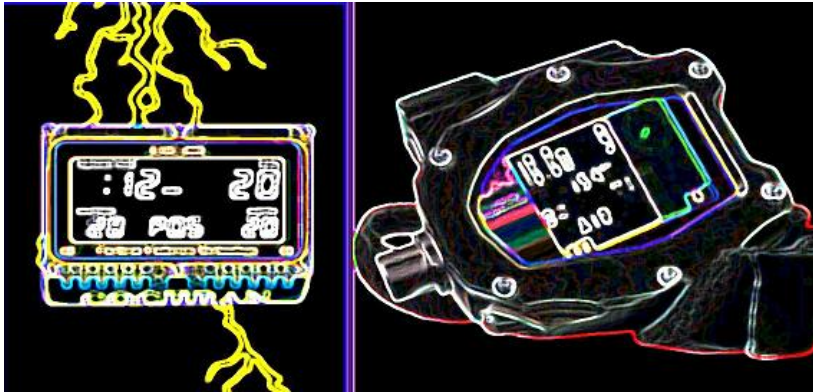


VR3 VPM vs COCHRAN EMC20H

*By Cedric Verdier
PADI Course Director
IANTD-DSAT-TDI-PSA Trimix Instructor Trainer
CCR Mixed-gas Instructor trainer*



When it comes to constant pO₂ dive computers, most of the divers immediately think about the VR3 made by Delta-P in the UK or the HS Explorer made by Hydrospace Engineering in the USA. Most of discussions on the Internet focus on these

two models, with sometimes strong arguments about the necessary features and advantages of one or the other. Decompression model, Graphic User Interface, reliability, customer service, it's like toppings on a pizza, everybody has an opinion about what is good or bad.

Until recently, one of the main complaints about the VR3 was the Buehlmann's algorithm modified to incorporate once-in-a-while deep stops (a la Pyle). But the current trend in deep diving is more about dissolved gas models. With the release of the new version, the VR3 is now offered with a brand new and shiny algorithm that is supposed to be based on VPM-B/E (even if people like Ross Hemingway, designer of V-Planner, confess that they didn't participate in the development of the Delta-P's VPM-B/E model).

Therefore I decided to buy a new VR3 in order to test it in deep trimix diving and determine if I actually increase or decrease my level of risks by using this computer.

Thanks to Mike Cochran, I also received a Cochran EMC-20H computer. Unlike the VR3 I didn't have any previous experience on a Cochran product, as they are not very common in the different countries where I normally go underwater without blowing bubbles. According to the manufacturer, this computer is based on a "20 tissue adaptive modified Haldanean" algorithm. Sounds like a twisted bubble model... Anyway it's a constant pO₂ computer one can use with helium-based mixtures, so it's good for my dives.

So, time to test and compare!!!

In the 70m range: (Trimix 10/52, setpoint 1.2, square profiles)

I was very surprised to discover that both computers always gave me the same 1st deep stop. By the way, it was also the depth of the 1st deep stop on my VPM-B Tables and much deeper than the Vision electronics on my Evolution (Buehlmann with GF 20/80). That's an interesting feature I didn't expect from the Cochran.

But it was only the beginning of my surprises. Both computers gave me a very different decompression profile than the one I was prepared to follow according my tables. The VR3 VPM kept on asking for one-minute stops all the way up to the shallower stops where all of a sudden, time started to increase tremendously (like in the previous version of the software). On the opposite, the Cochran tends to give me longer stops on the middle range depths and quickly goes through the shallow stops.

So the two computers really differ in the 70m range (with 0% conservatism on both computers):

- **1st deep stop:** virtually the same
- **Middle range stops:** longer stops on the Cochran – when the VR3 asks for 1 minute, the Cochran displays 3 or 4 minutes.
- **Shallow stops:** much faster on the EMC-20H (actually not much longer than the middle range stops on the same computer). The VR3 stops are clearly longer.
- **Overall decompression:** at least a 50% longer decompression on the VR3 compared to the Cochran. On one of the dives, I had more than a 40 minute difference...

In order to have a similar hang time on both computers (still with a different decompression profile), one has to set up the EMC-20H on at least a 30 conservatism level.

In the 100m range: (Trimix 8/62, setpoint 1.2, square profiles)

Looking for a submerged Buddha Temple located in an artificial lake on the North-East of Thailand, I had the opportunity to test both computers on deeper dives. It's sometimes quite difficult to find depths deeper than 80m in Thailand waters and this lake is one of the few places in Thailand where you can easily do a 3-digit deep dive (without being stuck on a rolling boat for many hours!).

We didn't find the Buddha Temple but I found some interesting data about the above mentioned computers. At the same time, I became certified as a Guinea Pig Diver, trying to avoid "bending" any of the computers I had with me. The water was quite cool on the bottom (23C) but fortunately nicely warm in the shallows (30C) so the overall experience wasn't that bad. And with no current and no swell, staying for a long time at 3m without moving in the water column was as easy as "in the book" (even while playing this stupid Octopus game...).

- **1st deep stop:** roughly the same. Also the same than the VPM-B/E tables. This time much deeper the Vision electronics.
- **Middle range stops:** still longer stops on the Cochran (with the same 3:1 ratio compared to the VR3).
- **Shallow stops:** a lot faster on the EMC-20H. Even with a 30% conservatism on the Cochran and no conservatism on the VR3, the difference was huge. When the English one asked for 18 minutes at 6m and 35minutes at 3m, the American computer modestly required 6 and 2 minutes respectively. I was so surprised that I immediately double checked if I didn't mix up metric and imperial units!!
- **Overall decompression:** Still a longer decompression on the VR3 compared to the Cochran, even if it's less impressive than on the 70m dives. The smaller difference was maybe caused by shorter bottom times and the fact that I tried to follow the stops on both computers in order to compare the data all the way

up to the surface. The Cochran doesn't lock up if you miss one or several stops and keep on displaying your decompression requirements.

Summary?

As usual when we speak about decompression, no one is right or wrong. Different off-gassing strategies give you different decompression profiles. My testing wasn't serious, scientific and thorough at all as I couldn't test a lot of dive profiles and as I didn't want to be bent (sorry if I look like a coward).

▪ Cochran:

Nevertheless I was nicely surprised by the EMC-20H. It's a very simple, compact and quite user-friendly dive computer. It should be rugged as there is no button to push or activate and the battery life looks impressive so far. There is no fancy feature (no game to play!) and you can only pre-set two different setpoints and two different diluents and it takes a little bit of practise to remember the correct programming sequence if you don't use the Analyst PC software. My main regret is the lack of flexibility when it comes to OC bail-out. No way to switch to OC (I like the simplicity of the Vision electronics for that) and you have to use your good old tables and some of your brain cells to safely reach the surface.

▪ Delta-P:

The VR3 VPM is a nice piece of equipment and it's convenient to be able to access almost all the settings underwater, even if it's sometimes a little bit time-consuming (but it keeps you busy during those long hangs, indeed!).

This computer is rugged like an anvil and has almost the same weight (it helps you to keep a good head-down, feet-up position as long as you keep your hands in front of you...). The VPM-B/E algorithm tries to mimic the original model but I wasn't able to get more or less the same deco stops with V-Planner even a conservatism level of 5. The last stops are really longer than the ones on PC software and it looks like a tribute to the former Dr Alois Buehlmann.

My main regret is the very short battery life, even with the black and white screen and no backlight.

All in all both computers performed flawlessly and I promised no dive computer was harmed during the test. Even if I have a small preference for the flexibility of the VR3, the EMC-20H seduced me with its simplicity. I just simply can't remember its name.



Author trying to trade a Nitrox tank and a VR3