

From mask removal, replacement and clearing Getting it all right to SMB deployment



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Probably best known for his records - Leigh once held the record for the deepest dive in the Red Sea - and attempts of reaching extreme depths, he also has a wide range of teaching credentials to his curriculum:

TDI instructor trainer, DSAT Tech Trimix instructor, PADI MSDT IANTD Technical diver instructor CMAS 3 star instructor.

Mask clearing and deployment of the Surface Marker Buoy. What's the connection between these two unrelated skills, you may be excused for thinking. They are both giving many students problems during training, that's what. In both cases it's all about getting it right from the beginning

During entry level "Open Water Diver" training it is the mask removal, replacement and clearing skill that students routinely have most problems with. Likewise, during entry level technical dive training, the deployment of SMBs, Surface Marker Bouys is surely the exercise that ranks highest on the tricky-issue hitlist.

Problems and cures
In this article, we are therefore going to discuss possible cures for problems associated with the above skills, hence prolonging the sanity of the diving instructor as well as making the world a better place. On both accounts I am talking from personal experience

in years gone by and the experiences related by fellow diving instructors. I can clearly remember spending hours at the pool side, telling students that it is perfectly normal to not be able to breathe solely through your mouth without breathing through your nose at the same time. After all, this is the first and only environment that we have been in where this is necessary to sustain life.

Rewinding the tape
However, under water we might one fine day find ourselves in a situation where we will have to rely on being able to do just that. So even though you weren't all that cool with this mask removal business back then, let's rewind the tape and redo some exercises. It will do you good and, in case you had problems back then, you'll probably be a lot more at ease with it all now anyway.

A good exercise
Try to adopt a circular breathing pattern. That is, inhale through your mouth exhale and through your nose. Practice at the pool side, with no mask and just a snorkel. Lie face down in the water, at the surface, in the shallow end. With some calm and focused practice, any problems associated with near drowning from inhaling water in the mask or while the mask is off, will be resolved quite quickly. For some it's going to take a little longer.

During training
I have often been thinking that training agencies should consider additional equipment requirements for the instructor during confined water training. Namely a cloths peg with a reasonably strong spring.

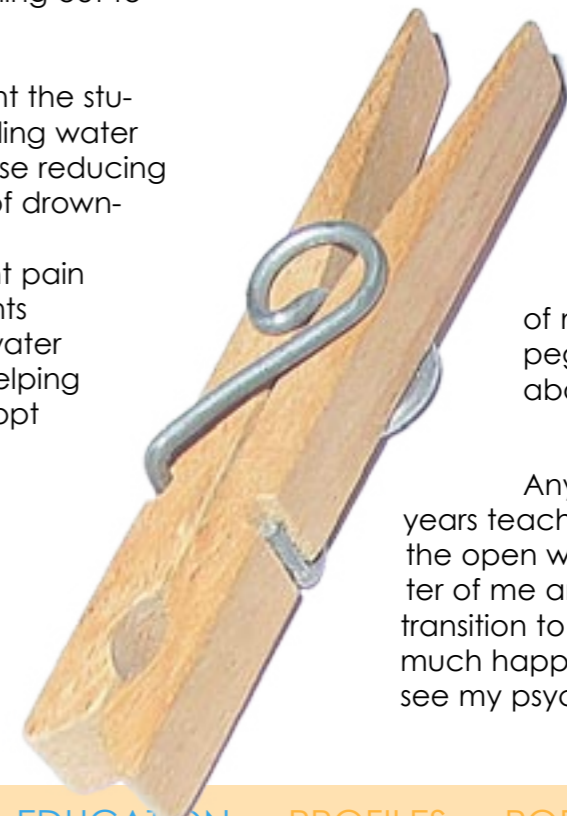
During mask removal and replacement in confined water training, if students start to snort water while apprehensively looking at the surface, the cloths peg could be swiftly attached to the students nose by the instructor. The cloths peg in this situation would have a constructive dual purpose, as well as being a useful tool for hanging your washing out to dry.

