HELLO

Underwater Communications has been around almost since diving began in the late 1800's today the typical diver learns hand signals to be able to communicate even in the beginning parts of the SCUBA class.

In the early years hard hat divers used ropes to communicate then around 1930's hard hat divers had a speaker in the brass helmet the speaker was a 2 way communications it acted as a speaker as well as a mic the surface personnel would listen to the diver and if they had to talk to them they turned a switch so that the communication was reversed.

50 Years later in the 1980's a few companies began to deliver underwater communications both wireless and hardwired. We will briefly look at the 3 ways for U/W communications.

Wireless - Hardwire – Hand Signals

Wireless or Through Water Communications

Wireless communications use the incompressibility of water to transmit the diver's signal. The diver's voice is translated electronically into ultrasound and introduced into the water via a transducer. The transducer consists of a ceramic ring that expands and contracts when an electrical current (signal) is applied. This same transducer is also sensitive to signals received in the water and the device then translates the ultrasonic communications back to an audible level for the diver to hear. These devices are transceivers, meaning they both transmit and receive. Even relatively low powered devices can transmit over a fairly long range, depending on conditions. You may hear terms such as ultrasonic, acoustic, wireless and through water communications used interchangeably.

We've been speaking of divers, but surface stations work the same way, just a different configuration. The surface station has the same basic components, microphone, speaker or headset, electronics and a transducer. The transducer is, however, on a length of cable to remotely place it in the water. All divers in the water can communicate with each other and the surface stations. This is referred to as the communications triangle, diver to diver, diver to surface and surface to diver. The only limitation is that only one diver (or surface tender) can effectively talk at a time, this is half duplex, as mentioned earlier

Hardwire Communications

Hardwire is commonly used in Public Safety Diving where search patterns are controlled with the use of a line (tether) and visibility is limited or zero. Surface tenders always know where the divers are in the event of an emergency; they are at the end of the line. Other users of hardwire communications are, commercial/surface supply divers and aquariums that have interactive diver programs/presentations. Media/television productions, both recorded and live broadcasts utilize hardwire for the full duplex communications.

There are two types of hardwire communications, two wire and four wire. Two wire is, somewhat antiquated and still commonly used in commercial diving. In that there are only two wires, both the earphones and microphone are wired together. While this is a simple system, a drawback is the earphones will act as microphones, picking up noise, primarily the diver's bubbles. With two wire, the surface station is constantly listening to the diver until the tender pushes a PTT button to talk to the diver. This basically turns the system around where the diver listens to the surface. Only one end of the system can listen or talk at a time. Again, default is to the diver's voice. Other than line-tugs, two wire is the oldest of the underwater communications systems. With a four-wire system, one pair of wires are dedicated to the diver's earphones and the other to the microphone. The communications are full duplex, just like talking on a telephone. The tender and the diver can hear each other at the same time and can talk over each other. OTS has several different surface stations for hardwire communications. With hardwire, the microphone is open and there is no need to use the PTT of the ear/mic assembly.

Hand Signals

force the water out of the snorkel tube. Immediately assume the natural position for snorkeling, with face in the water and snorkel tip pointed upward. Scuba divers primarily use a snorkel to conserve their air supply while swimming at the surface before descending.

Communications

Underwater, we can't talk to one another. We could write down everything on an underwater slate, but that wouldn't be efficient and would detract from enjoying the dive. Instead, divers can communicate by using simple, universal hand signals. The following illustrations depict the most common underwater hand signals. Knowing these signals will add to your safety and enjoyment (see Figure 4-24).

Figure 4-24
Hand signals are a simple and easy way to communicate while underwater. Before each dive, be sure to review hand signals with your buddy.