



TOPIC NUMBER: N091-049

| SBIR INVESTMENT: \$1,099,330 |

PHASE III FUNDING: \$10,403,116

DEPARTMENT OF THE NAVY

NAVY SBIR/STTR SUCCESS



Composite Hull for 7-meter Rigid Hull Inflatable Boat (RHIB) Combatant Craft

Advanced, low-cost composites enable Combatant Craft breakthrough

Structural Composites, Inc.

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THE CHALLENGE

The Naval Sea Systems Command has a standing requirement to reduce combatant craft weight through innovation/improvement to the hull design of its new generation of 7-meter Rigid Hull Inflatable Boats (RHIBs).

THE TECHNOLOGY

To meet this challenge, the Navy SBIR/STTR Program partnered with Structural Composites, Inc., leveraging its innovative material-blending technology. This technology uniquely enables the blending of low-cost polyester resins with elastomeric polyurethanes. The Navy and Structural Composites sought to apply this technology to meet the following objectives:

- Develop lightweight hulls without compromising strength or durability
- Enable a decoupled hull-deck design for shock absorption
- Reduce total ownership costs.

THE TRANSITION

This SBIR topic was sponsored by PMS 325G, Small Boats and Craft, and has pervasive application across platforms and services. The composite hull technology is an enabler, i.e., the composite material allows for hull design configurations not possible before. The new generation of 7-meter RHIBs required an innovation in hull design to meet weight, payload and ballistic protection requirements. Structural Composites' technology demonstrated technical maturity and was selected for a \$2.7M Rapid Innovation Fund (RIF) transition. The RIF has delivered two of four planned Navy insertion craft with the balance planned for delivery in the first quarter of 2019. The RIF engaged a key Navy RHIB prime allowing for expanded insertion across platforms, i.e., 7-meter and 9-meter RHIBs.

THE NAVAL BENEFIT

- Reduced Total Ownership Cost because a lighter weight boat with less horsepower results in less fuel consumed.
- Enabling of a decoupled hull-deck design that reduces crew fatigue, increased mission capability and reduced injuries.
- Reduced weight savings and reduced maintenance offer a 25% potential overall TOC savings.
- Cost savings from standardized maintenance across 9-meter RHIBs and 7-meter RHIBs

THE FUTURE

The material blending technology elements developed in this SBIR success will continue to improve combatant craft design and will support improved capabilities and reduced cost to emerging unmanned systems. The technology has also been adopted commercially by Wabash National, North America's largest semi-trailer manufacturer. Emerging markets in transportation and infrastructure, to include composite bridge decking, will benefit from the technology.

"The SBIR research has helped expand PMS 325's options for meeting Navy requirements with new technology. This includes advances in lightweight structures, advanced resin and marine coatings...that can reduce overall total ownership cost."

Christian E. Rozicer, PE, Assistant Program Manager
PMS 325G