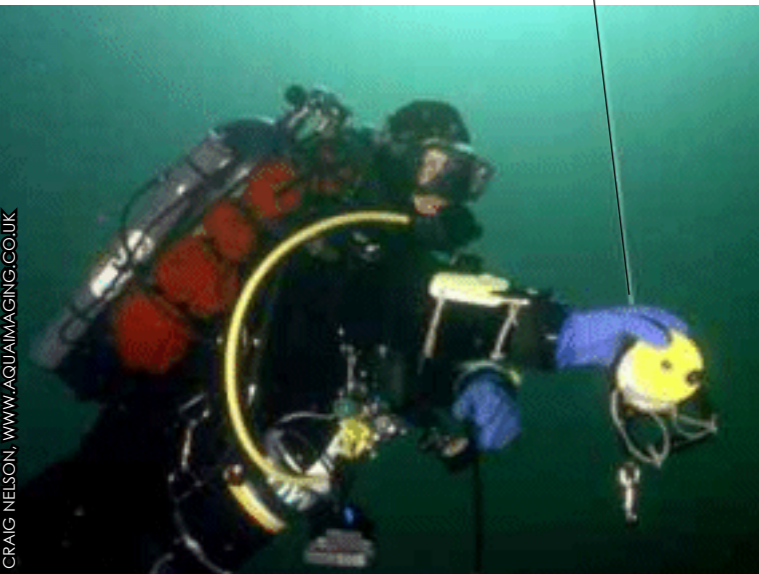
- 1) It would prevent the student from inhaling water through the nose reducing the likelihood of drowning.
- 2) Cause sufficient pain to deter students from snorting water in the future, helping students to adopt the correct breathing pattern.

Obviously the cloths peg is not a tool to be continuously used

after training by a diver who has not mastered separating breathing between the mouth and the nose. It is simply a tool to be used during training to help the student and instructor reach the end goal. Mask removal, replacement and clearing must be mastered without the use of the cloths peg before an Open Water diving license is issued. Rocky (my dog) used to piss in my house, I would slap him on the nose and rub his nose in it, he soon stopped pissing in the house. I don't think slapping students is the answer, in the case of mask problems. The cloths peg could be the key. It is all about conditioning.

Anyway, after a number of years teaching open water courses, the open water students got the better of me and I decided to make the transition to technical teaching. I'm much happier now and I only have to see my psychiatrist once a month.





Deploying and decompressing under a SMB is an essential skill, which however, takes some practise to master.

Now onto SMB's —Surface Marker Bouys

These are sometimes carried by the recreational diver in specific environments (like drift diving in strong currents) and as a required equipment for all technical divers in most environments.

The SMB has many uses:

1. To act as tracking device during drift decompression, so surface support and the boat captain can track divers underwater from the surface during the dive and to signal the support team that the dive has run to plan.

2. The line attaching the SMB to the surface will act as a reference for divers during open ocean drift decompression.

3. Hanging slightly negatively buoyant on the line/SMB will make a series of complicated decompression stops more accurate and comfortable to carry out.

4. A predetermined emergency SMB can be deployed by a diver from underwater to signal the support team that back up gas on the boat or shore is needed in the water now, or simply as a signal for a support diver to come in the water and see what the problem is.

Worst case scenario: if the reel does jam, let it go!!

For the decompression diver the reel, line and SMB could determine the safe return to the surface —or not. Bearing this in mind, it becomes an fundamental and essential skill to be able to deploy the SMB comfortably without problems in open water.

How to do this correctly depends to some degree of what type of SMB you carry. There are three different types of SMB.

