IMCA Safety Flash 10/19

May 2019

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 info@imca-int.com

Any actions, lessons learnt, recommendations and suggestions in IMCA safety flashes are generated by the submitting organisation. IMCA safety flashes provide, in good faith, safety information for the benefit of members and do not necessarily constitute IMCA guidance, nor represent the official view of the Association or its members.

1 Diver Fatality During Subsea Lifting Operations - Update

This is the second safety alert concerning the fatal diving incident initially drawn to members' attention in SF 19/18 Diver Fatality During Subsea Lifting Operations. This update specifically relates to the use of the secondary life support (SLS) system.

What happened?

During the removal of a spool at 172msw, divers were engaged in lift bag operations to relocate the spool to a wet store location. During the operation, a series of events occurred which resulted in one end of the spool rising off the seabed. The umbilical of one of the divers was caught in the lift bag rigging, causing the diver to ascend with the spool until the spool's ascent was arrested.

Following the descent of the spool back to the seabed, the diver's umbilical was trapped between the spool and a seabed structure resulting in the loss of the diver's primary breathing gas supply.

What went wrong? What were the causes?

The diver's secondary life support (SLS) system was activated, however, there was a delay between the two actions required to fully activate the SLS system. The interface valve on the diver's helmet (step 1) was activated by the diver, however, the delay in the diver pulling the actuation handle on the harness (step 2) to deploy the counter lungs resulted in the system becoming an open circuit. This delay caused the diver's SLS breathing gas to deplete much more quickly than in the event of immediate and full activation.

The SLS unit was inspected and functionally tested by the equipment manufacturer immediately after the incident which was found to be working within the manufacturer's parameters with no identifiable defects.

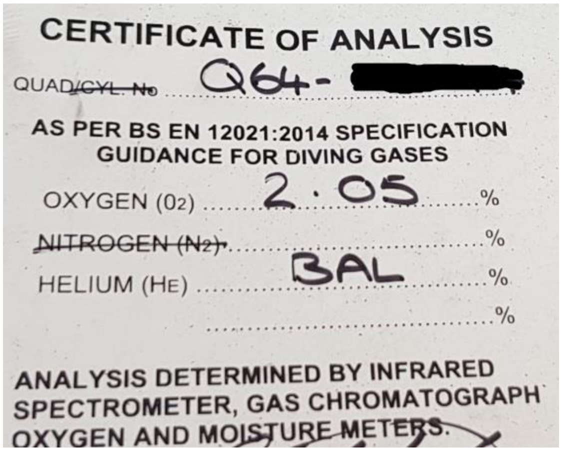
What actions were taken? What lessons were learned?

Divers have been refreshed in the use of emergency equipment including the SLS system and frequent training and drills have been implemented.

The continued use of the two-stage activation SLS system has been evaluated and a decision has been made to replace the current two-stage SLS systems with single-stage activation systems.

The use of heavy duty cold water neoprene gloves (reduced dexterity) and the diver's personal equipment (tooling) on his harness ***may*** have hindered the diver's activation of the SLS, therefore these will be reviewed on a case by case basis.

2 Helium Gas Quad – Gas Variances Across Quadrants



What happened?

During a planned mobilisation of five Helium gas quads (2% O_2, 98% He), one of the gas quads was found to differ from the others. All of the quads were labelled and certified as being 2.05% O_2. One quad, however, was stencilled as 12% O_2 and 88% He.

When the gas man began his analysis of the quad, the first quadrant indicated 1.21% O_2. Each quadrant was subsequently analysed and provided the readings below:

- 1) 1.21%
- 2) 1.40%
- 3) 3.73%
- 4) 1.84%

The intention was to store the quad onboard for use at a later time rather than decant all of the gas into Kellys. This quad was rejected by the diving support vessel (DSV) and returned to the supplier.

What were the causes?

It was established that there was a human error.

- Poor production checks resulted in the incorrect stencilling;
- Poor mixing of gasses before filling.

What lessons were learnt?

- Always make sure that the contents match with the quad markings, the paperwork supplied and is tested on site;
- When the manufacture recharges 64-cylinder quads, they may fill the four quarters separately (16 cylinders) of the unit, accounting for the variations.

The average of the quad was just above 2%, but the different quarters may have varied. In this case, if the vessel were to have decanted or used the gas directly from each quarter, they would not have received the required 2% mix. If the entire quad were decanted (all 4 quarters at the same time), this would have provided the 2% mix.

Our member noted that this is not a common occurrence, but that all personnel should be made aware that differences in gas ratios may occur in quads and check with individual suppliers whether quadrants need to be sampled individually.

