

Workers From Cape Abilities Make Electrodes

By BRENT RUNYON

A group of four developmentally disabled adults from Centerville and Falmouth just completed assembly of components for sensitive underwater equipment that will soon sit at the bottom of the ocean and measure changes in the sea floor.

The work was part of a pilot project between Cape Abilities, the Hyannis-based organization that helps disabled people find work and housing, and the Woods Hole Oceanographic Institution.

The four workers, Lisa Magnuson of Centerville and Joseph B. Sattler III, Carol Dimock, and Paul Kristiansen, all of Falmouth, assembled 180 electrodes over the summer. The electrodes are a key component in the magnetotelluric instruments which measure electric and magnetic currents on the sea floor.

Woods Hole Oceanographic Institution Senior Scientist Rob L. Evans had the idea that disabled adults might be able to assemble the electrodes when he was writing a grant for the National Science Foundation two years ago.

"They are not difficult, but they take a lot of care and a lot of time to make," he said. "It seemed to me the kind of work that we might have an opportunity to farm out to this kind of group."

He contacted Cape Abilities when he was writing the grant to see if the project would be possible. "They were on board, but neither of us had a sense of the scope of the proposal until it was funded," he said.

In 2010, the project to build 20 magnetotelluric instruments was awarded with a \$1.5 million grant from the National Science Foundation funded through the American Recovery and Reinvestment Act stimulus funding. Dr. Evans has applied for a separate grant to deploy the instruments in the ocean.

After the grant was awarded, Dr. Evans got back in touch with Cape Abilities to find developmentally disabled adults to build the electrodes that will sit at the bottom of the ocean.

Through the grant, Cape Abilities hired a project coordinator Trevor W. Harrison, a 24-year-old originally from Yarmouth who is a graduate of William & Mary College in Virginia.

Mr. Harrison has a degree in physics, and moved back to the area for the job and now lives in Falmouth.

"The first part of the job was to look at the design they had in place and look at ways to make the assembly process a little clearer," Mr. Harrison said.

He learned how to build the electrodes himself, broke it down into steps, and then went through the steps with the crew from Cape Abilities.

He showed the workers how to crimp delicate pieces of silver foil around a silver wire, and roll it into tight spirals. The crew also learned how to use a drill press and a lathe to drill holes in PVC pipe, wrap Teflon tape around the threads in the assembly, and make a watertight

housing for the electrodes. "We got off to a really good start," Mr. Harrison said. "[Dr. Evans] wasn't on a massive time crunch so we were able to take our time training the crew. And we did get a very skilled crew."

The members developed their talents and were able to repeat the steps without much supervision, he said. Mr. Harrison gave each crew member one part of the job to complete, like rolling the silver foil, or drilling holes in the PVC pipe.

Mr. Sattler and Mr. Kristiansen were better at the manufacturing jobs working with the drill press and lathe, and Ms. Dimock and Ms. Magnuson were better at the delicate job of working with the silver foil, he said. They were paid \$9 an hour for their work.

The original grant called for the crew to make 150 electrodes, but because of their efficiency and the simplified design of the electrodes, the crew completed 180 electrodes.

"Just seeing them get to learn a new skill and then feeling confident about it, and seeing that process develop was very satisfying," Mr. Harrison said.

The instruments are now complete, and initial tests were successful, Dr. Evans said. Soon the instruments will go through the ultimate test of being lowered to the ocean floor along a ridge off the coast of Washington State.

"It's absolutely been a total pleasure," Dr. Evans said. "I get a great sense of satisfaction from bringing them in and seeing the sense of fulfillment that they get from doing the work."

Dr. Evans, who is from Hampshire, England, said once the electrodes are field tested he will start marketing the Cape Abilities electrodes to his colleagues around the world. He will recommend them to other scientists at WHOI. "We will absolutely use them again when we need to build more instruments," Dr. Evans said.

Mr. Harrison said he is now trying to find another project for the crew from Cape Abilities, hopefully in Woods Hole working with other scientists.

Cape Abilities is based in Hyannis but has a satellite office on Gifford Street, Falmouth. The organization provides services for 400 people with disabilities across Cape Cod.



Cape Abilities worker Lisa Magnuson of Centerville enjoying her job at WHOI.