

Efficient Environmental Controls Save More Than \$200K per Hull in VCS Construction

Status: Implemented

PROBLEM / OBJECTIVE

General Dynamics Electric Boat (EB) fabricates Virginia Class Submarine (VCS) modules in its Quonset Point (EB-QP) facility and then ships them to other locations for final assembly. Prior to shipping, the final paint system must be applied to various compartments. In order to apply the paint system, environmental conditions need to meet certain specifications. Because EB-QP lacks automated environmental controls for work spaces within the submarine modules to allow access by other trades, an average of 41.6 workdays is lost per year. The Navy Metalworking Center (NMC) completed a Navy ManTech Rapid Response project that identified and recommended cost-efficient solutions to reduce the number of lost workdays. The results are expected to save more than \$200K per hull.

ACCOMPLISHMENTS / PAYOFF

Process Improvement:

The Integrated Project Team investigated the types of access required by trades, the various envelopes of workspaces that may be controlled, and the safety requirements for painting operations. Their work also involved identifying commercial technologies to meet requirements, selecting equipment, and conducting a cost benefit analysis for each potential solution. NMC recommended using insulated metal panels and fabric enclosures along with HVAC equipment to control the environment in major modules in order to minimize the lost workdays associated with painting.

Implementation and Technology Transfer:

While implementation was originally planned on SSN 785, partial implementation was expedited to support construction of SSN 782 during the summer of 2010. This partial implementation resulted in no lost workdays related to insufficient environmental controls and supported on-time delivery of three major modules to the final assembly facility. Project recommendations were fully implemented in 2011 at the EB-QP facility, resulting in no lost work days for painting operations due to unacceptable environmental conditions. The project is also reducing heating costs by minimizing the need for portable heaters and allowing more efficient freeze protection.



An NMC-led project team developed an environmental control system for painting operations that is reducing lost workdays in VCS construction and is expected to save more than \$200K per hull. (U.S. Navy photo)

Expected Benefits and Warfighter Impact:

- Reduce lost work days for painting operations associated with inadequate environmental controls
- Reduce energy costs associated with freeze protection and use of other portable heaters
- Total cost reduction is more than \$200K per hull after initial implementation cost

TIME LINE / MILESTONE

Start Date: January 2010
End Date: July 2010

FUNDING

Navy ManTech Investment: \$195K

PARTICIPANTS

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