

Taking 'tec' to 'rec': the future of technical diving

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Key words

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Abstract

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Today technical, 'tec', divers push the frontiers of manned exploration of inner space. When technical diving is being performed properly, tec divers are not thrill seekers or fools who simply disregard limits; on the contrary, they recognise that limits exist for legitimate, risk-management reasons. They seek to render the limits obsolete by applying new equipment and methodologies. In this sense, tec divers are diving's future. They are diving's innovators and problem solvers. They see change, challenge and choices, not 'one size fits all' diving.

Introduction

In 1962, US President John F Kennedy put forth a dream and a challenge to land a man on the moon by the end of the decade. Moreover, to make it really tough, that man had to come back safely. The technology did not yet exist. At that point in history, humans had made only a handful of short, orbital flights. As a result, the risks were unknown at the time. It was not known if humans could even live in space more than a few hours. In addition to this, the costs were unknown and there was not even a reliable estimate. From any reasonable point of view, it was impossible. Despite these odds, an entire generation in the US and much of the free world made it happen. It happened because they shared a dream and a vision to go beyond existing limits.

The relationship between space exploration and technical diving

Today technical, 'tec', divers push the frontiers of manned

exploration of inner space. They challenge themselves to new accomplishments just as President Kennedy challenged the free world. However, in doing so three relevant and important questions are raised:

- 1 What is tec diving, and who are tec divers?
- 2 How do you make the transition from recreational diving to tec diving, and should you?
- 3 If tec diving is pushing the envelope today, what will tec diving be doing tomorrow?

I hope that by sharing my views, I can shed some light on the answers to these questions.

Defining tec diving

Let us start with both a formal definition and philosophical definition. A textbook, formal definition for technical scuba diving is as follows: diving, other than conventional commercial or research diving, that takes divers beyond recreational limits. It is further defined as and includes one

or more of the following: diving beyond 40 metres, required stage decompression, diving in an overhead environment beyond 40 linear metres from the surface, accelerated decompression, and or the use of variable gas mixtures during the dive.

That is a technically accurate, but somewhat boring, description. I would prefer to rework it into more of a philosophical definition. In doing so, I propose that tec divers are better defined as both dreamers and visionaries:

- They see the possible when others see limits;
- They see opportunity when others see risk;
- They say, "There is a way, even if no one has invented it yet."

When technical diving is performed properly, technical divers are not thrill seekers or fools who simply disregard limits; on the contrary, they recognise that limits exist for legitimate, risk-management reasons. They seek to render the limits obsolete by applying new equipment and methodologies. They endorse recreational diving limits by acknowledging what is required to exceed those limits. So, in this sense, tec divers are diving's future. They are diving's innovators and problem solvers. They see change, challenge and choices, not 'one size fits all' diving. They act as the dreamers and visionaries for the future of scuba diving. They are the niche; the small segment of divers who not only see what is on the road ahead for diving, but also steer the course that gets us there.

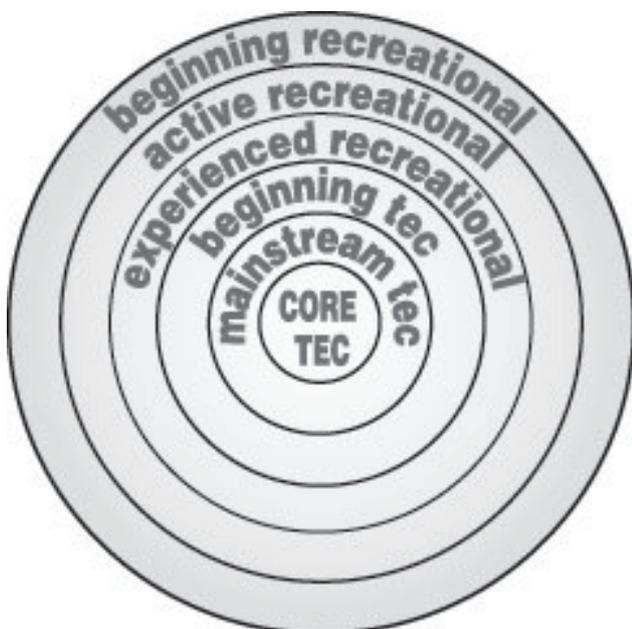
Who are 'tec' and 'rec' divers?

