

# Anthony Tarantino

ASSISTANT PROJECT MANAGER, *ALVIN* PILOT



Tom Kleindinst/WHOI

I joined the *Alvin* Group on Jan. 2, 2000, to kick off the new millennium. Barrie Walden offered to let me go to the ship and try it out before I committed to such a life-changing decision, and I remember saying, ‘No, that’s OK. I’ve made up my mind, let’s just do it.’ I joined *Atlantis* before ever setting eyes on the ship, or the sub, or meeting any of the people I eventually worked and lived with for the next few years!

I completed my *Alvin* pilot training and eventually did more than 130 dives in *Alvin*. I became responsible for all of the vehicle’s electrical systems and participated in two *Alvin* overhauls in 2001 and 2006. Then I left because I was getting committed in a relationship and wanted to transition to a land-based position. But as the upgrade ramped up, an assistant project manager position opened up. I got the job and came back to WHOI in 2007.

Besides my project management role, I got to contribute to the overall design of the vehicle. The new *Alvin*’s electrical system is [WHOI engineer] Lane Abrams’ brainchild, but it’s near and dear to me because I got to influence some design features. A key aspect of the old *Alvin*’s electrical architecture that made it so reliable was redundancy. It had multiple layers of backup systems, so if we had minor technical problems, the pilots could continue their work and not have to cancel a dive.

We applied that approach throughout the design of the new sub’s electrical system. Lane devised a parallel ‘port and starboard architecture.’ There are two of everything: two batteries, two power bottles, two data bottles, two imag-

ing-and-illumination bottles, two main junction boxes, two disconnect boxes, and on and on. This provides nearly complete redundancy by having two separate, symmetrical sets of equipment. If you drew a line down the middle of the sub, the left side essentially mirrors what’s on the right side. That increases reliability and safety.

We also consolidated all of our penetrators. Those are the connectors between the personnel sphere and the electronics, which are housed outside the sphere in titanium pressure housings. All the power, commands, and data are transmitted through them.

In the old sub, the penetrators were located around each of four viewports. In the new *Alvin*, the penetrators were moved away from the windows and consolidated onto two penetrator plates located in the upper port and starboard aft sections of the sphere. This gets them out of the observers’ way, protects them from damage, and makes them a lot easier to maintain.

Our final challenge was to introduce optical fiber penetrators, in addition to the usual copper wires. This required countless hours of testing but finally allowed us to get more bandwidth and pass much more data through the sphere. That enabled some of the biggest improvements, including high-definition video recording and automation of vehicle functions.

The project was a huge challenge for our entire team, but it was a lot of fun to be a part of and has been hugely rewarding for all of us. ▲