

# The HangLine

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## WANTED: Survival Managers

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It may come as a surprise to many divers but perhaps one of the greatest talents a SCUBA diver can possess is managerial skills. As the complexity of a dive increases, so do the risks. Good divers then need to manage and reduce that risk by adjusting their dive plan accordingly. This involves managing the different aspects that encompass the successful execution of a dive. A good manager (diver) must understand what these different aspects are and what kind of approach he has to take to manage a dive.

The final step involves putting it all together in a sequential checklist that helps us develop our dive plan.

We begin by determining our dive objectives. This part includes the where, who and why part of the dive. First you must determine where it is you are going to dive, with whom and why. The where part

of a dive includes how deep and how long as they represent some serious factors in pre-dive planning. They may also determine geographically where you need to go as well as who is going to go with you and why you even want to go in the first place. Once a suitable site is selected, you must determine if the site is within your abilities AND your buddy's. Never pressure another diver into making a dive at a site he is not comfortable with as "trust-me" dives kill divers.

Next you need to plan the fundamentals by using good old Dalton and his law of partial pressures. On every dive we must calculate the best gas for the planned depth based on our personal physiological limits. It is very important because it begins the how part of our dive plan.

*'It is no light matter to make up one's mind about anything and once made up, it is even harder to abandon the position. When a hypothesis is deeply accepted it becomes agrowth which only a kind of surgery can amputate.'*

*Thus, beliefs persist long after their factual basis has been removed, and practices based on beliefs which stimulate them have been forgotten.'*

*- John Steinbeck*

Planning the fundamentals starts by determining what your personal PO<sub>2</sub> limits are - and that can only be done by you and no one else. From your training, you learned that PO<sub>2</sub> limits should be adjusted





according to your personal level of physical fitness, age, present disposition, diving activity and the environment you are diving in. The same questions must also be applied to deco and travel gases as well. When diving Rebreathers, depending on the make and application, divers need to consider a third dimension to Dalton's Law as their FO<sub>2</sub>'s (not just what is in the supply cylinder but what FO<sub>2</sub> is inspired) are not necessarily fixed. In advanced dive practices, divers will adjust the maximum acceptable limits during various points in the dive to meet their particular needs.

Once the bottom gases and deco mixes have been selected, a diver now needs to determine how much bottom time is required to meet his objective and what method he will use to determine the



Figure 3.12

<b>Deco Options for a 20 minute Air Dive to 200rsw</b>			
<u>Deco Gas</u>	<u>Deco Time*</u>	<u>CNS% Used</u>	<u>Max PO<sub>2</sub></u>
EAN21	62 min	21%	1.48ATA
EAN75	32 min	24%	1.48ATA
EAN100	33 min	25%	1.60ATA

**IMPORTANT - Not to be used for decompression purposes.**

decompression profile (be it dive tables or decompression software). Just choosing the right table or program can take time and some serious research. This is what is referred to as managing your residual nitrogen and the on/off gassing rates into/out of your tissues.

A diver must consider how much oxygen is being consumed, as oxygen is less forgiving than nitrogen when the levels exceed the recommended dosage. This is what is referred to as managing the oxygen and includes checking incidental exposures of PO<sub>2</sub> levels over 1.6ATA as well as prolonged exposures to PO<sub>2</sub>'s exceeding 1.3ATA. For many it may appear logical that the more oxygen and less nitrogen we use in a dive (assuming we stay within safe acceptable parameters), the less deco time will be required. This is not always the case. The example in the illustration shows that it was actually better to have a lower FO<sub>2</sub> (EAN75) in our Deco Gas, allowing us to begin our decompression earlier and starting our off-gassing quicker. In this instance, we reduced our decompression time by a minute, our oxygen clock by 1% and our Maximum PO<sub>2</sub> exposure to 1.48ATA. Also, in the event of extreme bailout scenario this diver could breathe his deco gas deeper than a diver using 100% (see Figure 3.12).





A quick review of the dive plan so far will reveal whether our plan is within our limits. A diver must continually evaluate through a dive plan and ascertain whether the dive plan exceeds the capabilities of any of the team members before carrying on with other aspects of management. If it does, he must go back and adjust the dive plan accordingly.

Figure 3.13

**Survival Management**

<b>H</b>	<input checked="" type="checkbox"/>	Handle
<b>E</b>	<input checked="" type="checkbox"/>	Educate
<b>A</b>	<input checked="" type="checkbox"/>	Administer
<b>D</b>	<input checked="" type="checkbox"/>	Direct
<b>C</b>	<input checked="" type="checkbox"/>	Control
<b>A</b>	<input checked="" type="checkbox"/>	Accomplish
<b>R</b>	<input checked="" type="checkbox"/>	Regulate
<b>E</b>	<input checked="" type="checkbox"/>	Engineer

**Achieve & Succeed!**

We must take great CARE when planning every dive by using our HEAD.

incorporated to determine if everything is still a go.

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Each step is very important to ensuring that a dive plan is complete. I refer to it as survival management because that is exactly what you are doing, managing a dive so that you reduce as much risk as possible and facilitate a safe and enjoyable dive.

Only after the decompression profile and mixes have been chosen may the diver begin to calculate how much gas he will need. This is what is referred to as managing your gas supply. Tallying the volume of gas you will need to complete a dive safely involves applying your respiratory rate to your depth, dive time and factoring in all of the contingencies.

~Safe Diving

Once a diver has an idea of the what, why, where and who part and an idea of what kind of equipment is required, he can start to select his gear configuration so that it will meet his needs. As mentioned we always plan contingencies for every dive plan and constantly monitor the environmental conditions. If the dive still is within the diver's limitations and abilities, the dive progresses to the site where in-water updates and pre-dive visualizations are

