

IMCA Safety Flash 18/15

November 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.

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 Small Change to the Disclaimer for all Safety Flashes

It has been brought to IMCA's attention that a number of members have been required by their client to make changes to their operations, or to undertake additional activity on the basis of information published in IMCA safety flashes.

In general, the editorial content within the IMCA safety flashes is kept to a minimum. The text, whilst it may be amended to ensure it is brief, informative and readable, remains as far as is reasonably practicable, with the main text being supplied by the submitting organisation.

Therefore, any actions, lessons learnt, recommendations or suggestions in IMCA safety flashes are generated by the submitting organisation, rather than by IMCA itself. 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.

The remainder of the events in this safety flash focus on diving related incidents.

2 Maintenance of Automatic External Defibrillators (AED)

During a recent audit, a member discovered significant non-conformances pertaining to the storage and maintenance of AED. The consequences were potentially significant, and immediate re-assessment was undertaken of all such equipment at that members' dive sites. AEDs should be available for immediate usage.

Our members' audit process noted the following non-conformances:



The battery had been removed or had been fitted incorrectly to the device. This was contrary to advice in the user manual for the item.



The pads on the AED were out of date;

Our member considers this to be a significant issue. Inspection of other sites revealed that in some cases batteries were removed or detached from the units. Removing or detaching the batteries from these units will prevent the unit being used for an additional sixty seconds, and lessens the chances of survival for the patient.

Our member took the following actions:

- ◆ Confirmed that the battery was fitted in accordance with the manufacturer's instructions;
- ◆ Confirmed that all equipment associated with the AED was "in-date";
- ◆ Tested the readiness of AED in accordance with the manufacturer's instructions;
- ◆ Appropriately trained personnel conducted a familiarization session on use of the AED with all of the crew;
- ◆ Ensured that the maintenance of the AED was added to the appropriate planned maintenance system.

3 Three Incidences of Decompression Illness (DCI)

A member has reported three instances of decompression illness on the same diving project. The dives were to a depth of 40m in June in temperate waters. Water temperature at the seabed was 5 °C and 9 °C at the surface:

- ◆ Diver A experienced a DCI in his left lower arm (muscle);
- ◆ Diver B experienced a DCI in his left knee and right shoulder (joints);
- ◆ Diver C experienced a DCI on his right shoulder/ upper arm (skin).

Our members' investigation noted the following:

- ◆ Initial checks of the DCI cases didn't reveal any signs of procedural or material failures;
- ◆ The three divers underwent additional examinations by the diving doctor with the focus on:
 - Personal build of the individuals including measurements (length, width, circumference and weight);
 - Fat percentages;
 - Use of dietary supplements.
- ◆ These examinations showed that these divers had quite normal fat percentages (13-25%) and that they were quite fit. Additional examinations did not reveal any indicators that could predict a higher risk to DCIs.
- ◆ There were no notable findings with regard to sleeping, eating (including use of supplements), drinking and sporting habits;
- ◆ No abnormalities during the deck decompression were noted.

What came to light was the relationship between the water temperature and in-water decompression and clothing:

- ◆ In all the three incidents the divers noted the water temperature was low;
- ◆ One diver explained the temperature was much lower than experienced last year in the same location around the same time of the year;
- ◆ Whereas last year the divers were able to work with normal gloves, this year they used the thicker versions to reduce the cooling down of the hands.

Diver A reported that he used normal gloves in his first dive. As his hands got cold he decided to use his own 'long-sleeve' gloves. He used the same gloves on the previous project, where he already suffered from "sour" underarms as these gloves were quite tight (as they were older).

Diver B reported that he was working quite hard to handle a *tirfor* tackle. He explained that he was sweating quite a lot, part of the time he was working on his knee, and he felt really cold during the in-water stops. When asked what kind of undergarment he was wearing, he explained a t-shirt, thin fleece jacket and sports trousers (track suit).

Diver C reported that he was working quite hard to move gravel bags around. He explained he was sweating quite a lot, but didn't feel cold. He further explained that for him it was quite normal to still feel comfortable, even though his skin had become cold. When asking what kind of undergarment he was wearing, he explained a long-sleeve thermal shirt (normal synthetic type) and a summer-type under-suit.

