

# Mechanized Tools to Reduce Labor for Pulling Cable on Surface Ships

**Status:** Pending Implementation

## PROBLEM / OBJECTIVE

It can take up to 25 workers to pull a single cable on a surface ship, depending on the cable size, length, and routing path. The workers grasp the cable and use verbal communication to coordinate the pulling effort. The cable is moved several inches at a time until it's routed into the desired position. Depending on the cable length and type of pull, the workers may pull an entire length of cable simultaneously, pull portions of the cable short distances until the full length of cable is installed, or most commonly, pull the cable from the middle of the run, in both directions, as opposed to the cable being pulled completely from one end. In addition, the workers are often forced to pull the cable from poor ergonomic positions due to lack of space and cable access. The objective of this Navy Metalworking Center (NMC) project was to develop easy-to-use, small, lightweight, portable, power-assisted tools to reduce the amount of time and effort required to pull cable.

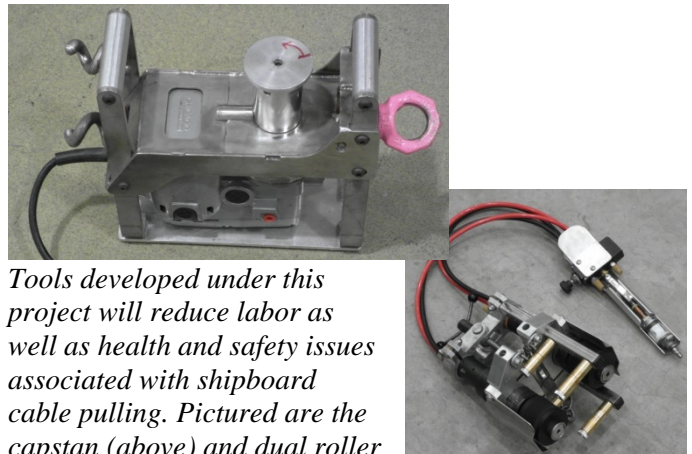
## ACCOMPLISHMENTS / PAYOFF

### **Process Improvement:**

The project team has developed two mechanized cable pulling tools that have demonstrated the ability to increase efficiency and greatly reduce the physical demand on the tool operators. The air-powered dual roller tool weighs 26 lbs and is designed to pull cables 1.5 in. to 2.25 in. in diameter with a force up to 450 lbf. With slight modifications, this tool could be adapted for use with cable diameters as small as 0.5 in diameter. The electric capstan tool weighs 29 lbs and has a maximum cable-pulling force of 2,000 lbf without cable size limitations.

### **Implementation and Technology Transfer:**

Quotations to fabricate the developed tools have been solicited and documented for shipyard use. Vendors will incorporate tool modifications requested by the shipyards as they gain additional experience using the tools. Ingalls Shipbuilding (Ingalls) expects to purchase six of each tool (capstan and dual roller) for use on DDG and LHA in the second quarter of FY16. Implementation is also anticipated at Newport News Shipbuilding (NNS) and General Dynamics Bath Iron Works.



*Tools developed under this project will reduce labor as well as health and safety issues associated with shipboard cable pulling. Pictured are the capstan (above) and dual roller (right) tools. NMC photos*

### **Expected Benefits and Warfighter Impact:**

- Ingalls anticipates that this project will result in a 20% labor savings when using the tools to install Class III and Class IV cables on LHA, LPD, DDG and National Security Cutter (NSC) class ships.
- This labor hour reduction equates to a total estimated cost savings of approximately \$1.5M, and is based on using the cable-pulling tools on a single hull of each of the programs under construction at Ingalls.
- Additional cost savings are anticipated due to reduction in medical claims.

## TIME LINE / MILESTONE

Start Date: March 2014  
End Date: November 2015

## FUNDING

Navy ManTech Investment: \$1.6M

## PARTICIPANTS

LHA Program Office	DDG 51 Program Office
LPD Program Office	CVN Program Office
Ingalls	NAVSEA 05Z
NNS	ONR Navy ManTech
NMC	

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