Electrowatch Completes Revere Sensitization Treatments on USS Vicksburg

The Ticonderoga-class guided missile cruiser USS Vicksburg (CG 69), shown here awaiting dry dock flooding in June 2021. *U.S. NAVY / Mass Communication Specialist 3rd Class Brandon Roberson*

Norfolk, Va. – ElectraWatch, an Austal USA company, completed two successful reverse sensitization treatments of aluminum alloy in service on the U.S. Navy Ticonderoga-class guided missile cruiser USS Vicksburg (CG 69) in September 2020 and July 2021.

The process of reverse sensitization involves careful heating to restore shipboard aluminum to near-factory condition from a "sensitized" state, an out-of-spec condition susceptible to cracking that can develop at sea. This treatment reduces the need for replacement of the material or alternative surface treatment which is costly and time-consuming. Follow-up measurements verified the material had been returned to within specification.

"I'm proud of the hard work our engineering team has done to accomplish these treatments," ElectraWatch General Manager Ryan Dunn said. "These results validate the Navy's confidence in ElectraWatch and the process we have developed. Our cutting-edge tools and processes represent a major improvement over previous methods and will serve to extend the service life of the Ticondergoa-class ships."

Donald Tubbs, ElectraWatch's Senior Test & Research Engineer, explains: "These tests are the result of several years of collaboration with waterfront managers and the Navy's technical and research and development communities."

5000-Series Aluminum Alloy (Marine Grade) is used extensively on U.S. Navy guided-missile cruiser superstructures. The specific alloy used, AA5456, can become sensitized after long exposures to elevated temperatures, such as those that arise at sea during solar heating. Once sensitized, the combination of a corrosive environment like seawater and stress can lead to cracking of the plate.

By carefully controlling time and temperature, the reverse senstization treatment can return to near-factory condition or “heal” aluminum alloy that may have previously required costly complete replacement. Used in tandem with ElectraWatch’s proprietary non-destructive Degree of Sensitization Probe, which has been successfully used to conduct over 9,000 fleet-based sensitization measurements, the Navy now has a turnkey solution to conduct better-informed, cost-saving maintenance planning that limits scope creep and reduces the amount of aluminum replaced.