

## DPV Safety (underwater scooter safety)

(text taken from Website Wakulla Project)

### 1) Scooter Dive Planning

First of all, it is imperative that you know your scooter's burn time with the gear you are using. You must burn test the batteries on an regular basis to be sure you can depend on this. I calculate my burn times based on full cave gear, stages, towed DPV's, dry suit and full prop pitch when stating burn times.

You never want to run one DPV to its max. The best bet is to run one scooter for about 40% of its burn time and then switch to the next scooter on the way in, reverse the procedure on the way out. This way you always have something that will get you back to your last scooter. You do not want a situation where you have one scooter with depleted batteries and another that has a full charge but then breaks blades or otherwise gets messed up. Want to go further? Get more scooters, take more gas.

Beyond short dives we require dive teams to tow scooters in the WKPP. Three-man teams can tow one for a moderate dive, two-man teams must tow two, and long dives must have full coverage. The number of scooters needed for a dive can be figured using the 40% guideline.

### 2) Gas-Management

Gas management for scooter diving is not a function of whether you can swim out, except in rare cases of high outflow, shallow springs, where your ingoing scooter gas will likely equal your outgoing swim gas. Scooter gas management is a function of common sense. You will not swim out of a 300 foot deep syphon, like some that we dive, or a 300 foot deep non flowing cave, or 300 feet of anything. The correct way to handle this is to breathe only the stages, saving the backgas for emergencies, and to place safety bottles in the cave at the same intervals as stages. You must assume that with everything going wrong and towing with no primary lights, you will take twice as long to get out so you will need twice the gas. For instance, on light failures, you will have to be on the line and moving more slowly. If the line is on the floor and you rode the ceiling going in, then you will need much more gas. If you have one problem, expect several more. DIR is designed to prevent, anticipate and or handle anything that gets thrown at you. **When, not if**, you have a problem scooter diving, you will either learn why I am so insistent on following Rule Number One, or you will die finding out how right I am.

We dive 1/2 plus the amount of gas needed during a bottle switch on our stages, usually 1/2 plus 300. We deduct 300 from our starting gas due to the fact that you will not drain that last 300 without using the purge button in real deep water. If the bottle has 3300 in it to start with, you consider it to have 3000 "effective", so the halfway mark is 1800, and adding the 300 for switching, you would then only go to 2100 before dropping the bottle.

On the way out, you either switch bottles with each stage recovery, or be sure you are proficient enough to switch without stopping if you keep breathing a bottle past the next pickup on the way out (only done if there is excess gas in the bottle relative to the depth of the water). Usually, this is not a good idea since you will not get enough additional time to make up for the Charlie Foxtrot you will cause if something goes wrong that needs your attention in the middle of an on-the-fly switch. Play it by the book. NEVER pass through a difficult area on a stage bottle that is in any danger of running out, go to back gas. That means most of the time go to back gas.

Partially full stages do you no good in an emergency. The intent of proper planning is to use

the whole bottle and save the backgas. If you have to run for it, you ditch the stages and run slick. If you are behind the curve on stages, pick up a full safety and drop the partial stage (unless you can tow it without slowing the team down). If one guy picks up, all must pick up unless the reason for pick up is isolated to a one man bottle problem and not an overall delay.

### **3) Towing a Diver**

The correct procedure for towing a diver is for the towed diver to store his own DPV behind him above his legs by the tow leash clipped to his front crotch d-ring, and for himself to hold the crotch strap of the towing diver. He must keep his head down and leave the driving to the front diver. If there is some other emergency, leave the dead DPV and go get it later.

In the event of a gas-sharing situation, NEVER leave a working DPV to go to a towing position. ALWAYS keep the good DPV with you. Let the out of gas diver do the driving - it will keep his mind occupied and will prevent his gas source from getting away from him.