



Text by Simon Pridmore

In the last *Scuba Confidential* column, I took a long, hard look at the buddy system and solo diving. Whatever you may feel about the issues, there are definite benefits—both tangible and intangible—to diving with someone else. We are human beings, after all. We like to share our experiences and we also derive a great deal of emotional security from the company of others. There are also occasions when having a buddy around can be of enormous practical assistance.

If you become entangled in fishing line or a net, a buddy can see the situation much more clearly than you and is better placed to extract you. If you become confused or anxious, your buddy's mere presence and calm disposition can be reassuring. If you get a serious injury, you may need a buddy to get you safely to the surface and out of the water.

Another major advantage of diving with someone else is that you can assist them if they have an air supply emergency or so that they can help you if you have one.



PETER SYMES

Scuba Confidential:

Air Supply Emergencies

— *What Do You Do When It All Runs Out?*

Running out fast

A couple of years ago, the folks at *Advanced Diver* magazine in the United States ran a few scenarios using a standard set of equipment on a full 12-litre cylinder placed at a depth of 30m. They

found that a burst intermediate pressure hose emptied the cylinder in less than 90 seconds. A purged (i.e. free-flowing) regulator did not take much longer, causing the cylinder pressure to plummet from 200 bar to zero in just 154 seconds.

So, if you are using a single cylinder with no alternate independent source when you are diving to any sort of depth and something like this happens, you are unlikely to have enough time to make an ascent at a safe speed on your own. You

are going to need someone to share air with you as you go up.

There is also the possibility that you might start a dive on an almost empty cylinder, fail to check your pressure gauge and run out of air completely





MARK POWELL

while still at depth. This has happened to a number of divers who mistakenly thought they were much too careful for something like this to ever affect them.

All of us learn at an early stage in our diving lives how to assist another diver with an air supply emergency. In spite of this, real life air-sharing situations often end badly, with one or both divers coming to harm. In this article, I suggest ways in which you can train and configure your equipment to give you, and the people you dive with, a better chance of survival when one of you suddenly runs out of air.

Unrealistic drills

In standard diver training, the drill begins with two divers kneeling facing each other. One signals calmly to the other that they have run out of air. The donor hands over their octopus regulator, they establish a mutual grip and, after a minute or so, on a signal from the instructor, the drill is ended and the out-of-air diver returns the octopus and starts breathing from their own regulator again. The drill is then repeated with the divers exchanging

roles. A development on the theme has the two divers execute a timed swim together once they have begun air sharing, then return to the starting point.

The benefit of these exercises is limited. Firstly, they presuppose an unrealistic scenario where two divers are side-by-side and stationary when the emergency occurs. Secondly, the manner in which the drills are conducted is unlikely to induce any significant degree of stress in the participants, whereas a real-world air supply emergency is a highly stressful event. Thirdly, the sequence fails to include an ascent.

Two divers, both breathing heavily under stress and sharing one cylinder, need to have an immediate ascent at

the forefront of their minds, as their air supply is likely to become rapidly exhausted. Unfortunately, the exercises they have practised are more likely to make them think that the act of air sharing is the only thing that matters, and that once this has been established, the emergency is over. If anything, the situation has actually become even more serious—There are now two divers at risk instead of one, and any delay in ascent could be critical. The emergency is not over until both divers are buoyant at the surface.

“Real life” drills

Of course, the air-sharing swim is supposed to simulate an ascent, and a good instructor would explain that, but it is commonly accepted that, when called to action in an emergency, you are far more likely to remember some-

thing you have done than something you have been told. People involved in a stressful situation will act according to instinct rather than intellect, and instinct is developed by repetitive rehearsal. This is the concept behind the progressive series of drills I describe in the text box accompanying this article, which takes you through increasingly realistic scenarios, allowing you to gradually develop both your technique and confidence. Practise these as a team exercise. I would recommend a team of three: two divers executing the drills and the third person acting as observer and safety diver, and providing an objective critique of the air-sharing divers' performance. Roles should be exchanged during each session.