Figure 1 attempts to model the distinctions and transitions between recreational scuba diving and degrees of technical scuba diving. The outer rings depict recreational scuba diving, which has been well defined over the years, and consists of beginning, active and experienced recreational divers ('rec' divers). The experience and training needed to cross these various thresholds is arguable; however, there is generally accepted thinking as to what is required. The transition to technical diving and the progression based on experience are less well understood or defined.

'Mainstream tec' defined

Defining 'mainstream tec' is worth a short discussion for the purposes of argument. Divers who are categorised as mainstream tec generally can be defined as those who follow established tec protocols and are ready for challenge. Although they are following a beaten path, it is a far less travelled path as compared with recreational diving. That said, it is important to identify that the risks in doing so have increased. Just because a path is travelled does not make it safe. Consider this analogous example: many people have climbed K2 and Everest. Taking the same route with the same guides as others may reduce risk, but does not make it safe. The same is true for mainstream tec diving. mainstream tec divers are crucial to tec diving because they verify, refine and improve tec diving's innovations by repeating and reapplying them. They also serve a crucial purpose in doing so, as they uncover new problems. It is important to establish that interested divers must first participate in this group to reach the leading edge of tec diving, just as you have to start as a recreational diver and gain experience to begin tec diving.

**FIGURE 1
A MODEL TO DISTINGUISH THE
RELATIONSHIPS AND PHASES OF
RECREATIONAL FROM TECHNICAL SCUBA
DIVING**



Who are the leading edge 'core tec' divers?

For the purposes of clarification, I have categorised 'core tec' divers into three distinct groups:

- Pioneers – exploring new environments, depth and distances;
- Innovators – creating new technologies to make it possible;
- Test pilots – experimenting with their new technologies in new environments.

An example of 'core tec' diving was found in the Wakulla Project in 1987. Dr Bill Stone, Sheck Exley, Paul Heinerth and other cave-diving pioneers innovated open-circuit mixed-gas diving procedures for making long-range explorations on modified diver-propulsion vehicles. It was all new territory. Expeditions that are more recent have eclipsed the Wakulla Project's depths and distances, but these efforts stand on the foundation laid by the early leading-edge core tec divers.

Core tec divers are the group that faces the greatest risk, but also enjoys the greatest reward. Diving has always had

'test pilots' over its history; examples are found, for instance, in the first utilisation of helmet diving, scuba diving, oxygen rebreather applications or cave diving. This group drives advancement of diving techniques, methods and knowledge over the long run and is crucial to the entire model. The future of recreational diving is linked to technical exploration in many important ways.

How recreational diving benefits from tec diving

Recreational scuba diving has long been a benefactor of the innovation found in technical diving. Consider if you will the influence of innovation. It is conceivable, based on history, that today's mainstream tec diving may well be commonplace recreational diving tomorrow. Unconvinced? There are many examples of this, which are considered mainstays of recreational diving. These include the utilisation of alternative air sources, buoyancy compensators and the recreational usage of enriched air nitrox. These were all made possible through a process of innovation by leading-edge tec groups followed by refinement and verification by mainstream tec divers. This verification process establishes the infrastructure necessary to move new procedures, applications and equipment into the realm of recreational diving.

A second major benefit to recreational diving is in the form of exposure; tec diving raises scuba diving's visibility. Tec diving is exciting to the media because it is risky; it gets attention. This, of course, is a double-edged sword. Negative visibility can actually damage the image of scuba diving at large. Positive stories on the other hand, can depict tec diving as glamorous to many rec divers because of the gear and training required. There is a responsibility to communicate the training and equipment needed to safely make the transition from one to the other in the process. A third benefit is found in an excitement factor. For some divers, tec diving offers new excitement in diving. It should be noted that a subset of divers thrives on risk-related challenges; tec diving appeals to them. Other divers are passionate about specific dive environments, and tec diving is simply a means to reach some of them, deep wrecks for example. Tec diving enriches rec diving for casual divers who enjoy the excitement vicariously, much as casual surfers like rubbing shoulders with the champions they see on magazine covers and documentaries.

