



## Risk Management and Decompression Procedures Control, Monitoring and Performance Improvement

**The recurrence of DCS despite the compliance with the diving procedures is indicative of a limit that has now been reached**

- **Numerous DCS cases are reported every year around the world**

These accidents occur despite the compliance with the diving procedures. They do not follow the well-controlled deterministic pathways: we talk about stochastic risk.

- **What progress can be made?**

The large number of factors attributable to the occurrence of a DCS introduces a limitation. **This situation precludes any possibility of progress outside of a systematic collection of information in a Research framework - synonymous with constraint, duration and, moreover, doubt as to the scope of the results.**

**In this context, O'Dive-PRO brings up a new paradigm**

**O'Dive-PRO is a patented innovation that enables the analysis of the quality of decompression procedures by considering two indicators for which a correlation to the DCS risk has been proven: the dive exposure parameters on the one hand and the quantity of microbubbles detected in the operators' bloodflow after their intervention.**

**O'Dive-PRO includes a vascular microbubble sensor (ultrasonic Doppler technology) connected to a server with specialized analysis tools.**

**This compact and robust sensor is coupled with a data-logger watch used to record all the exposure profiles in digital format.**



### **How are the measurements taken?**

After the decompression, each intervenor places the sensor for 20 seconds under his left and then right clavicle and records his signals on the O-Dive PRO module.

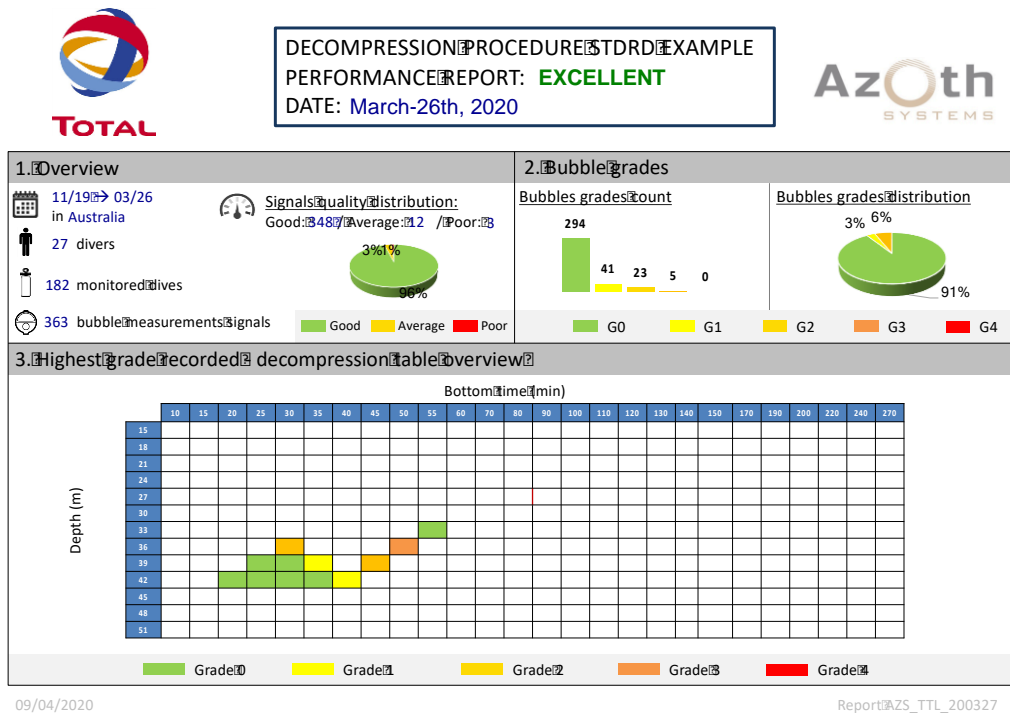
He then imports his exposure profile by connecting his data-logger.

The information is collected anonymously. It is analyzed as part of a quality monitoring system.

## How does this service work?

The service is based on a **regular monitoring of circulating microbubbles in the operator's venous flow** after the intervention using the O'Dive-PRO sensor.

The result of the measurements is available in the form of **online reports to monitor the effects of decompression procedures on intervenors.**



**Illustration of a periodic O'Dive-PRO follow-up report**

### References:

- (1) - Hugon J. et al. "Reliability of venous gas embolism detection in subclavian area for decompression stress assessment following scuba diving", *Diving and Hyperbaric Medicine* 2018; 48 (3): 132-140.
- (2) - Hugon J. "Decompression models: review, relevance and validation capabilities", *Undersea Hyperbaric Medicine* 2014; 41(6): 531-556.
- (3) - Gardette B. "Correlation between decompression sickness and circulating bubbles in 232 divers", *Undersea Biomedical Research*, vol. 6, No. 1, 1979.
- (4) - Eftedal O.S., Tjelmeland H., Brubakk A.O. "Validation of decompression procedures based on detection of venous gas bubbles: a Bayesian approach". *Aviation, Space and Environmental Medicine* 2007; 78: 94-99.
- (5) - Nishi R.Y., Eatock B.C. "The role of bubble detection in table validation". In "Validation of decompression tables. The 37<sup>th</sup> Undersea and Hyp. Medical Society Workshop": Schreiner and Hamilton eds. 1989; 133-138.
- (6) - Jones A.D., Miller B.G., Colvin A.P. "Evaluation of Doppler monitoring for the control of hyperbaric exposure in tunneling", *Research Report RR598. UK Health and Safety Executive; 2007.*

**Website:** <https://www.azoth-systems.com/en/home/>

**Contact us:** [contact@azoth-systems.com](mailto:contact@azoth-systems.com)

**+ 33 (0)4 89 33 11 27**