

Increased Automation of NDT Tracking

Status: Pending Implementation

PROBLEM / OBJECTIVE

Ships constructed for the U.S. Navy must meet rigorous survivability, quality, and durability requirements. To ensure the structural fabrications meets these requirements, these assemblies are tested using non-destructive methods throughout the construction process. Non-Destructive Testing (NDT) methods on structural members are used to validate two or more structural components have been joined properly. These welded connections will endure loads and fatigue during the ship's life, which can result in a break or failure if the weld is defective.

Huntington Ingalls Industries-Ingalls Shipbuilding's (Ingalls) process for requesting and accomplishing NDT required multiple paper request and report forms, some of which were completed in quadruplicate. Shot locations were identified and physically marked on the test articles and expected to match the contents of the key plan, which was not always the case. Deviations required modifications to the key plan which proved to cause severe disruption and be problematic for tracking in the paper-centric process. If reconciliation between the NDT being requested and the key plan was not done, it could have resulted in incorrect testing, inability to test, testing 'out of position', or other harmful cost drivers.

ACCOMPLISHMENTS / PAYOFF

Process Improvement:

The recently completed NSAM-managed *Increased Automation of NDT Tracking* project with Ingalls developed a new electronic process to enhance and replace the prior paper-centric process for requesting, executing, processing, and archiving of Non-destructive Testing (NDT) for ship structures. Through piloting and testing Ingalls proved that with this new electronic tool and process in place, many manual touchpoints can be eliminated.

Implementation and Technology Transfer:

The 14-month project performed a thorough study and modernization of the current NDT process utilizing the latest proven techniques and technologies. The primary focus was to develop parameters, identify best-fit technologies, and best-



Reducing the effort required to request, track, and manage Non-destructive Testing. Photo Courtesy of Ingalls Shipbuilding.

practice concepts then incorporate them in to a the electronic process to enhance and replace the paper-centric process for request, execution, processing, and archiving of Non-Destructive Testing for structure. The new process and tooling focuses on addressing areas to achieve maximum cost reduction and process efficiency benefit. This process is enabled through digital automation and optimization.

Expected Benefits and Warfighter Impact:

This symmetry of process and technology is helping to streamline the NDT process. Once fully implemented, Ingalls anticipates this technology and process effort will result in a potential 5 year cost savings of \$2.6M across the Ingalls shipyard.

- \$228K per DDG Hull
- \$369K per LPD Hull
- \$484K per LHA Hull

TIME LINE / MILESTONES

Start Date: August 2018
End Date: October 2019

FUNDING

Current Navy ManTech Investment: \$460K

PARTICIPANTS

Navy ManTech
Huntington Ingalls Industries, Inc.
Naval Shipbuilding and Advanced Manufacturing Center