

flowing second stage will eventually cause the first stage to freeze, causing the AAS to free-flow as well.

Look carefully at your AAS equipment and how it is set up. Does it really carry out the function for which it is required, or is it an expensive fashion accessory?

As some of this year's incidents, and their aftermath, have shown, one of the most important things to remember is that every diver, when he or she enters the water with a buddy, owes a "duty of care" to his or her buddy, to ensure that they both surface none the worse for the experience. Whenever you dive with someone there is a mutual bond of trust to the effect that, if anything goes wrong during the dive, your buddy can, and will, assist you to safety. As BS-AC divers, you are trained to enable you to carry out that commitment without undue risk to yourselves.

Tim Parish is the BS-AC's Incidents Adviser.

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BREATHLESS IN JURASSIC PARK

Bob Halstead

"There I was, alone, 30 meters down the drop off. Grey reef sharks were approaching to my left then, to my right, a huge tiger shark swam straight for me, pectoral fins down and mouth agape. Suddenly a giant tentacle reached up from the deep and grasped me around my ankle. Just then I realised no more air could be drawn from my regulator "

By the way I've just seen Jurassic Park. Do you know what the scariest creature in the movie is? Yeah, you got it, a computer operator. He's a big guy, and not even jolly.

Let's try again.

"There I was alone, 30 meters down the drop off. Grey reef sharks menaced my left, their chilling eyes glued

to my succulent thighs. Then, to the right, I was stunned to see a huge Tiger shark, jaws agape, lunging towards me. Suddenly a giant tentacle reached up from the deep and grasped me around the ankle. Just as I realised that no more air could be drawn from my regulator, I was engulfed in a frenzy of bubbles Oh No!! Looking down I was horrified to seeA DIVER!!! Aaaarrgghhhhhh ..."

Cut to scene of butterfly fish flitting around coral gardens and causing typhoons in the China Sea.

Alright, I know you real divers love sharks and sea monsters and have learned that most of the danger from these beasts exists in the imagination. Some of you also might believe my observation that the circumstance most likely to lead to injury is being with other humans, the message was quite clear in the movie, by Neptune! But I have a feeling that most of you might get a nasty creepy shiver thinking about "no more air could be drawn from my regulator." Which is why I am going to devote this enlightenment to "Emergency ascents" of which more nonsense is spouted by diving instructors than even, well, for example, the buddy system.

It has taken me a long time to come to my senses on this topic so to all whom I have taught buddy breathing, octopus ascents, emergency swimming ascents, breathing from a BC, buoyant ascents and other assorted dumb techniques: I APOLOGISE.

I got suckered in to these crazy ways of sucking for survival because they are all theoretically possible and, even better, they generally involve complex and difficult skills that require continual practice to master and remember. Even better still, the procedures are so dangerous that we are told they should never be practised except in conditions in which they never will be needed. So diving students spend hours buddy breathing etc. in swimming pools and shallow ocean but never from the sort of depths that divers actually run out of air in. Let's make this crystal clear. You find yourself, through bad luck, or your own stupidity, or whatever, at 30 m with no air. To survive you are now supposed to use a procedure that is so dangerous that you have been advised never to practise it in the circumstance that you now find yourself. I would imagine, since I have never been in that circumstance myself, that the thought would be enough to bring you close to pushing the panic button. Is this intelligent advice we are considering here or something more appropriate to the Jurassic era? Emergency swimming ascents from 30 m have become drills for consenting heroes in private oceans. They are skills that you just know the old pros can do, a nod is as good as a wink here, but it is not something they are going to admit to practising, especially to mere mortals. OK, we do not encourage pilots to practice actual crash landings in airplanes so I suppose some smarty is going to use that argument against me, but, tough luck mate, with diving there is a solution so simple that we do not have to learn or

practice buddy or octopus breathing or 30 m Emergency Swimming Ascents at all because, if we are smart, we will NEVER have to use them EVEN with “no air at 30 m”.

I CONFESS, (Oh forgive me, Neptune) that I have been prepared to risk all to learn these elite skills and having them mastered has made me feel superior, perhaps even super-human. This meant I could boss other divers, particularly beginners, and generally make them feel insecure and inadequate which I needed to boost my own self esteem. Yes, I too was a sinner. Those that were able to survive my assault style diving classes and cruises inevitably felt the same way about these skills, and so they became part of diving lore. I must say I was not alone, merely a sardine in the big school of diving instructors who believed that diving has to do with doing things the “true” way rather than the logical way.

