Support of Advanced Coatings

The Center for Naval Shipbuilding Technology (CNST) awarded a new project, *Support of Advanced Coatings*, to General Dynamics Electric Boat (EB). This two-phase project, to be executed over a period of 24 months, will provide technical expertise to support an Institute for Manufacturing and Sustainment Technology (iMAST) led project, *Improved Interior Finish Coatings*.

Preservation is a significant cost driver when considering total ownership costs of Navy Ships, and there is great potential to reduce additional costs associated with fleet unit repairs. The appearance of interior and exterior painted surfaces is important to the Navy, and a substantial amount of money is spent on reapplying finish coatings solely for cosmetic reasons. This is true in both new construction and repair. The cost associated with routine application of finish coatings to repair cosmetic damage goes well beyond the material and labor cost associated with application of the paint. Surface preparation (hand sanding, brush blasting, power-tool cleaning, solvent wipe, etc.) is labor-intensive. Masking and cleanup of dust or paint also increases the cost associated with cosmetic over-coating. This project aims to improve toughness, abrasion resistance, and cleanability of interior finish coatings to help reduce or eliminate over-coating, which will reduce both acquisition and total ownership cost (TOC).

Interior finish coatings currently in use have (predominantly) been developed to meet environmental regulations and cost constraints. Current trends in marine maintenance coating formulation are toward high-build rapid-cure coatings and extended corrosion protection. However, simply improving coating longevity will not necessarily reduce cost when repair coating operations are performed for cosmetic reasons alone. To reduce TOC, an interior finish coating (or coatings) must be developed that will eliminate the need to paint for strictly cosmetic reasons.

The first phase is an investigative task into design and formulation of improved interior coatings. The requirements and optimal characteristics of finish coatings will be identified, and materials will be acquired and incorporated into an experimental design. The second phase will focus on the demonstration and qualification of an optimized interior finish coating. A candidate coating (or coatings) will be produced to perform a shipyard demonstration. Following a successful demonstration, a request to qualify letter will be sent to NAVSEA 05M to initiate the qualification process. Once tested and qualified, the coating advances are expected to yield $465K/VCS Hull in acquisition cost savings, with greater potential for savings over the submarine life cycle as well as any other Navy platform.

About CNST

CNST is a Navy ManTech Center of Excellence, chartered by the Office of Naval Research (ONR) to identify, develop and deploy, in U.S. shipyards, advanced manufacturing technologies that will reduce the cost and time to build and repair Navy ships. For additional information on this and other CNST projects, please visit www.cnst.us.