What really happens

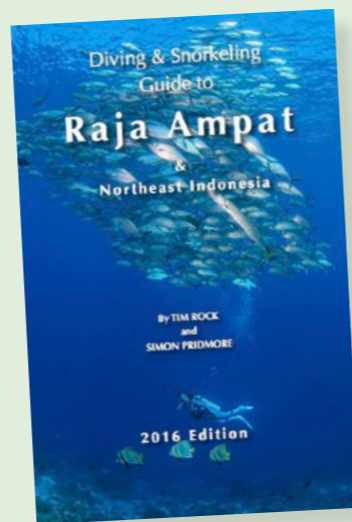
On the two occasions that people ran out of air on a dive and came to me for assistance, they both arrived unnoticed from above and behind, and grabbed the regulator out of my mouth. Both also dragged my mask off in the process. This is what typically happens when you run out of air. At the moment you suddenly realise that you have no air to breathe, you stop swimming and instinctively hold your breath.

This causes you to float upwards. Assuming you have enough self-control and awareness to resist making a panicked runaway ascent, the next thing you do is look around desperately for someone nearby who has air and swim as fast as you can to get to your prospective saviour, who is now usually below you.

As you swim, the anxiety you originally felt on finding yourself airless increases with the effort you are expending and the gradual build-up of carbon dioxide in your body. By now, you have only one thought in your head, “I need air!” The concept of politely requesting assistance with a series of calm gestures could not be further from your mind.

The equipment setup that most divers use is a regulator on a short hose in their mouth and an octopus regulator on a slightly longer hose, secured to the right side of their BCD. From above, the octopus regulator is invisible, so you will just grab the most obvious source of life-saving air you can see. This will be the regulator in the other diver's mouth. Hav-

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opinion



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ing taken it, you immediately discover that the regulator hose is too short and that, in order to breathe from it properly, you need to turn it around. This presses you up against the diver's right-hand side, making it hard for them to reach their octopus without pushing you away. A confused, chaotic struggle takes place and sometimes, as the history of diving tells us, disaster ensues.

A solution that works

As well as improving your technique by practising real-life drills, you can anticipate, prepare for and reduce the risk of air supply emergencies

by adopting a regulator setup similar to those used by technical divers.

The regulator that you breathe from—your primary—should

OUT OF AIR PRACTICE DRILLS

PHASE 1: To be practiced in a swimming pool or calm, shallow, protected body of water

1. You and your buddy position yourselves 10m apart. Your buddy "runs out of air" and swims towards you without breathing.

2. When you see your buddy signal that they need air, prepare whichever of your second stage regulators is on the longer hose and give this to them when they arrive.

3. Begin air sharing then ascend slowly together. On arrival at the surface you auto-inflate your BCD while supporting your buddy as they orally inflate their BCD.

4. Repeat the drill, alternating roles and increasing the distance between you until the person who is out of air starts experiencing significant stress towards the end of the non-breathing swim.

5. Then add a new level of difficul-

ty. Turn your back so you cannot see your buddy coming and do not prepare a response until they arrive and spin you around.

6. Finally, practice the drill while you are both swimming, one following the other, so your buddy is in the realistic position of having to catch up with a moving target in order to share air.

Do not end any of the drills until both divers are at the surface and positively buoyant.

PHASE 2: To be practiced during ocean dives

1. Begin phase 2 only when you are both comfortable with the phase 1 drills.

2. Once in a while, particularly at the beginning of a dive season, agree that one or other of you will initiate the drill at some point during a normal dive in open water. Advise anyone else diving with you that this is what you intend to

do, just so they do not mistake it for a real emergency and try to intervene.

3. Then practice the drill as you did in the pool, first when you are swimming close together in the shallows then extending the distance and depth as you become more accomplished.

4. Always follow an out-of-air swim with an ascent and establishment of surface buoyancy so the sequence is burned into your minds and become automatic.

5. Finally, to test yourselves in a realistic scenario, involve a third person to act as the trigger for the drill. Ask this third person to watch for a moment in the dive when it looks like you or your buddy has become distracted or when you have drifted a little further apart from each other than usual. Then, the third person should signal to one of you that you are out of air. This initiates the drill.