Which reminds me. OF COURSE it is much better not to get yourself in an *out-of-air* situation at 30 or even 5 m but you know, it happens, and is a principal cause of diving injuries particularly decompression illness. And it is not always carelessness, my survey of experienced divers revealed that 21 % of them had suffered sudden regulator failure, producing no air, at least once in their diving careers.

I first started to feel uneasy about octopus and buddy breathing when I noticed more and more discussions and published opinions about whether the donor should be in front or to the side, how many breaths to take, which regulator should be passed and where the octopus regulator should be carried and which hand should go where and well you know what I mean. You see, I was still trying to figure out how I was going to find my buddy. I was recently assured that the correct emergency procedure if my buddy was closer to me than the surface was to swim to the buddy (20 m?) then make an octopus/buddy breathing ascent to the surface (30 m?). Are your eyes watering, they should be, this is better than Laugh In.

So I became the expert on Emergency Swimming Ascents, (or Buoyant Ascents, for wimps). This was really good because to survive these you need terrific breath control and tolerance for carbon dioxide build up, and you got these by practising skin diving. I am a pretty fair skin diver so coined the rule “Never dive deeper than twice the depth you can skin dive to”. This has since been taken seriously and published in a book on solo diving. Wow. By the way, Compressor King and long time diver and friend Brian Hotton from New Zealand, to whom you can all be grateful for all those great clean air fills that you get from Telita and Tiata, wrote and told me that it was not a good rule because in New Zealand all the divers can skin dive to at least 30 m and he did not approve of scuba diving deeper than 60 m. There is a response to this, and it has to do with sailing and a certain cup. The trouble with these ascents was that although I was confident I could reach the

surface after “no more air could be drawn from my regulator” I could not figure a way of doing a decompression stop on the way up, after all it would be unlikely that the regulator would fail or I would run out of air directly beneath the boat and a hanging bottle. Since I truly believe that old, bold divers must consider EVERY dive to be a decompression dive this produced an impasse. If you could think of a way of making a stop it would be the answer to an impasse-able dream, and make an impassible dive.

And although I practiced rebreathing air from my BC, and even breathing from a tank with no regulator, even as silly as I am, I never supposed that any one in a real emergency situation would be stupid enough to actually try to do that. I mean, CRAZY or what!

So I moved on to trying one of those neat bottles, with a single stage regulator built in, as a source of emergency air. This, I thought initially, is a clever little device. Small, easy to carry and fill and a totally independent air supply with a handy mouthpiece on top.

Dinah and I bought one each and used them for a year. We discovered:- (a) They leak; (b) Sharks like to bite them (Dinah had a Grey reef shark bite one on her waist with no baits in the water and another diver who was using it as a shark billy got his bitten with baits in the water. We painted ours red and this seemed to solve that problem.); (c) People in distress drop them and (d) They have not got enough air. If you are diving with a standard tank of about 80 cu ft you need a minimum of 10 cu ft for shallow diving and 20 cu ft for deep diving to make a compete and NORMAL ascent including a decompression stop. It is a pity the idea was not developed further but it wasn't.

SO, and thank you for your patience:-

“Reaching down and backwards I grasped the valve of the PONY BOTTLE attached to my main tank and turned it on. I then pulled the pony bottle regulator from its clip on my chest and placed it in my mouth, purging before breathing normally and starting my ascent, using my middle finger to signal “UP” to the creatures in Jurassic Underwater Park”.

Diving instructors stress the importance of “Normal” breathing while using SCUBA. They do allow that breathing can be used to control buoyancy but frown on photographers holding their breath in order to get that close fish shot. They then go on to teach the very abnormal breathing required in emergency ascents. Am I missing something here? If normal breathing is important then, surely, that must especially be used in an emergency. And the only method that uses a normal ascent (not hanging on to another diver) and normal breathing, is using a sufficient independent air supply that you carry with you. Divers using double tanks can achieve this by means of manifolds

and twin regulators. Other divers need a PONY BOTTLE WITH REGULATOR.