After comparison of the combination of dry-suit undergarments divers B and C were wearing, including consulting manufacturer's recommendations, it was concluded **that they were insufficiently dressed for the temperature conditions.**

The lessons learnt:

- ◆ Diver A's long sleeved gloves were too tight;
- ◆ Divers B and C were using undergarments insufficient for the conditions of the dive.

The following actions were recommended:

- ◆ Divers should wear correct and sufficient clothing for the dives they are going to make – in terms of duration, type of work, and sea water temperature. This should include sizing (garments should be properly fitted) and insulation properties (under-suits that are made of suitable materials in view of compression, moisture absorption and thermal properties):
- ◆ Supervisors should consider restriction or adjustment of the dive profile (e.g. reduce bottom time and/or tasks) if a diver does not have the possibility to wear the appropriate clothing, so that increased risk of DCI is avoided.

For reference, here is a table outlining the divers clothing on this dive:

	Diver A	Diver B	Diver C
Dry-Suit	Northern Diver Origin 6,5mm XO grade neoprene	Bare CD4 3,5mm compressed neoprene	Bare D6 Pro 6mm compressed neoprene
Undergarment	Inner suit (Subgear Subtech 100)	T-shirt, Fleece jacket, Training pants	Thermal shirt (long sleeves, synthetic) and inner suit (summer type)



Manufacturer's Recommendations

Metalux Temperature Undersuit (100gsm/200gsm)

SB Mid Layer Vest + CT200 (inner suit - 210gsm)

SB Mid Layer Vest + CT200 (inner suit - 210gsm)



Reference Summer

Northern Diver SD71/SD74

Reference Winter

Northern Diver Flectalon 100

Reference Cold Winter (2-part)

Fourth Element Xerotherm Arctic



Members may wish to refer to the following incidents (search words: *DCI, diver*):

- ◆ [IMCA SF 04/04](#) – Incident 3 *Late onset of decompression illness (DCI)*;
- ◆ [IMCA SF 05/14](#) – Incident 1 *Decompression illness (DCI) incident during routine decompression of divers from saturation*.

4 Lost Time Injury (LTI) Following Stored Energy Release and Subsequent Serious Infection of Wound

A member has reported an incident in which a diver was injured subsea whilst disconnecting a flange on a damaged flexible pipe. The incident had occurred after the diver had removed all but four of the bolts and nuts and was in the process of removing the last four bolts. He was in the process of sending the removed bolts and nuts up to the surface via the messenger line on the down line, when he heard a loud bang and was then struck in the leg by the flange, which had unexpectedly parted from the opposing flange. There had been no indication during the disconnection that the flanges were parting.

The diver sustained a wound on his right leg just below the knee and was safely recovered to the vessel and immediately treated on board. As a precaution, he was transferred to a nearby fixed platform, for further medical treatment and helicopter transfer to a shore side hospital, where he remained overnight.

Though he received initial treatment including antibiotics to stabilize the injury, following a short period in the hospital, the wound received became more seriously infected with gangrene. The injured person was repatriated to a hospital in his home country where in due course he made a full recovery.

Our member noted the following:

- ◆ All pre-dive procedures were conducted properly; there was a dive plan, a risk assessment and a toolbox talk held;
- ◆ The diver reported that nothing seemed out of the ordinary during the dive, and that the operation was a normal flange disconnection.

Our member drew the following lessons from the incident:

- ◆ **The importance of stored energy / body positioning during diving operations** - it was concluded that the risk assessment for this type of connection was insufficient in the area of engineering and stress analysis, and that preventative measures to be considered may include tensioned tie backs, or actually releasing possible stored energy through a series of cuts along the pipe;
- ◆ **The importance of proper wound aftercare immediately following diver recovery**, and the dangers and potential severity of infection in skin-breaking injuries, no matter the size or severity of the wound. This is especially important in diving operations in inshore or tropical waters;
- ◆ Also while appropriate aftercare was administered, a more aggressive antibiotic approach should have been taken. Further awareness and education about microbial agents in the water, and the ways to identify and treat possible infections, should be made available to health professionals.

Members may wish to refer to the following incidents (search words: *wound, infection*):

- ◆ [IMCA SF 03/05](#) – Incident 13 *MRSA (the ‘Super Bug’) and appropriate use of antibiotics*;
- ◆ [IMCA SF 01/12](#) – Incident 2 *Lost time incident (LTI) – laceration to finger*