- 1) The open ended, which is the cheapest and least reliable.
- 2) The type with a one way valve allowing gas to go in one end, so, if the SMB reaches full gas capacity during the ascent, gas will escape through a standard dump valve on the side of the SMB, instead of out the end where the gas went in (one way valve). This type is more reliable than the open ended.
- 3) Closed end with a LPI (Low Pressure Inflator) inflation system (Halcyon) or a small .25-.5 liter cylinder attached to the SMB for independent inflation. These are, in my opinion the best types, and the most reliable.

Don't opt for the cheapest type. You get what you pay for.

There are several methods for deploying the SMB (adding gas). The most trouble free is the closed end type



with the small cylinder attached for independent inflation. But don't forget to fill the small cylinder every time before you dive. One fill is good for one deployment only. The small cylinder can be filled by attaching it to a standard scuba cylinder and equalizing the pressure. The disadvantages with this type is that it's quite bulky (more difficult to stow) and you need to remember to always have the tank filled or topped up.

Therefore the closed end with a LPI *) inflation (Halcyon) system is my personal favorite. A standard low pressure inflator hose/connection is used to add gas to the SMB.

The male connection on the SMB has no ridge, so the LPI cannot lock onto the SMB. Good thing. Just imagine if the buoy started going up and you couldn't disconnect – you would be dragged with it to surface faster

*) LPI: Low Pressure Inflator

than a ballistic missile fired from a submarine. You simply add sufficient gas to the SMB via the LPI, the hose slips off and the SMB makes its way to the surface with expanding gas vented from the dump valve on the side of the SMB.

The semi closed (one way valve) type has the same options regarding how

Don't clip your reel onto your wing or BCD. If a boat passes you might get dragged faster to the surface than you bargained for



to add gas to the SMB, as the open ended. But filling it is less sophisticated. One method would be to use a second stage, i.e. simply purge sufficient gas into the SMB. This method is not to be recommended in cold water environments as extensive purging of a regulator adds to the risk of it freezing and freeflowing.

Dumping wing gas, on the other hand, into the SMB doesn't carry the risk of a second stage freeflow and has another advantage over other methods of adding gas. As you are simply moving gas from one bladder (your wing / BCD) into another (your buoy) your overall buoyancy doesn't change. Until the buoy is released that is after which the diver would need to add gas to the wing directly after releasing the SMB to maintain neutral buoyancy.

Another method with the open ended and one way valve type is to exhale while holding the SMB above the second stage you are breathing from. Gas would then escape from the exhaust valve into the SMB. This method works well from deeper water, but it's not the best method when deploying the SMB from shallow water. A third option would be to use a small air gun attached to an LPI.

Bigger is not necessarily better.

Size matters

Something divers should consider is the size of the SMB. Bigger is not necessarily better. Yes, in open ocean environments with a big swell at the surface, the 2 meter tall SMB would be the way to go. A 1-1.5m buoy in this environment may not be seen clearly by surface support as its lost in the swell. But the bigger the SMB, the harder it would be to get a good fill and a nice erect SMB at the surface.

"Think Boyle's law" deploying a 25 liter SMB from 20 meters. The 2 meter SMB would have a gas volume of 20-25 liters. Consequently the SMB would need over 8 liters of gas added (1/3 full) to ensure an erect SMB at the surface, as a floppy sausage is no use to anyone.

For in-shore, lake and calmer water environments the 1-1.5 meter SMB would be a wiser choice as it easier to fill.

Another important issue as regards to deploying the SMB is to make sure the line on

a floppy sausage is no use to anyone.



the pool is actually ON the spool. If you have excess line running off the spool as you are about to deploy, the line could snag on the locking nut/brake or handle on the side of the reel.

Worst case scenarios

If the reel does jam, let it go!! Do not let the SMB drag you to the surface. Once the SMB is up, do not clip the reel off. If boat traffic at the surface ran over the SMB you could find yourself on the surface very quickly.

On a concluding remark

Please get formal training where considerations regarding SMB deployment are thoroughly covered and practiced, before deploying SMB's from underwater.

An article like this is no substitute for the real thing

Have fun and dive safe.

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