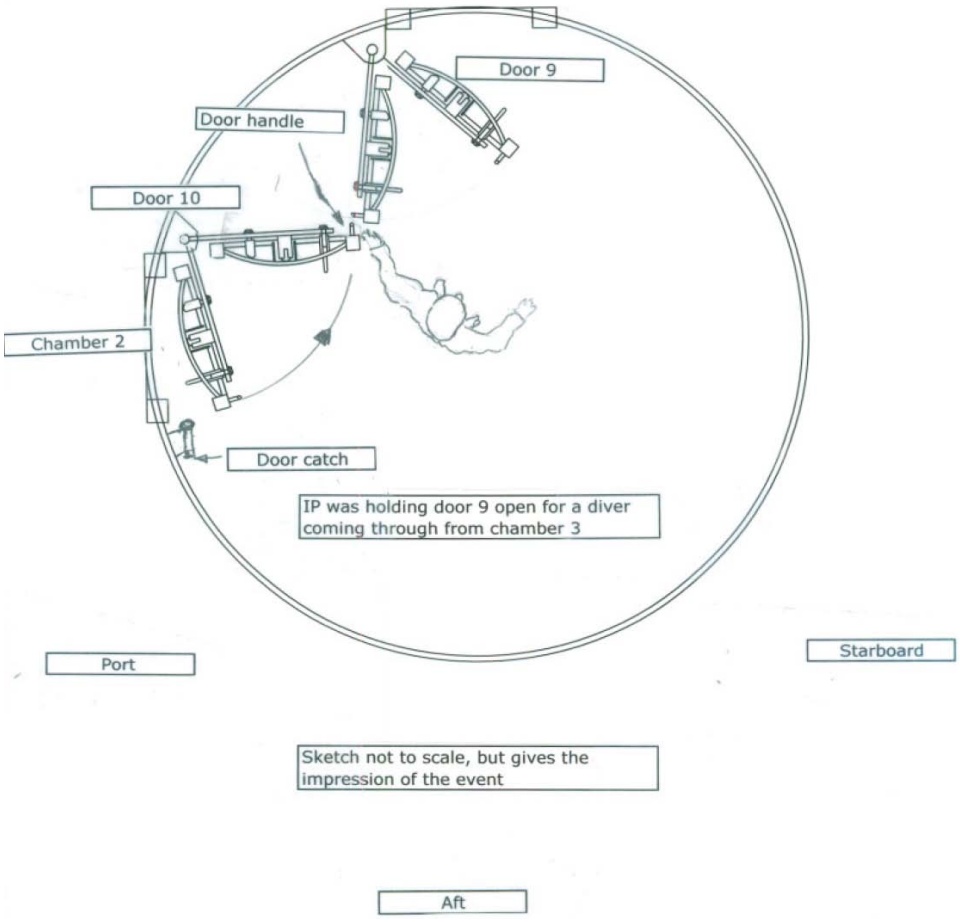
A member has reported an incident during a dive support vessel transit from port to an offshore location, a diver sustained an injury to two fingers of his left hand.



The diver was in the aft transfer lock and was holding a chamber door open to allow a colleague to transit between the chamber and transfer lock. When holding the door open, another door in the aft transfer lock swung open, trapping the diver's fingers between the two doors.

At the time of the incident, weather conditions winds were between force 7 and 8. The vessel was pitching and rolling heavily.

The diver received first aid inside the chamber from his colleagues.



The diver was subsequently decompressed and the vessel returned to port.

On arrival in port the injured person was taken out of the dive chambers and transferred to a hyperbaric facility for further treatment and 'bend' watch.

The diver sustained crush injuries to his fingers, as well as the removal of both finger nails.

After investigation, the immediate cause of the injury was attributed to uncontrolled opening of chamber door, trapping and crushing diver's fingers between the two doors (refer to above schematic), with underlying causes as follows:

- Door spring tension was not enough to hold against uncontrolled door movement;
- No hooks were used; no door dampers were in place;
- No risk assessment had been carried out for the chamber with regard to a rough weather transit;
- The chamber door design and securing arrangement for chamber doors were poor;
- Chamber doors are heavy and cumbersome;
- Safety observation should have heightened diver awareness of hazards in chambers.

Members are reminded that they should consider the following:

- Carry out a risk assessment on all chamber door systems for potential uncontrolled movements;
- Test and set latching devices, particularly spring loaded latching devices, to an optimal tension for safety and ease of use;
- Be aware of the inherent dangers associated with operation and transit during bad weather;
- Adhere to diving chamber transit procedures.

4 Near-Miss Incident Involving a Diver's Umbilical

Attached is the UK Marine Accident Investigation Branch (MAIB) note 'Flyer to the shipping industry' entitled "*Hazardous incident – Norma – 21 June 2008"* (copy attached).

This incident was reported in the UK Association of Diving Contractors (ADC) Safety Alert 3/08 – *Very near-miss incident involving a divers umbilical* – which was reproduced and circulated to members under IMCA safety flash 15/08 item 4.

