Careers in Underwater Welding

When someone meets a commercial diver, invariably the first question is “Do you see many sharks”? For me as Director of Marine Diving Technologies at Santa Barbara City College, the most common question is, “What do I have to do to become an underwater welder”? I think the overwhelming interest in underwater welding is a function of history and old wives tales. People see the vocation as profitable and exciting, practiced by an esoteric few with steel nerves and a daredevil demeanor. So before I answer your question, a little background is in order.

Underwater welding generally takes one of two forms, hyperbaric (dry) welding in which the welder is performing in a dry underwater habitat and wet welding in which the welder/diver is completely submerged in water and wet.

Hyperbaric welding is an expensive proposition generally requiring large numbers of support personnel and amounts of exotic equipment. The processes used in hyperbaric welding are the same or similar to regular topside welding based on design, function, metallurgy, etc. They may be Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), Wire Feed or Metal Inert Gas (MIG).The difference between topside and hyperbaric welding is pressure (atmospheres absolute) and logistics. This technique is used when assemblies are required to be compatible to surface quality welds as specified by the client or specifying agency.

Wet Welding is a process that is conducted while the diver is “wet”, completely submerged in either salt or freshwater. Wet welding operations are generally less involved in terms of personnel and equipment. Wet welding is also limited by depth; I will go out on a limb here and say that 150 feet of seawater (FSW) is a good threshold both functionally and economically. The vast majority of wet welding operations are conducted shallower than 50 FSW. The quality of the welds can suffer as well, where hyperbaric welding can produce surface quality weldments; wet welding is generally considered inferior due to effects of rapid quenching on ductility and tensile strength. However, depending on the repair design requirements wet welding can produce a level of satisfaction that is acceptable in certain instances.

So now that you know a little bit about underwater welding, I will attempt to answer your question. In the industry right now, there are generally two kinds of underwater welders. Those that do it as a specialization (it’s their only job) are called Welder Divers, and those that do it as part of a greater quiver of skills when required for certain projects, are called Diver Welders; I fall in the latter category.

Welder/divers require greater knowledge and have a more defined welding skillset; they would be certified in SMAW, TIG and very likely MIG as well. They will be certified in these disciplines both structurally and pipe up to 6G. Welder /divers will be capable of preforming “Type A” welds dry and “Type B and O” welds wet.

Diver/welders not only participate in wet welding operations, they are “Jacks of all Trades” capable of not only underwater welding, but also cutting, rigging , construction, inspection, concrete work, and even ditch digging, to name just a few of the diverse skills required by the project.

All major marine construction companies have underwater welding departments as it is an important part of their business model. For the Diver/welder, any of those companies that are a good fit for you in the other aspects of commercial diving, would be a good employment opportunity. If you want to be a Welder/diver, there are three companies in the U.S. that really specialize in this discipline. They are Phoenix International, Subsea Global Solutions and Oceaneering International. I am sure there are others; these just are the most familiar to me. Please see links below.

I have had over 38 years of experience in the commercial diving industry. If you are interested in underwater welding as a career, I would be happy to discuss it with you. Working in the industry was a rewarding experience and it gave me the opportunity to travel while being part of an elite group of people doing something they never dreamed about.

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For additional information check out the following websites:

http://www.aws.org/education/plunge.html

http://www.phnx-international.com/

http://www.subseasolutions.com/

https://www.oceaneering.com/

http://en.wikipedia.org/wiki/Underwater_welding