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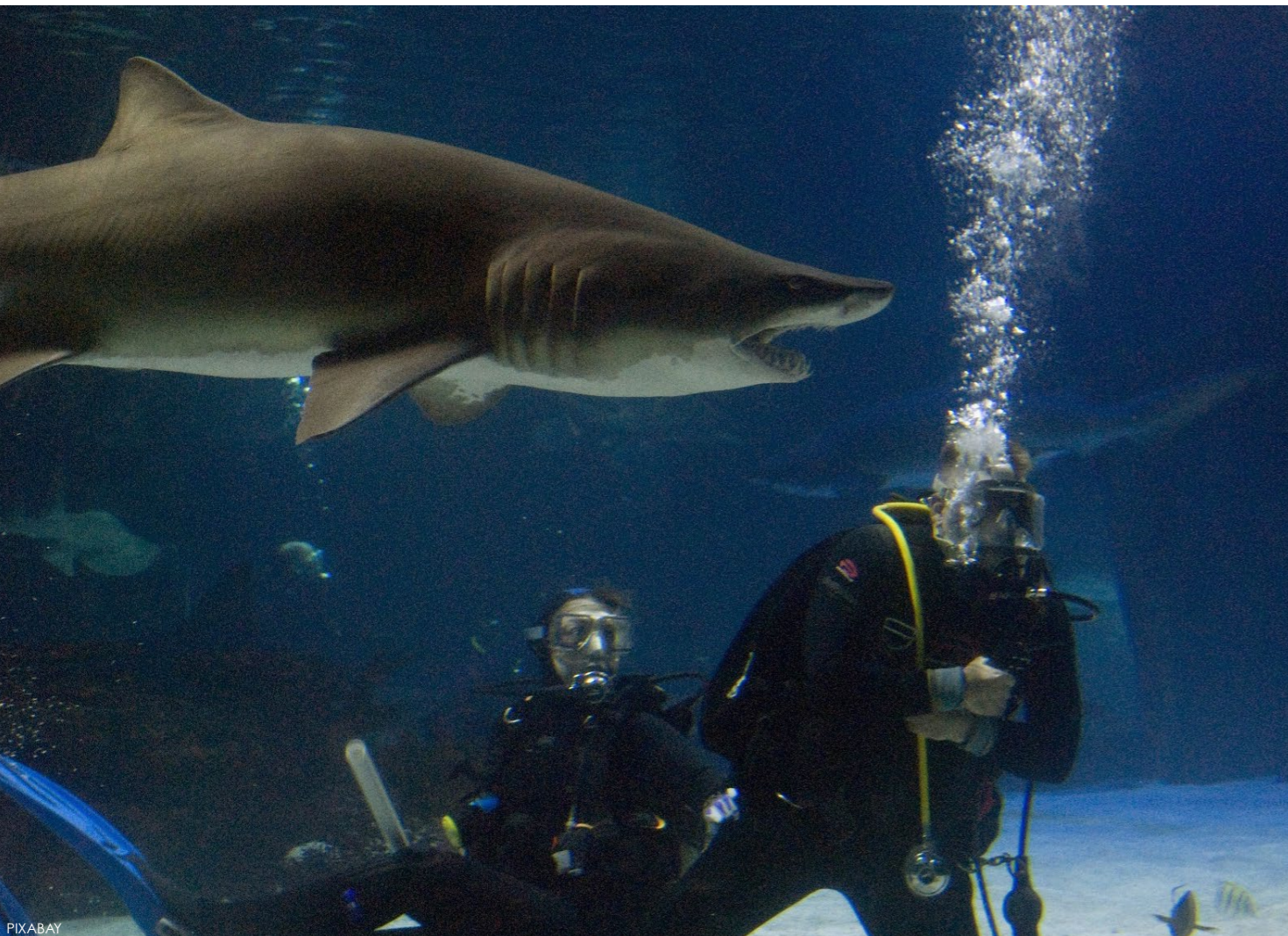


opinion

Technical diver with regulators in Hogarthian configuration

be attached to a brightly coloured hose. The second stage should ideally be brightly coloured too. The hose should be at least 1.5m long and, depending on your size and shape, the extra length can be wrapped over your chest, tucked into loops of tubing along the side of your harness or BCD, or tucked into your waistband. The important thing is that the hose comes free easily when it is deployed.

