

National Shipbuilding Research Program Selects \$2.55 million for Panel Project Portfolio

November 20, 2024 -- The Executive Control Board of the [National Shipbuilding Research Program](#) (NSRP) has selected 13 panel projects for award as part of the Program's continuing mission to reduce costs and expand capability for U.S. shipbuilding and ship repair. These new projects, valued at over \$2.55M in government funding, were among those proposed in response to the Panel Project Solicitation issued in June 2024. Abbreviated descriptions follow; prime contractors are listed first and noted in **bold text**:

Laser Hybrid Tack Welding of Structural Steel Fillet Weld Joints

HII - Ingalls Shipbuilding

Duration: 12 Months

Objective:

The goal of this project is to test the weldment and heat affected zone material properties resulting from an IPG LightWeld XR laser welding system used to produce tack welds, which are then welded on top of with various conventional shipyard welding processes. Proving that the heat-affected zone of the tacks is not negatively impacted by the laser beam will provide a path for shipyards to pursue qualification for using the process to produce tack welds.

Extended Recoat Windows for Non-Critical Zones

Elzly | HII - Newport News Shipbuilding

Duration: 12 Months

Objective:

This project will evaluate the effects of different surface preparation methods on interior non-critical surfaces (bulkheads and overheads).

Semi-Automatic Stud Welding Gun for Capacitor Discharge Stud Welding

HII - Newport News Shipbuilding | HII - Ingalls Shipbuilding | GD - Electric Boat

Duration: 12 Months

Objective:

This goal of this project is to design, develop and test a prototype semi-automatic Capacitor Discharge stud gun that is capable of housing and loading multiple studs without requiring technician input in tandem with a battery powered stud welding power supply system.

15kV MIL-SPEC Cable Development for U.S. Navy Ships

HII - Ingalls Shipbuilding | GD - Bath Iron Works | HII - Newport News Shipbuilding

Duration: 12 Months

Objective:

The goal of the project is to design and manufacture a cable that would be fully MIL-DTL-24643 compliant for use in U.S. Navy 13.8 kV, 60 Hz power systems. The goal would be realized by identifying new materials and/or modifying the cable construction in order to meet requirements for circuit integrity (i.e., must survive a 3-hour flame test for vital designated cables) and incorporating a water blocking system in the cable

Evaluation of Digital Twin Technologies for In-Situ Ballast Tank Inspection

Southwest Research Institute | HII - Ingalls Shipbuilding | HII - Newport News Shipbuilding | BAE Systems

Duration: 12 Months

Objective:

This project will determine the viability of existing 3D mapping methods on off-the-shelf underwater inspection robots by precisely analyzing their behavior.

Training Modules for Applicable NAVSEA Tech Pub and Spec

HII - Newport News Shipbuilding | HII - Ingalls Shipbuilding

Duration: 12 Months

Objective:

The objectives of this project are to increase the knowledge base and proficiency with suppliers who are providing products in support of the Naval welding industrial base; a training program is to be developed. Once this training information is developed, the American Welding Society (AWS) will be engaged to refine the materials so that it can be delivered nationwide as part of the AWS education, training and certification programs.

Shipboard Fiber Optic Cables Jackets Performance Enhancements

RSL Fiber Systems | HII - Ingalls Shipbuilding

Duration: 12 Months

Objective:

This project will continue the evaluation of LSZH, low toxicity thermoplastic jacketing materials to determine their suitability for use in all shipboard applications including data networks, distributed sensing, remote source lighting, and power delivery by performing selected tests in accordance with M85045.

Completion of an Incline Experiment Without Use of a Pendulum

GD - NASSCO | Austal USA

Duration: 12 Months

Objective:

The goal of this project is validate digital measurement devices are a suitable replacement for pendulums in an Incline experiment. Evaluating accuracy and efficiency of a digital inclinometer, an Inertial Measurement Unit (IMU) sensor, and a smartphone with the SCRAM app. Confirming they meet ASTM F132-21 standards. Evaluation will occur as part of a planned Inclining Experiments.

DSSM Latch Adjustment Mechanism

HII - Newport News Shipbuilding

Duration: 12 Months

Objective:

The objectives of this project are to:

- Fabricate, install, and test latch adjustment mechanisms for four DSSM latches
- Develop inspection procedures to obtain evidence for maintenance and replacement actions
- Document results

Integrate MAESTRO Ship Structural Design Software with Femap/ Nastran Software

MAESTRO Marine | HII - Ingalls Shipbuilding

Duration: 12 Months

Objective:

The project goal is to improve the current state of design tools and practice by integrating the ship-specific MAESTRO software tools, including automation of design criteria evaluation and optimization with the Siemens Femap/Nastran finite element analysis software that is widely used throughout the U.S. Naval ship design and in-service engineering enterprise. The goal is to make the structural design process faster, more accurate, and more agile.

Defect Characterization of Navy Ship Structures with Active UMI

Antech Systems | Norfolk Naval Shipyard

Duration: 12 Months

Objective:

The project objective is to demonstrate the technical feasibility of an active UMI system with a 20-foot range capable of locating corrosion and plate thinning under coatings and coverings in Navy ship metallic structures with a high impact on reducing Naval shipyard NDT&E costs.

Pulsed-Laser Comparison Tool

Penn State ARL | HII - Newport News Shipbuilding | GD - Bath Iron Works | HII - Ingalls Shipbuilding

Duration: 12 Months

Objective:

This project will develop a pulsed laser comparison map to enable users to move from one laser, of similar wavelength but non-identical specifications, to another based on energy density and resulting material properties.

Potential for Applying Artificial Intelligence (AI) in Shipyards Processes

HII - Newport News Shipbuilding | HII - Ingalls Shipbuilding

Duration: 9 Months

Objective:

Our AI goals and objectives are twofold:

The first is Strategic efforts involving A) industry review and categorization of AI capabilities to be aligned with Shipbuilding processes for optimization and B) use-case review and development with ODU on their Defense Manufacturing Mission Readiness Tool.

Secondly are Tactical efforts involving pilot evaluation of AI proposals from A) Ingalls; large language model (LLM), and B) Mission Technologies; AI/ML capabilities for identifying & predicting maintenance events.