Bridging the gap

So, how does one progress from rec diving to tec diving? Let me first say that promoting or pushing tec diving as something for all divers is not desirable, because it is not for all divers. The reasons for this are obvious:

- It is risky;
- It is physically and mentally demanding;
- It loses its extreme status, which is its unique appeal;
- Most importantly, it is not what every diver, or even most divers, want out of diving.

For the minority who want to go into mainstream tec and qualify to do so, there needs to be a path. There is no reason to relearn lessons that cost someone his life. There are many tragic stories of divers dying due to ignorance, complacency or choosing to ignore known safety requirements on 'psuedo-tec' dives. In all cases, requirements for training, equipment and methods were not respected. To minimise this type of problem, an educational pathway is appropriate and must accomplish three main objectives:

- 1 Train to meet the demands of the activity;
- 2 Build upon minimum experience requirements;
- 3 Use sound learning psychology and instructional system design applied to tec community practices.

While this may be reasonably clear, for those divers who wish to go from mainstream tec to core tec diving, the test pilots pushing the envelope, the pathway is much less clear. There is no path through formal training, and there cannot be a legitimate one. By definition, the core goes beyond the known to the unknown. You cannot educate before you innovate. So how would one make that transition? The best path is to gain lots of mainstream tec experience and team up with others breaking new ground. It is imperative to first know what one is doing and then to accumulate a large amount of practical experience. By definition, core tec, or expeditionary technical, divers are people who are making it up as they go. They work in the environment where we often count lessons learned by counting bodies. The important point is that one must have a broad experience base with what has worked and what has failed to work in the past in order to become an expeditionary or core tec diver.

The future of tec diving

What we call tec diving today will not be technical in the future. Today's tec diving may be tomorrow's recreational diving. In 20 years, a trimix dive to 80 metres may be a typical Advanced Open Water dive. Equipment technology could make tomorrow's gear so reliable, redundant and navigationally proficient that it would be reasonable for brand new open water divers to explore caves and wrecks. But if these dreams come true, tec divers may be making 300 metre dives routinely using hydrheliox (hydrogen/helium/oxygen) gas mixtures, exploring the *Titanic* in the fourth generation of Phil Nuyten's one-atmosphere suit, and building and living in underwater habitats for long-duration adventures. Dreamers and visionaries can make this possible.

As long as humans have the desire, drive and passion to explore, there will always be tec diving. The 1960s dreams of humanity expanding into seas to live and explore faded with government funding cuts in the 1970s. However, they did not die. Today they lie before us, rekindled by the hearts and minds of diving visionaries worldwide, Sheck Exley, Bill Stone, Jacques Cousteau, Parker Turner and others.

As a community, our future lives or dies with a few concepts. Firstly, there is enough experience within mainstream tec diving for a consensus of broad guidelines and community practice. We need to unify with respect to these to minimise accidents. There is no future in disunity or an 'anything goes' attitude. Whilst we need such a consensus, we also need reasonable flexibility to tackle problems in different ways. We need to treasure our differences. Innovation arises from diversity, not uniformity. When we disagree, we need to disagree respectfully, or we lose credibility. If without mutual respect, the world sees us as squabbling amateurs, fresh ideas do not flow and progress stagnates. There is no future in infighting and backstabbing. Finally, we need to accept the consequences of taking risks. Those of us who choose to undertake tec diving must accept that we may die or end up with permanent disability.

Complacency must never be allowed to creep into our procedures and approach. We must never drop our guard because tragedy often strikes when risk seems the most

remote. We need only remind ourselves that in the quest to reach the moon, three astronauts died, not in space, but in a fire on the ground during training. This means that should we experience injury or death, we accept the blame and responsibility ourselves, no matter who or what failed, or what did or did not happen. There is no future in finger pointing and scapegoating. Humankind's future underwater, and the future of the underwater world itself, lies in our hands; in your hands. Dreams are fragile. Handle them carefully.

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