

NNS Created the Ability to Quickly Analyze Material Impact on Build Strategy Decisions

Status: Pending Implementation

PROBLEM / OBJECTIVE

Naval ship construction is an immensely complex logistical activity involving large quantities of highly specialized material, equipment and personnel. All material that ultimately resides in a CVN must be pulled from inventory, staged within a limited footprint and moved to the mechanic's work site along predetermined material paths. Material availability in the right job site at the right time is a key element in NNS's drive to lower CVN construction costs. Unnecessary movement of material, delays due to material unavailability or blocked material paths or space consumed by unneeded material translate to schedule delays and increased costs.

The project's objective was to deliver a tool that allows the material logistic controllers to manage the adjacent lay down areas in an optimal manner. The lay down areas next to the work areas can now be synchronized with the type of work underway with respect to required square footage and location. This project provided an adaptive simulation tool capable of adjusting the material lay down layout and delivery path to the existing build strategies.

ACCOMPLISHMENTS / PAYOFF

Process Improvement:

The NNS team developed a prototype simulation based material logistics planning tool which employed Discrete Event Simulation techniques to create a library based reusable application that optimized material logistic scenarios and improved the efficiency of CVN construction. This simulation tool permits Ship Construction Production Control to quickly link a proposed build strategy to those material delivery logistics associated with the involved CVN tasks. The development team worked extensively on the underlying model logic and hand in hand with the systems super user to determine needs and review system for responsiveness. Information about material availability was tied into the system and drawn directly from the Material Ordering Database (MOD)

Implementation and Technology Transfer:

NNS is executed this 24-month project over two phases. Phase 1 addressed data and information collection and quantitatively defined the problems. Phase 2 involved the development of the simulation tool. The initiative was led by the Material Distribution Department supported by planning personnel representing all trades involved in



CVN construction. The CVN Construction Material Logistical Planning Tool illustrates by reports how a specific build (construction or outfitting) strategy will impact material resources, thus allowing CVN management to determine the optimum plan chosen from several potential alternative plans each having been analyzed using the simulation tool. This technology, once fully implemented, will reduce lost trade time by 26,433 hours and reduce CVN acquisition costs by an estimated \$3.08M per CVN Hull.

Expected Benefits and Warfighter Impact:

- Ability to quantitatively compare different staging and material supply stream scenarios choosing those that best support the constantly changing requirements as ship construction matures
- Allow the decision makers to rapidly adapt to the dynamics of ship construction, thus ensuring that construction capacity is efficiently utilized
- Reduce construction schedule delays caused by material logistic issues

TIME LINE / MILESTONES

Start Date: August 2014
End Date: October 2016

FUNDING

Current Navy ManTech Investment: \$667K

PARTICIPANTS

ONR ManTech
PEO Carriers
Newport News Shipbuilding
Naval Shipbuilding and Advanced Manufacturing Center

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