



=| SAFETY FLASH 2021-01 |=

Information sourced from IMCA Safety Flash

Failure of in-service saturation bailout bottle

What happened?

During saturation diving operations, Diver 1 reported his bailout bottle pressure dropped. A leak was observed by diver 2 but the origin was uncertain. Diver 1 returned to the bell and changed his bailout bottle. The leaking bailout bottle was removed in the bell trunking and stored in the clump weight basket.

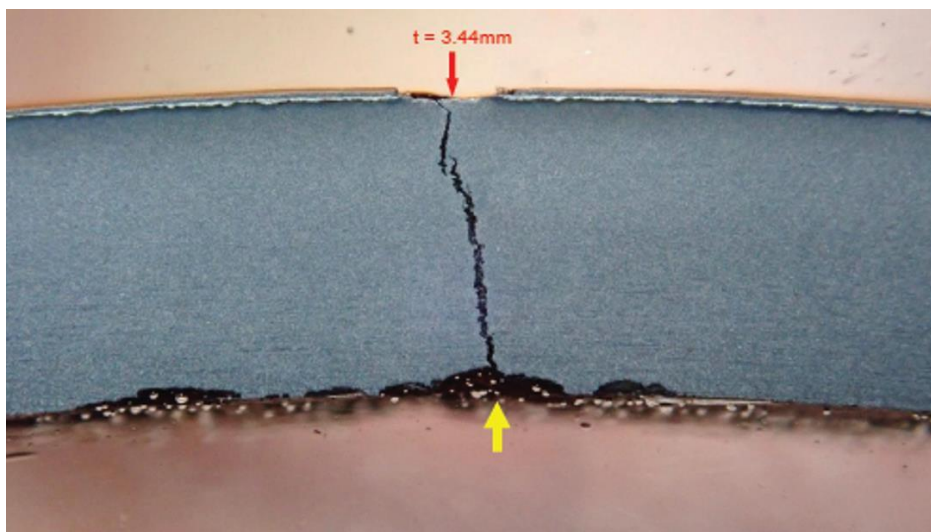
Upon recovery to deck, the bailout bottle was found to have 3 pin holes on the side wall hidden by a locking clasp. Saturation diving operations were suspended and all bailout bottles from the same manufacture of the same type were taken out of service and quarantined.



Leaking cylinder



Internal surface of cylinder, showing corrosion over entire surface. Leak location circled.



A cross-section through the cylinder wall at the leak location showing a through-thickness crack. The cylinder suffered internal corrosion at the crack location, with a measured remaining wall thickness of 3.44mm.

What went wrong

A through-wall defect 42mm long approx. was observed, with 3 small leak paths.

What were the causes of the incident?

- The primary factor was water/moisture on the internal surface of the cylinder, promoting corrosion. High levels of chlorides and possibly produced hydrogen may have led to the Stress Corrosion (SCC) and/or Hydrogen Stress Cracking (HSC) mechanisms;
- The root cause was suspected to be third-party testing and/or unsuitable long-term storage.

Lessons learned

- Improvement required for technical specification for servicing, testing and inspection of bailout bottles;
- Drying procedure used by supplier deemed to be inadequate;
- Bottle receipt and storage process deemed inadequate - potentially exacerbating internal corrosion.

Actions

- Verify that third-party procedures are fit for purpose and followed;
- Improve receipt inspection and storage of bailout bottles to ensure they are dried and sealed.

Members may wish to refer to:

- IMCA D 018 *Code of practice for the initial and periodic examination, testing and certification of diving plant and equipment*
- COBRA bailout system – guidance note
- Substandard nitrogen quads delivered to shipyard
- High potential near miss: failure of valve on gas bottle