As previously stated, although the incident occurred during a diving operation being carried out in UK territorial waters, the lessons learnt are relevant world-wide to both inshore and offshore diving operations.

Members are again reminded of guidance note IMCA D 035 – *The selection of vessels of opportunity for diving operations* – which discusses isolations and vessel permit systems.

5 Bolt Failures on Lawson ROV Launch and Recovery Systems

Members are alerted to the attached safety flash from Lawson Engineers Ltd, manufacturers of launch and recovery systems, covering a recent failure of bolts in a 3000m launch and recovery system which allowed a latched-in tether management system (TMS) and ROV to fall to the deck.

MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

FLYER TO THE SHIPPING INDUSTRY

Hazardous Incident - *Norma* - 21 June 2008

Figure 1

Norma

On 21 June 2008, *Norma*, a Belgium registered self-propelled crane barge **(Figure 1)** was assisting in a salvage operation to remove a wreck in the Dover Strait. By 1000, the vessel's anchors were holding her in position, and the master instructed the OOW to switch off the vessel's Voith Schneider propellers. At 1115, the master signed the diving contractor's 'permit to dive' request, on which he verified that the vessel's engines were stopped and isolated. In fact, the propellers were still rotating. The OOW had turned the steering control switch to 'off' which only disabled the control of the pitch of the propeller blades; he did not instruct the duty engineer to stop the electric motors.

The diver **(Figure 2)** entered the water and, during his descent to a depth of about 20m, the umbilical containing his air supply and communication links was set towards the aft propeller by the tidal stream. The umbilical, along with a polypropylene rope the diver was carrying, then became entangled in the propeller and the diver was pulled rapidly towards its rotating blades. Although spinning, the diver managed to switch to the air supply provided by his 'bail-out' bottle.

Figure 2

Diver

Figure 3

Voith Schneider propeller

The umbilical was also pulled from *Norma*'s aft deck and severed. The diving supervisor immediately contacted the bridge and the master quickly determined from the engine room that the propeller units were still running. The electric motors were stopped with the diver only about 3 metres away from the propeller **(Figure 3)**. The diver then managed to free himself from the entangled mass of umbilical cord and rope and make his way to the surface, where he was safely recovered.

The Lessons

Loss of life or serious injury was only prevented by the rapid actions taken to stop the propellers, and the quick thinking of the diver, in what must have been an extremely harrowing situation. However, the incident was entirely preventable, and it is important that lessons are learned. These include:

- **During diving operations, it is essential that both ships and diving contractors have procedures in place to establish and maintain a safe working environment, regardless of the scale or purpose of the operation.**
- **Although diving contractors usually have a sound appreciation of the generic risks involved when working in the vicinity of merchant vessels, the responsibility for ensuring that appropriate shipboard control measures are taken rests with a vessel's crew.**
- **The operation of machinery which poses a risk to divers should be prevented by physical barriers such as the removal of fuses whenever possible.**
- **A master should authorise the commencement of diving operations only when he is satisfied that the required control measures have been taken and all key ship's personnel, such as the chief engineer, have been informed.**
- **Crew must be fully familiar with the operation of critical machinery that may pose a risk to divers.**

Further details on the accident and the subsequent investigation can be found in the MAIB's investigation report, which is posted on its website:

www.maib.gov.uk

Alternatively, a copy of the report will be sent on request, free of charge.

Marine Accident Investigation Branch
Carlton House
Carlton Place
Southampton, SO15 2DZ

Telephone 023 8039 5500

Email: maib@dft.gsi.gov.uk

January 2009

LAWSON ENGINEERS LTD

Safety Flash – Routine Fastener Inspection

FAO: All Lawsons 3000m Launch and Recovery System (LARS) operators.
RE: Routine Fastener Inspection

A recent failure has highlighted the importance of frequent fastener inspection as part of essential routine maintenance.

Incident Description:
A failure of bolts connecting the snubber docking box and sprung frame assembly through the snubber rotate bearing to the raise-lower frame occurred. This allowed these assemblies to separate from the snubber and the latched in TMS and ROV to fall to the deck. No injuries were reported.

Conclusions Reached After thorough investigation:
It is believed that in this instance failure occurred after several bolts had, over time, loosened to the point of falling out transferring all load to the remaining bolts (fewer than half the bolts remained). These failed in a chain reaction allowing the suspended docking box, sprung assembly, TMS and ROV to fall.

Measures necessary to prevent future failures:
Ensure that routine maintenance is carried out as per your maintenance and operations manual. If necessary additional/ up-dated copies of this manual are available, contact LEL for details. It is worth noting that where system installation increases likelihood of bolts loosening due to factors not foreseeable by LEL (excessive vibration on deck, smaller than allowable vessel etc) it will be necessary to reduce the inspection period.

FOR MORE INFORMATION
Telephone: +44 (0)1228 711470 E-mail: sales@lawson-engineers.com