Ingalls Shipbuilding Promoting Digital Automation and Optimization with New Non-destructive Testing Processes

Project Snapshot

Project Lead:

Huntington Ingalls – Ingalls Shipbuilding

Project Dates:

Aug 2018 – May 2019

Objective:

Develop a new electronic process to enhance and replace the paper-centric current process for request, execution, processing, and archiving of Non-Destructive Testing for structure

Estimated Savings:

- **$167K per DDG-51 hull**
- **$57K per LHA hull**
- **$46K per LPD hull**
- **$110K per NSC hull**

M2787 Increased Automation of NDT Tracking
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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.

Ingalls Shipbuilding (Ingalls), a division of Huntington Ingalls Industries, process for requesting and accomplishing Non-Destructive Testing currently requires multiple paper request and report forms, some of which are completed in quadruplicate. Shot locations must be identified and physically marked on the test articles and should match the contents of the key plan, which is not always the case. Deviations require the key plan to be modified which can cause severe disruption and be problematic for tracking in a paper-centric process. If reconciliation between the NDT being requested and the key plan is not done, it can result in incorrect testing, inability to test, testing 'out of position', or other harmful cost drivers.

The objective of the *Increase Automation of NDT Tracking* project is to perform a thorough study and modernization of the current NDT process utilizing the latest proven techniques and technologies to do so. The primary focus is to develop parameters, identifying best-fit technologies, and best-practice concepts then incorporating them in to a new electronic process to enhance and replace the paper-centric current process for request, execution, processing, and archiving of Non-Destructive Testing for structure. The new process and tooling will focus on addressing areas to achieve maximum cost reduction and process efficiency benefit. This envisioned process is enabled through digital automation and optimization. This coupling of process and technology will have at least a portion of the NDT process performed in one digital tool using one repeatable process. This technology and process, once implemented is estimated to result in per hull savings of $167K for DDG, $57K for LHA, $46K for LPD and $110K for NSC. This results in a potential five-year savings of $1.9M for DDG, LPD, LHA and NSC.

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