Your backup second stage regulator should be black and attached to a black hose to make it less obvious than the primary. This hose should be as short as possible while still allowing you to move your head freely when you are breathing from the regulator. Some choose to keep the backup second stage attached to a chest D-ring. Others hold it in place on the upper chest with a loose loop



of cord or surgical tubing around their neck.

The concept of this setup is that, when an out-of-air diver approaches you to share air, the brightly coloured hose and second stage will attract their attention and indicate which regulator you want them to take. The length of the hose will then allow them to remove themselves to a reasonable distance from you once they have taken it. When the regulator leaves your mouth, you take your easily accessible backup regulator with either hand and pop it into your mouth. You and the out-of-air diver will then both be breathing comfortably and ready to begin a controlled ascent together.

Practice makes perfect

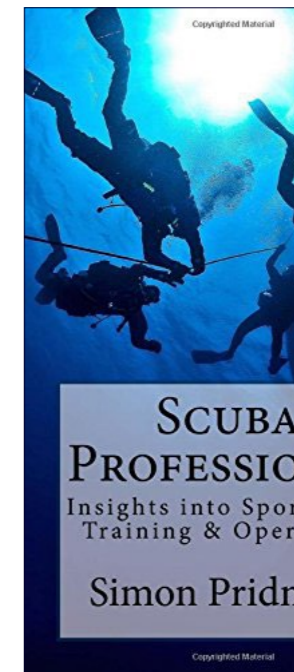
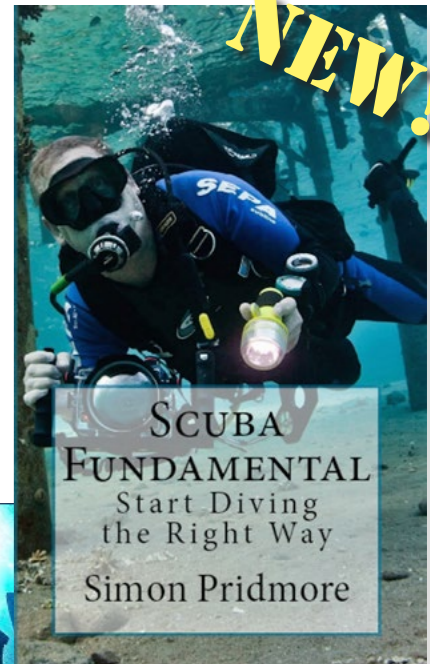
The combination of real-life drills and a well-thought-out

regulator setup can turn an air supply emergency from a potential disaster into a minor inconvenience. Practise the techniques frequently so that they become completely instinctive. ■

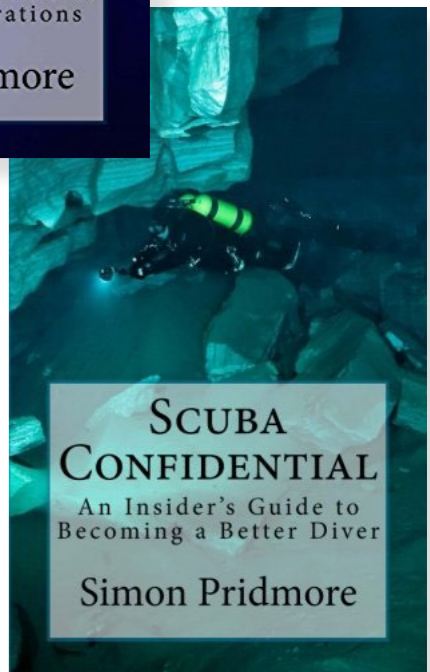
Simon Pridmore is the author of the international bestsellers, Scuba Confidential: An Insider's Guide to Becoming a Better Diver, Scuba Professional: Insights into Sport Diver Training and Operations, and Scuba Fundamental: Start Diving the Right Way. He is also the co-author of the Diving and Snorkeling Guide to Bali and the Diving and Snorkeling Guide to Raja Ampat and Northeast Indonesia. This article is adapted from a chapter in Scuba Confidential. For more information, please visit: SimonPridmore.com.

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