

Propagating Undersea Vehicle Expertise

UW Human Powered Sub Team Races in International Competition

- Narrator:** The University of Washington's Human Powered Submarine team is on the world stage hoping for victory at an international competition in Gosport, United Kingdom.
- Bentley Altizer:** The course consists of kind of an out-and-back style, where you do a straight line for about 80 m and you make a big sweeping turn and come back toward the start line.
- Narrator:** The UW entry, christened "What Sub Dawg," is the product of many long months of design, complex engineering, and rigorous underwater testing. All done by UW students.
- Andy Stewart:** The team actually built – designed and built – their own propulsion. Not only the entire system but the propeller itself.
- Narrator:** Human powered sub competition at this level requires maximum effort by all hands:
- Altizer:** The idea behind this one was to reduce our mass quite a bit so we could accelerate more quickly off of the line and to turn on a dime.
- Narrator:** Beyond a pair of strong legs for pedaling, engineering a winning sub requires brain power as well. The sub is small, with barely room for the pilot to squeeze in, forcing the team to somehow shrink the machinery.
- Altizer:** Our gearbox team designed a gearbox only 1.4 inches wide. We did put the controllable pitch propeller hub in. It shallows out the pitch of the propeller so the pilot can get up to a higher RPM.
- Narrator:** Ingenuity and hard work paid off.
- Altizer:** I would say the high point was Friday. Our female pilot came in first for female speed.
- Narrator:** After a week of competition, the UW team wound up near the top.
- Altizer:** The team did fantastic this year. We're really happy with how we did. We came in third place overall out of the 11 teams that showed up at the competition.
- Narrator:** APL-UW played a role in preparing the team for international competition.
- Stewart:** The original human powered sub was actually built here at APL-UW.
- Narrator:** Faculty advisor Andy Stewart accompanied the team to Gosport.
- Stewart:** I stayed with them in some pretty interesting accommodations. Felt like a student again.
- Narrator:** Next for the UW team: moving up from the one-person "What SUB Dawg" to a two-person craft made of wood and presenting a whole new set of engineering challenges.
- Stewart:** This has been an excellent learning experience for the team in terms of engineering and design and figuring out how to make something that's flexible and robust and being able to adapt when you're in the heat of competition. I'd say the primary learning experience for the group is really team building and the value of having an organized team that works well together and can overcome challenges as they arise.

This is APL The Applied Physics Laboratory at the University of Washington in Seattle.