Members may wish to refer to:

- High Potential Near Miss: Poor O_2 Content In Supplied Air – Diver Temporarily Lost Consciousness
- Failure To Follow Gas Quad Procedure
- Substandard Nitrogen Quads delivered to shipyard

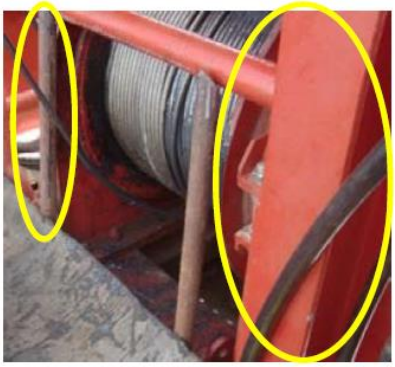
3 Weight Dropped to the Seabed Narrowly Missing Diving Bell

What happened?

Before launch of an Air Diving Launch and Recovery System (LARS) from a third-party DSV, the winch wire for the clump weight/guide weight became lodged between the winch body and the winch drum wall. As the winch operator paid out on the clump weight, the winch wire tightened on the winch hub and parted. This resulted in the 300kg clump weight falling to the seabed and narrowly missing a saturation diving bell and divers already deployed near the seabed. There were no injuries or damage to equipment.

300KG Guide/Clump Weight

Parted Winch Wire



What went wrong? What were the causes?

- It was not standard operating procedure to inspect the clump weight wire or winch, before launch of the Air Diving LARS;
- There was no pre-use check program in place for operating the LARS;
- The winch operator's position did not allow a clear line of sight to the winch drum;
- The LARS design enabled a loose wire when the A-frame is in stored position, i.e. a loose wrap became lodged between the winch housing and the winch drum wall.

What actions were taken? What lessons were learned?

- Consider additional engineering controls, where there is a possibility for winch wire loose wrap movement off the winch drum;
- Ensure adequate equipment pre-use checks are conducted;
- Maintain line of sight to the winch drum during spooling;
- In operations that involve equipment being deployed overboard, consider dropped objects and ensure that adequate 'drop-zones' are identified.

Members may wish to refer to:

- Near Miss: Dropped Taut Wire Clump Weight (2011)
- Near Miss: Dropped Clump Weight (2009)
- Subsea Lifting and dropped loads (1999)

4 Near Miss: Fire on Electrical Distribution Board During Diving Operations

What happened?

A barge suffered a total loss of electrical power whilst air diving was in progress. The incident occurred during diving operations at 18 msw, conducted from a third-party client chartered barge. The power loss affected the barge cranes and the dive spread (comprised of diver LARS, chamber, and dive control). The uninterruptible power supply (UPS) activated for dive control and the dive was immediately aborted.

However, whilst the diver was being recovered to deck with the LARS on the back-up power supply – a deck mounted generator – a fire was reported in the barge engine room.

All personnel responded to the situation in a calm and exemplary manner and followed the appropriate procedures. Once the diver was recovered to deck, all non-essential personnel mustered to their stations whilst the situation was assessed and made safe. No one was injured and no evacuation from the vessel was required.

Our member noted that the barge, power generation equipment, and diving equipment, had been in periodic use in the same configuration for the past 5 years without incident.

What went wrong?

At the time of the incident, power was only being drawn by dive control (240v, 13A) and the HPU for the forward barge crane. An intermittent fault in the 32A circuit had been reported; the barge Engineer was attempting to trace the fault within the engine room distribution board. He intended to replace one of the 32A breakers. As he started to remove the faulty breaker a short circuit was created causing a flash fire across the bus bar burning all circuit breakers in that row.

What were the causes?

- The established electrical lock-out/tag-out procedures were not followed;
- There was no permit to work (PTW) issued to the Engineer;
- The Engineer carried out multi-meter checks on the faulty breaker and put in place personal protective equipment, but did not isolate the distribution board or the generator;
- Simultaneous operations (SIMOPS) were being conducted with no prior communication between departments. Work was ongoing on the main power supply at the same time as diving operations using the same main power supply.

What actions were taken? What lessons were learned?

- Crew should be informed and regularly reminded of safe systems of work;
- Lock-out/tag-out and PTW systems are there for a reason and should be used and followed at all times;
- Existing procedures are there for a reason and should be followed even if it makes a simple task more complex and more time consuming;
- Better communication and planning of SIMOPS, particularly when actions in one operation can negatively impact another.

Members may wish to refer to:

- Guidance on simultaneous operations (SIMOPS) (IMCA M 203)
- Management of simultaneous operations during demobilisation
- Serious Injury Caused By Energy Isolation Failure [There were simultaneous operations taking place and these presented risks which had not been properly assessed]
- Near Miss (HIPO): Engine Started And Running Whilst Crew Member Working On Shaft Generator [one immediate cause: bridge and ECR not informed regarding on-going work on shaft generator]