

## **Underwater GPS? Yes!—and it’s surprisingly simple**

The average scuba diver probably is not in the water enough to have a true need for “Underwater GPS,” but the most avid divers and researchers have much to gain by using GPS data. I’d like to describe a method by which the diver can “mark” points of interest as needed, while maintaining an awareness of the boat’s anchor position. This method does not use the predictable towed antenna configuration.

This method allows an autonomously functioning diver to gain GPS updates as needed, without the bother of complex gear configuration, and without spending much money. The diver does not have constant signal, but *is* able to gain updates in as little as 5 seconds. This concept is intended to allow divers to use what may be the first off-the-shelf sort of “Diver GPS.” The primary tools are a readily available container, and a hand-held GPS.

### ***HOW DOES IT WORK?***

After the diver’s boat settles on anchor, the position is “marked,” and the GPS is set to a “go to” that will point back to the anchor. The GPS is placed inside a clear housing. The Otterbox 9000 works well, is inexpensive, and is rated to 100 feet—beyond the depth at which this concept would most often be used. Not every GPS unit can be used: the device must retain on-screen display even after signal is lost. Magellan units work well. ( I’ve been using the Sportrak Map and the Meridian series).

#### 3 different methods used to deploy and recover the GPS (to gain signal update) :

- **Deploy and Recover with Reel:** The buoyant container is dropped...surfaces...gains signal (about 60 seconds), and is pulled back below to view GPS data.
- **Deploy and Recover with Flag Assist:** The container ( in the diver’s hand ) is attached to a line that leads to a surface towed dive flag. This flag is a unique “no drag” design, and is no bother to tow. ( This flag design and other details can be found at the below listed web site). To deploy the container, the diver drops the housing, allowing the line to slide through a loosely clenched fist as the GPS ascends. To recover, the diver simply reaches up, pulling down rapidly in a hand-over-hand fashion.
- **Rapid Data / Surface-Towed:** The GPS housing is fitted with a nose cone that reduces drag for surface towing. The container remains on the surface most of the dive. Trailing behind the container (on the surface ) is a length of highly visible, positively buoyant line. The line’s length is roughly equal to the depth of the dive. The above mentioned “no drag” flag is attached to the end of this line. The diver holds a line that connects directly to the surface-towed housing, and gains GPS data by simply pulling the housing below, making note of the desired data, and releasing the buoyant container.

## **What About “Drift”—Is it Accurate?**

This method has been used and tested for several years with very good results. Remember, it's where the container is pulled below the surface that matters. The GPS does not lose signal until it is pulled below, and it's not difficult to control the location where this occurs.

## **What about Switches?**

Even without switches, the diver is able to observe the time; an overhead position; and the position of the boat (or start point). This is possible because Magellan display screens are customizable. The position ( Lat. / Long. ) screen is set to display “bearing” and “distance,” thereby making the “go to” (back to the boat) viewable on the same screen that shows Latitude and Longitude. The diver makes note of any “marks” that are made ( 001, 002, 003, etc.) on slate material affixed to the housing, and manually enters this data post-dive.

With the addition of switches, the diver is able to “mark” instantly, but will still make a brief note about what each numbered waypoint represents. After the dive each waypoint is given an appropriate name. Switches also allow the diver to scroll through a list of stored waypoints, instantly viewing the relative bearing and distance to each ( based on only one housing recovery).

## **Is Constant Signal Better?**

This concept is being presented in an effort to demonstrate the simplest, lowest cost configuration. In most cases, it is impractical to envision steering about at every turn using GPS. This method allows the diver go work with waypoints and maintain awareness of the boat's position. It's a great thing to have access to billions of dollars worth of satellite equipment while diving! When swimming toward the boat or other objective, the GPS provides the bearing and distance, while a conventional compass leads the way. Just as on land, the diver does not dispense with traditional aids to navigation. Basic skills are enhanced, not replaced. Please don't let the simplicity fool you. We are so used to high-tech approaches that the obvious is sometimes ignored. This concept is not often thought of because it requires a sort of reverse order thinking that's a bit unconventional. I'm sure you will find that the method is simple, and surprisingly accurate.

For complete information and a free downloadable eBook, visit:

<http://groups.msn.com/divergps> ( please enter as shown...not a “www”).

This information is provided as part of a not-for-profit effort to promote the use of GPS in diving. The free information is not linked to product sales or promotion. Please feel free to contact me with comments or questions. I particularly enjoy hearing from researchers who are using the concept.

Mark Thome, Marathon FL Keys      [divergps@hotmail.com](mailto:divergps@hotmail.com)