

**A. Composite to Steel Adhesive Joints Development for Next Generation Surface Combatant**

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New material systems present potential solutions to meet the advanced performance criteria for the next generation family/class destroyer and other defense acquisition programs. As a result of these requirements there is an increased demand for the use of composites. Composite materials are strong, light weight, and are not susceptible to corrosion. The use of these materials generates the need for new joining technologies for fabrication of large marine composite-to-steel components. Existing composite to steel joints are typically accomplished through a labor intensive mechanical fastening scheme.

A Navy MANTECH project has been established to develop an all bonded steel-to-composite joint technology that is structurally sound, producible and cost effective while meeting the functional requirements of structures, ship survivability (signatures) and longevity for the DD(X) program. The joining development activities in this project focus on large marine joints intended for integration of composite with the steel hull structure, providing structural load continuity through the ship. The emphasis of this project is to identify and maximize the efficiency of key joint details and manufacturing processes, and to assess the viability and cost of integrating this technology into ship manufacture.

A concurrent engineering approach has been used during this project to incrementally demonstrate through joint design analysis and testing that the functional requirements of the adhesive bond joint and manufacturing processes are attainable. This presentation will give a final update on project development and technology transfer activities to the DD(X) program.