

CAPE-ABLE WORKERS BUILD DEEP-SEA DEVICES



Tom Kleindinst, WHOI

In 2009 WHOI geologist Rob Evans knew he had a laborious task coming. He needed to build 120 complicated and delicate silver chloride electrodes for deep-sea instruments. And he needed all 120 of them finished by the fall of 2011.

“It’s painstaking work,” said Evans, who had built hundreds of them. “I didn’t have time.”

Evans found a novel solution. He formed a partnership with Cape Abilities, a non-profit organization dedicated to finding good jobs for Cape Cod residents with disabilities. Cape Abilities hired a project manager and selected workers, who learned how to manufacture the electrodes and con-

Cape Abilities worker Carol Dimock and project manager Trevor Harrison work together in a WHOI laboratory to assemble a silver chloride electrode used in a sea-bottom instrument.

ADIEU TO THE R/V *OCEANUS*

When Capt. Larry Bearse reported for his new job sailing for Woods Hole Oceanographic Institution in 1980, he and his friends saw two ships tied up side by side at the WHOI dock—a large research vessel and the smaller, 177-foot R/V *Oceanus*.

“What ship are you going on?” his friends asked. “It’s got to be that ship there,” Bearse replied, pointing to the big ship, “because that little thing’s not going across the ocean.” Bearse quickly discovered what scientists and crew found out when they sailed aboard *Oceanus*. “It turns out she’s an excellent sea boat,” he said.

Designed by John W. Gilbert Associates of Boston, *Oceanus* was constructed by Peterson Builders of Sturgeon Bay, Wis. Its name comes from the Greek Titan Oceanus, father of the river gods and sea nymphs. He was represented as a great stream of water encircling the Earth—the source of all bodies of water.

Oceanus sailed into Woods Hole in November 1975, painted a bleak battleship gray, but with distinctive, rakish-looking twin stacks arranged like kingposts on the port and starboard sides of the bridge. It joined the fleet of illustrious WHOI ships that have brought back hard-won knowledge about how the oceans work.

Oceanus was operated by a crew of 12 and accommodated 20 scientists for up to 30 days at sea. Over 36 years (with a major midlife renovation in 1994), *Oceanus* conducted nearly

500 missions, spanning all fields of oceanography and covering hundreds of thousands of miles, from Georges Bank to the Red Sea and south to the Sargasso Sea and the Angola Basin. Its crew members confronted the challenges of the sea with innovation, expertise, and a can-do spirit, getting the job done for some 250 chief scientists and their scientific parties.

“It was the little ship that could,” said WHOI biologist Peter Wiebe.

“The theme of *Oceanus* has been to support our customers, to support science and give it our best, and I believe we’ve accomplished that,” said *Oceanus*’s last captain, Diego Mello.

So there was disappointment when the ship’s owner, the National Science Foundation (NSF), needing to retire a ship from the nation’s oceanographic fleet, selected *Oceanus*—even though it had scored high marks on its last NSF inspection. No one knew what would happen to the ship after its final WHOI cruise in November 2011.

“Somebody’s going to get a good boat,” former *Oceanus* captain Mike Palmieri said ruefully.

Somebody did.

In January, the NSF, WHOI, and Oregon State University reached an agreement to transfer *Oceanus* to OSU. It headed out

structed the entire quantity in time to be deployed last fall in instruments used in an earthquake-prone area beneath the western Pacific Ocean.

Evans sought funding from the National Science Foundation (NSF) to replace 20 instruments that were wearing out after years of use in the deep sea. NSF proposals include provisions for “broader impacts” that promote education, outreach, and benefits to society. In a conversation with colleague Lisl Lewis about how scientists could bridge the gap between their work and the wider world, the idea came up of working with people with disabilities.

Evans approached Cape Abilities, which hired Trevor Harrison as project manager to teach the workers how to build the electrodes and check them for quality control. With Evans and others, Harrison simplified the construction of the electrodes, separating the job into repeatable steps, and significantly reduced the total cost with no change in quality.

Four Cape Abilities workers, Lisa Magnuson, Carol Dimock, Joseph Sattler, and Paul Kristiansen, took part in the pilot program. Under Harrison’s guidance and with help from Cape Abilities’ job coach Buzz Friend, the quartet learned the many steps to making the electrodes: how to use the drill press and lathe safely, bevel and thread plastic housings, wrap the fittings’ ends with Teflon tape for a tight fit, and fill the vessels with a salt solution. Wearing purple nitrile gloves to avoid transferring oil from skin, they also wrapped and crimped sheets of 99.9-percent pure silver foil onto a central wire.

“I love the work, and this is a good team for me to work with,” said Magnuson, who previously worked in a supermarket.

Starting in May, working in teams of two for a half-day each

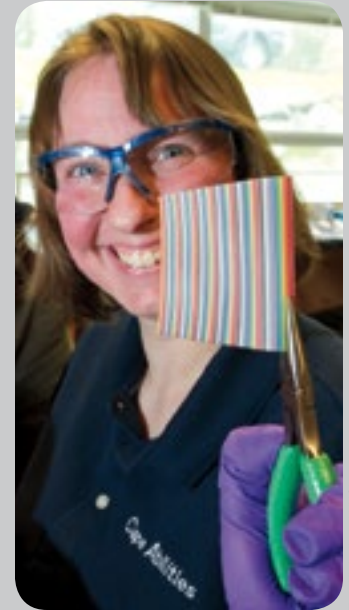
week, the four completed 180 well-calibrated electrodes, even more than planned.

“This is difficult work that requires fine motor skills,” said Friend, “but this shows that people with disabilities can do just about anything if they get the right training.”

“This saved me lots of time and effort,” Evans said. He was so pleased with the partnership that he has been describing the project to other scientists, hoping to interest them in similar arrangements that would decrease workloads for overcommitted scientists and increase job opportunities for overlooked workers.

In February, a scientist down the hall from Evans, WHOI geologist Jeff Donnelly, partnered with Cape Abilities workers to build 50 aeolian sediment traps. The instruments were installed on Santa Rosa Island, a barrier island off Florida, for an experiment to measure sand blown off beaches during storms and hurricanes.

— *Kate Madin*



Tom Kleindinst, WHOI

Lisa Magnuson waves a ribbon cable used in the electrodes she constructed at WHOI for deep-sea instruments.



Courtesy of WHOI Archives

via the Panama Canal to Newport, Ore., to replace OSU’s research vessel *Wecoma*, a sister ship also built in 1975 with the same design as *Oceanus*. *Wecoma* will be retired, while *Oceanus* sails on.

“This decision speaks to the quality of our marine operation in maintaining *Oceanus* as a capable research vessel,” said Susan Avery, president and director of WHOI. —*Kathryn Eident*



Doug Weisman

Above left, the newly constructed hull of the research vessel *Oceanus* splashed into the water in 1975 at Peterson Builders shipyard in Sturgeon Bay, Wisc. Operated by WHOI over the next 36 years, *Oceanus* (above) and its crew earned the respect of hundreds of scientists on nearly 500 research missions. The National Science Foundation had slated *Oceanus* for retirement, but still in tip-top shape, the ship instead sailed on to replace an aging vessel at Oregon State University.