

Ü-COAT

Sherwin-Williams helps submarine exhibit recreate history in colorful detail

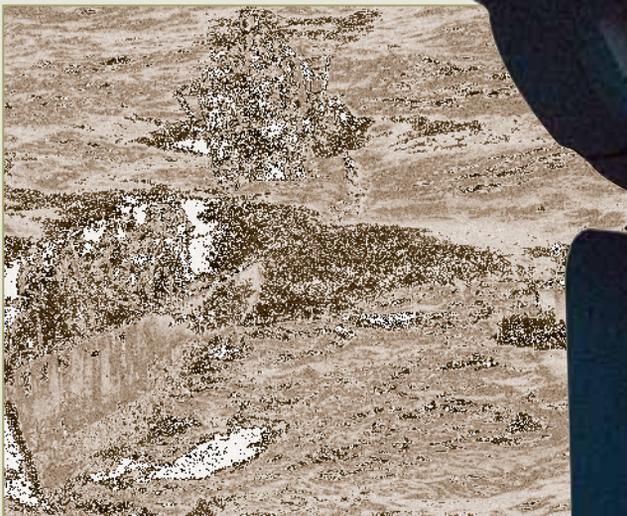
Rarely can an exhibit bring its viewers so in touch with world history as does the U-505 submarine at the Museum of Science and Industry in Chicago.

The German U-boat, captured by Americans during a dramatic high-seas battle in World War II, has provided an interactive glimpse into life on a wartime submarine for some 23 million visitors since making the museum its permanent residence in 1954.

As a teaching tool, the U-505 is rare. This is no replica, no re-creation. It is very much the real deal, from the control room where a German commander committed suicide during a depth charge attack, to the bunks that slept up to 59 men in a space that now seems crowded with 10 tourists aboard.

Perhaps that's why exhibit curator Keith Gill, who has been involved with the boat in various roles since 1988, is so active in ensuring that the U-505 remains historically accurate to even the finest detail. And those details include color.

Through his extensive research both here and in Germany, Gill has found evidence that the German Navy put



The U-505 lists in the Atlantic Ocean shortly after its capture by the U.S. Navy in June 1943.

considerable thought and planning into paint color, from that of the hull to that of interior valve handles.

But during the needle-gunning phase of a limited interior repaint of the vessel in 1994, Gill discovered that maintenance repaints over the years had not been so respectful of the original colors, which could still be seen in microscopic paint chip analysis under a half dozen or more subsequent coats of paint.

"We started thinking about the boat differently at that point," says Gill. "And as we began looking more closely at the paint, it started to creep up on me how much of it had been painted incorrectly.

"There was surely no malicious intent on the part of the people who painted it. They just didn't have the information we now have."

FOUND MANUALS

The quest for information on the U-505 took Gill to Germany, where his research led him to the discovery of a German paint standard first developed in the 1920's, as well as some period-appropriate manuals for painting submarines. Combined with black-and-white photography from the day of capture that provided limited color cues and further microscopic study of paint chips taken from the U-505,

Gill soon felt he had a general handle on correcting the color inaccuracies.

Around 1998, museum officials began studying ways to shield the

submarine from the harsh effects of Chicago winters and move it indoors. Planning moved slowly, but it was soon settled that a new wing on the northeast side of the property would house the sub.

"It was about then that I started chanting the mantra that the boat was not in its original colors," says Gill. "It was agreed that the right time to repaint it was when we could work it into the moving program."

Meanwhile, the museum sought support for the move from the corporate sector and found help from Sherwin-Williams, which pledged a donation of paint to the project. By early 2003, ground was broken on the new wing, while an exterior repaint of the boat itself began later in the summer. The museum hired National Decorating, a Chicago-based contractor which brought a crew of six to the two-week job.

But the boat needed more than a simple repaint. More than 3,200 pounds of rusted steel was removed from the boat's ballast tanks and free flood spaces. Steel repair was performed where necessary, but Gill found the high-build properties of Sherwin-Williams Mastic Aluminum useful in preserving thinning steel in many areas. For the most part, however, the existing exterior coating — an enamel epoxy that had been applied in 1988 — was essentially washed down and served as a prime coat for one brushed and rolled coat of Sherwin-Williams DTM Acrylic, but only after adherence testing was complete.

"There was some concern that it wouldn't adhere, but the coating performed very well in testing," says Gill.