And can you practise the use of a pony bottle in the circumstances that you are likely to need it? Yes! It is so simple and easy the only drawback is that I cannot brag about being able to do it....

Now you might think that carrying a pony bottle with regulator attached is awkward and will add drag, and so did I, but I have been pleasantly surprised. You can get rid of your octopus from your primary regulator (keep it and use it with a long hose and a new first stage to make up your pony bottle regulator), exchange the sea anchor that you call a buoyancy compensator for one which fits and has only one (small) pocket for your safety sausage, ditch your snorkel and tidy up the rest of your scuba gear. I have made a very simple clamp which fixes the pony bottle upside down on the right (or left) of my main tank. At the start of the dive I use a gauge to check the pony is full, attach the regulator, pressure the system and check it, then turn it off (leave it pressurised). I know that I do not have to worry about running out of air or my regulator failing. Of course I still aim not to run out of air. One of the techniques that I have used for many years is to predict how much air is in my tank BEFORE I check the gauge. Now I am very accurate in my predictions. I know how much air is in my tank without looking at the gauge. Obviously regular diving is a help here. I also do not intend to make crazier dives just because I have extra air. Lack of sufficient air supply has not been the limiting factor for the deep dives I have been making anyway.

There may be those that will now argue that there will be divers who submerge with an empty pony bottle or whose pony regulators will have solidified with corrosion and that these divers will one day perish as a result. Alas this is true. But in these days of eco-love and appreciation of nature should not we just let natural selection take its course instead of trying to out smart it all the time? Let's face it, I bet you are glad that natural selection worked for the dinosaurs, just imagine how tedious it would be having to watch out for tyrannosaurs every day on the way to work, so what is wrong with it working for turkeys? So there we have it. Get yourself a pony bottle rig. If enough interest is shown we will soon see compact pony bottles with neat clamps and miniature "pony regulators" on the market. Forget all this other nonsense about buddy breathing and emergency swimming ascents, and the only octopus you should want to see is one with eight giant tentacles, 20 m across, and with a beak capable of ripping the flesh off a diver in less time than it takes to draw your hand across your throat.

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OCEANIC REGULATOR PROBLEM

Oceanic has issued a "Quality Alert" regarding the high pressure first stage pressure seat in their diaphragm regulators. Shipped to dealers between April and June, 1993.

When used with tanks filled over 3,200 psi this seat could shift and alter the intermediate pressure from the first stage to the second stage regulator. If the pressure gradually increases, then the regulator will eventually free-flow. If the pressure decreases, the regulator becomes increasingly difficult to breathe. The problem was determined to be the material in the seat. While seeking the cause, Oceanic found a better material for this seat and alerted their dealers of a change in material and also supplied new seats for those regulators in stock.

Peter Radcliff, marketing manager for Oceanic, told us, "This was in no way a recall. The shift in intermediate pressure is not life threatening."

Those concerned about their diaphragm first stage regulator should take it to their local dealer and have the intermediate pressure checked.

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The address of UNDERCURRENT is P.O. Box 1658, Sausalito, California 94965, USA.

GLEANINGS

Plasma catecholamine levels during exposure to an environment of hyperbaric oxygen

Tremellen KP, Williamson JA, Frewin DB and Russell WJ. *Clin Autonomic Res* 1993; 3: 91-93

Abstract.

Plasma catecholamine levels were measured before, during and after hyperbaric oxygen therapy in nine subjects. Adrenaline levels were elevated immediately prior to hyperbaric oxygen therapy, but then fell and stabilised once treatment commenced. No significant fluctuations in plasma dopamine or noradrenaline levels were noted during the treatment period.

The study does not support the premise that there is a suppression endogenous plasma catecholamine levels during hyperbaric oxygen as has been previously reported. The observed initial increase in adrenaline can be attributed to stress/anxiety and the subsequent decline in this stress, rather than the result of the hyperbaric oxygen treatment itself.

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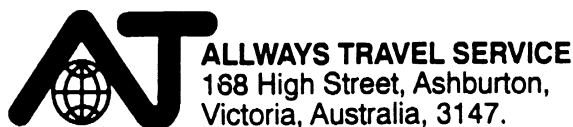
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