

# Newport News Shipbuilding - Electronic Weld Record (eWR)

Status: Implementing

## PROBLEM / OBJECTIVE

Welding processes at Huntington Ingalls Industries - Newport News Shipbuilding (NNS) require the use of over 25 different forms. All of these forms are manually filled out, and then signed by hand. Information recorded on the forms must be captured and retained to meet internal procedures and/or government requirements. The current NNS process for recording information on weld/NDT (Non Destructive Testing) forms consists of physically routing paper forms from department to department obtaining signatures/OQE (Objective Quality Evidence). At the end of the paper process the records are filed and stored at a physical location for record retention. This process leads to hand-written errors, difficulty interpreting hand written data, missing data fields, misplaced records, and difficult, time-consuming tracking along with reviewing and certification of records for accuracy and completeness, impacting audits and system testing.

The purpose of this project was to develop an Electronic Weld Record System to eliminate the paper records and replace with an electronic system. The electronic system is web-based and accessible by all users (e.g., welders, auditors, managers, SUPSHIP, fitters, inspection) through the NNS network using a desktop, mobile device (e.g. tablet), or kiosk. The first phase mapped out the current state process, future state process, developed a paper and electronic prototype, and defined the technical requirements. The second phase was for system development, which included coding, testing, evaluating, verifying, validating the software works as determined to meet the end customer/business requirements, and stakeholder demonstration of the developed system.

## ACCOMPLISHMENTS / PAYOFF

### Process Improvement:

This project focused on providing a digital solution that allows electronic signatures to be recorded and data collection for VCS P-1 pipe weld/NDT records. The eWR application accomplishes the following:

- Eliminates unnecessary fields and duplication of data
- Allows for real time data access, including weld joint data, and weld joint sign-off data
- Delivers easy accessibility of records through any computer device
- Provides an electronic workflow between steps in process and departments
- Provides accountability to the person performing the task (e.g., fit, weld, inspect)

### Implementation and Technology Transfer:

The initial pilot implementation of eWR is for VCS P-1 pipe joints across all the new construction Submarine programs. NNS plans to start implementation of the eWR application during the first quarter of 2023 with a digital solution that can eliminate and replace three VCS and CLB pipe welding and NDT forms. The eWR prototype can be used on the Columbia platform with little to no modifications and expanded to the Carrier platforms through a separate, internal effort by NNS.

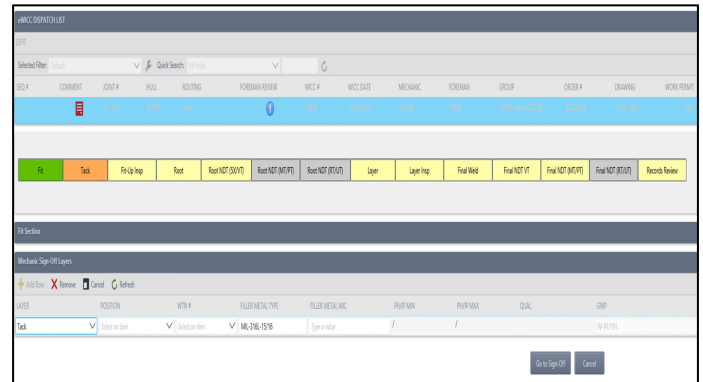


Photo Courtesy of Newport News Shipbuilding

### Expected Benefits and Warfighter Impact:

The estimated savings for the 10 VCS hulls at \$3.01M per year, over a five-year period, on 10 hulls is an approximate total savings of \$15.1M. Additional savings may be generated with adoption of CLB and CVN hulls and expansion of eWR system to include other weld joints, such as mechanical joints and P-2 pipe weld joints in the future.

## TIME LINE / MILESTONES

Start Date: November 2016  
End Date: December 2021

## FUNDING

Current Navy ManTech Investment: \$1.13M

## PARTICIPANTS

Navy ManTech  
Naval Shipbuilding and Advanced Manufacturing Center  
Huntington Ingalls Industries – Newport News Shipbuilding