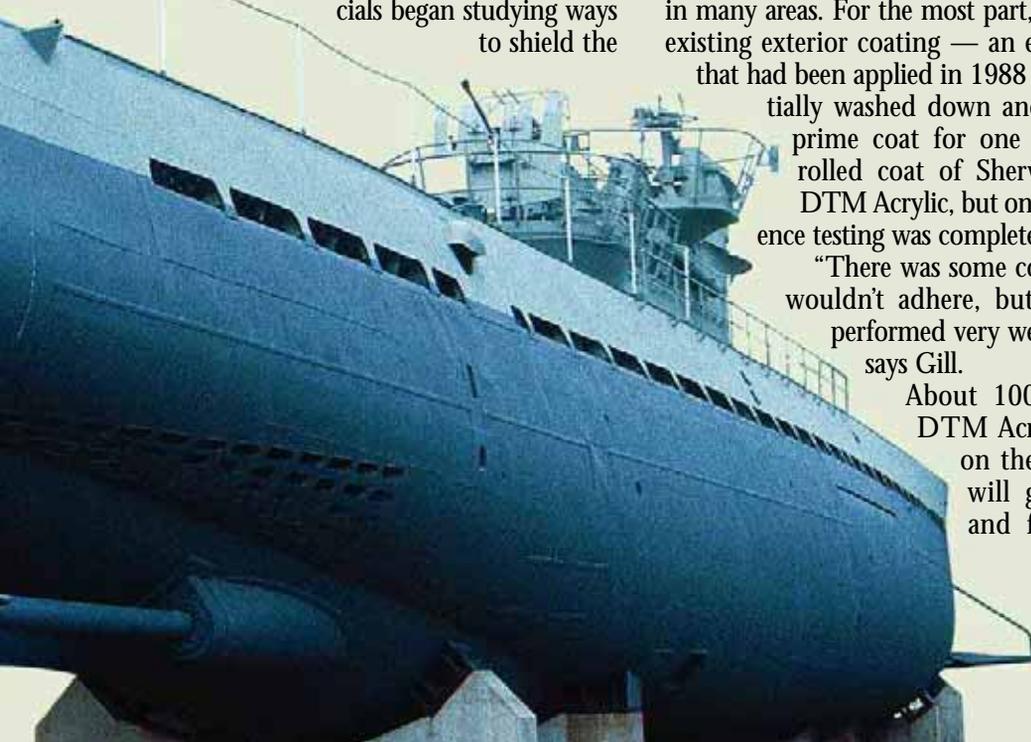
About 100 gallons of DTM Acrylic was used on the hull, which will get a second and final coat of



While the exterior finish required two shades of grey, 10 color shades were necessary inside in part because valve handles that had various functions were color-coded.

AT A GLANCE

- The U-505 submarine exhibit at Chicago's Museum of Science and Industry undergoes a maintenance repaint.
- Analysis of paint chips reveals that past repaints had not been historically accurate. Curator Keith Gill commits to restoration of original colors.



the same product once the ship is moved indoors. Gill acknowledges that an oil-based coating rather than an acrylic would have been used by the Germans, but he was more concerned about visual accuracy than functional accuracy. Since the exterior had been sandblasted several times since the boat's capture, Gill relied on the German manuals rather than chip analysis for color cues.

"The fact is that some of this is more of a conservation project than an actual restoration project," he says. "Additionally, moving

control room to continue his chip analysis.

While the exterior finish required two shades of grey, 10 color shades were necessary inside in part because valve handles that had various functions were color-coded to provide instant visual cues to operators (they were shaped differently as well so as to give cues to operator's if the sub were operating in darkness, which it often had to do). By matching color cards from a fan deck from the German paint standard Gill had found to a Sherwin-Williams fan deck,

Gill found appropriate matches in shades offered by Sherwin-Williams ProMar 200 Interior Alkyd.

"We had cases where the color no longer exists in the German paint standard, but we can get close to it with the Sherwin-Williams fan deck," says Gill. "In all cases, the intent is there, and the colors are pretty darn close.

"We owe thanks to the Hammond (Ind.) Sherwin-Williams store," Gill adds. "We threw a lot of changes at them and they were always very patient, very

accommodating and very responsive. It's been a great partnership."

Curator and paint crew — raised to 10 painters during the final days of interior painting — worked side by side in tight quarters during the final days of interior painting, prompting repeated "Excuse me's" and general amazement that 59 crewmen were aboard the day the ship was captured. Gill would label various piping, valves and machinery with either a color or a matching Sherwin-Williams color code, and a painter, with a 2-inch angled cut-in brush in hand, would soon follow, restoring the part to its original ivory, red, green or silver.

"Some people might say, 'Who's going to know the difference?'" says Gill. "But to not do this the right way would be a disservice to history and to our visitors. We owe it to them to make it right."

The New U-505 Experience is scheduled to open in 2005. ■



Exhibit curator Keith Gill seeks to restore the colors of both the interior and exterior of the U-505 to historical accuracy. Microscopic study of paint chips, such as the one shown at right which was removed from a valve handle inside the U-505, reveal numerous color changes in the years since the sub was captured.

the boat indoors meant that we wouldn't require the weathering properties other coatings may have offered.

"But most importantly, we wanted to match the varying shades of gray that the Germans felt best provided camouflage in the sea."

INSIDE CHALLENGES

While exterior painting was relatively uneventful, delays in construction of the U-505's new wing meant interior painting would occur in February 2004, while the sub was still outside. Original plans had the interior being finished after the move.

While National Decorating was able to juggle its schedule to accommodate the change, Gill's study of the original interior color wasn't yet complete. Since blasting has never occurred inside the sub, chip analysis would prove to best reveal original colors. As a result, he set up a microscope in the sub's