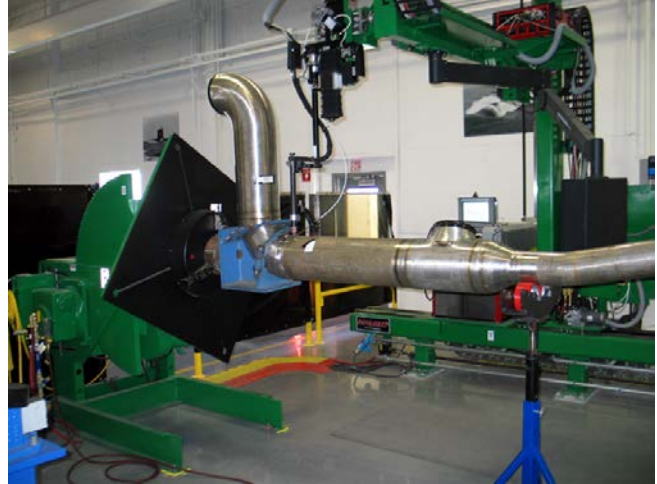


Pipe Shop Process Re-Engineering

General Dynamics Electric Boat (EB) recently completed a project to revitalize pipe manufacturing processes and improve pipe fabricating sequence practices at their Quonset Point, RI facility. This project is considered a tremendous success and as such is a critical step toward enhancing EB's ability to meet the requirements of increased construction rates for the VIRGINIA-Class Submarine (VCS). The team ultimately realized their primary goals of designing processes and technologies that streamline planning and manufacturing practices while developing self-sufficient, cellular work centers and process lanes that



support a more efficient product flow through the pipe shop. Implementation is ongoing, and once fully implemented, savings from this effort are expected to exceed \$1.3 million per VCS hull.

EB executed this CNST led project in two phases. During the first phase, the team concentrated on mapping out the "as is" process and developing the "future state" process map. During Phase 2, the team focused on the technology insertion possibilities to address the problems identified during Phase 1. Pipe detail deliverables were identified and classified into specific classes based upon common manufacturing and assembly characteristics. The identified product families were assigned to specific work centers and process lanes in order to further streamline the pipe detail fabrication process.

These efforts resulted in the overall modernization of the pipe shop facility at Quonset Point including streamlined process lanes, centrally located primary work centers, an expanded nuclear pipe shop, centralized gas bottle management system, and updated tooling for fitters and welders. The project team also developed business rules for the discrete sequencing of joint-to-joint pipe fit-up and welding to provide pipe fitters and welders with written direction for pipe detail weld sequencing. EB expects the implementation of the production control and work package routing changes as well as final implementation of pipe fit and weld sequencing software to be completed during the fourth quarter of 2011. All pipe shop modernization efforts are expected to be fully implemented by the second quarter of 2013.

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.