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## **Hunley holds keys to more than sinking mystery**

By Scott Miller  
Staff Writer

After surviving 136 years buried in the sand and silt just outside Charleston Harbor, the H.L. Hunley Confederate submarine and all its mysteries rest in the caring hands of Wisconsin native Mike Drews.

But Drews' charge stretches beyond unlocking the secrets of Feb. 17, 1864, when the Hunley became the first sub to sink an enemy ship, then inexplicably disappeared.

"Personally, I hope we never find out. I hope 20, 30 years from now people are still conjecturing about what happened that night. It adds to the lore of it," said Drews, director of the Clemson University Conservation Center.

He does hope, however, to make groundbreaking advancements in the conservation of metals by researching and restoring the corroding Hunley.

With a doctorate in chemistry, he joined the faculty at Clemson University in 1972, developing an expertise in the analysis of materials over the next three decades that prepared him for the Hunley.

### **Amazing survival**

The sub, made of cast iron and wrought iron, should have corroded in the salty seawater of the Atlantic Ocean.

The submarine was covered with shells, marine life and other sediment and buried in the sand and silt. That protected the Hunley from the salts and oxygen that cause corrosion. The Hunley's elusiveness to divers — many parties tried unsuccessfully to find the sub during the 130-plus years it sat on the ocean floor — may have protected it against time.

It also prevented the Hunley from being found too soon.

Showman P.T. Barnum, for example, offered a \$100,000 reward to anyone who found the sub. He surely would have put the vessel on display, subjecting it to oxygen. Even if conservationists found the Hunley 50 years ago, it likely would have corroded under earlier preservation technologies, Drews said.

"We know so much more now about corrosion than we knew back then. They didn't understand the limitations of treatments," he said. "People have treated artifacts, thought they were stable and put them on display only to find out years later that they were not stable.

Now you have a deteriorating artifact on your hands."

## **Sustainable environment**

While the deterioration process has slowed, the Hunley continues to corrode along with any hope of answering its mystery.

Drews must keep it breathing by limiting the sub's exposure to oxygen. So the Hunley remains submerged in around 56,000 gallons of fresh water at the Warren Lasch Conservation Center at the old Charleston Naval Base in North Charleston.

In addition, the Hunley's hooked up to electricity, which essentially converts the 40-foot, 7.5-ton sub into a giant negative terminal on a battery.

"It's still corroding, but it's corroding at a very slow rate," he said.

Meanwhile, the crew eventually will break down the sediment coating the ship to reveal the iron, a long process. Now 62, Drews could be retired by then. A Civil War-era cannon, for example, has been going through the process at the lab for about eight years, though the process would be faster if so much attention wasn't directed toward the Hunley.

"As long as it's fun, I'll continue to do it," Drews said. "I don't think I'll ever retire."

As archaeologists slowly remove sediment from the ship, they may be able to unlock keys to the Hunley, perhaps determining the extent of the damage to the ship and the cause of any damage.

As the crew digs deeper, they continue to find surprises in the Hunley's design, like the use of counterbalancing mechanisms and rubber gaskets, Drews said.

"Most people did not expect the Hunley to be as sophisticated as it was," he said.

In addition, the crew is identifying solid practices in the conservation of metals, ways to remove salt from corroded iron and artifacts. Ultimately, the research could spawn the development of irons and metals more resistant to corrosion.

"By studying what happens to old materials like the Hunley, you can mitigate the effects of corrosion on future materials," Drews said.

Future researchers can also use the Hunley as a guide in their own efforts.

"We have challenges related to (understanding) the Hunley because it's corroded. It's the same type of challenges someone would encounter when trying to determine the stability of an old bridge," Drews said.

The project is just getting started though. As the crew takes samples from the sub, most of them must be taken back to Clemson to be tested. Fundraising efforts continue, through Clemson and the Friends of the Hunley, to help advance Clemson's lab at the Warren Lasch Conservation Center.

The long-range plan, as agreed to by the U.S. Department of the Navy, is for the indefinite display of the Hunley in a controlled environment.

The Hunley has attracted archaeologists and conservationists from around the world: France, Uruguay, Denmark and Chile.

Senior conservator Paul Mardikian of France worked on the Titanic. He also worked on ancient shipwrecks in the Mediterranean Sea.

Conservator Philippe de Vivies, also from France, worked on ancient shipwrecks and on projects in Egypt.

“It’s a very international group,” Drews said. “There’s more experience out in other parts of the world. We’re still a relatively young country.”

“The fact that they want to work on the project speaks to the magnitude of the project,” he said. “I mean, this was the first modern submarine.”

They’re also among the few who can stand face-to-face with the Hunley. Everyone else can only peer at it from a platform as the Hunley rests in the tank below.

The crew periodically drains the tank to work on the submarine and gather specimens. The tank takes three hours to drain, so out of practicality, the crew can work on it only for so long. The Hunley is never dry overnight.

But for a moment, the crew can stand next to the Hunley and all its mystery, wondering what happened to the eight men who never returned on Feb. 17, 1864.

“When you’re down standing next to it you realize you’re also standing next to a tomb. Eight men died there,” Drews said. “I don’t know how to describe it.”

Scott Miller is a staff writer for the Business Journal. E-mail him at [smiller@scbiznews.com](mailto:smiller@scbiznews.com).



Renee Lyons

Mike Drews, director of the Clemson University Conservation Center, says the research and restoration of the H.L. Hunley Confederate submarine could unlock keys to making metals more resistant to corrosion.

### Mike Drews

Title: Director of the Clemson University Conservation Center.

Job duty: Leads a team of archaeologists and conservationists working on the H.L. Hunley Confederate submarine at the Warren Lasch Conservation Center in North Charleston.

Background: Ph.D. in physical chemistry from the University of North Texas. Professor at Clemson University since 1972.

Age: 62.

Hometown: Milwaukee, Wis.