Panel Chair Update
Ship Design and Material Technologies Panel

Monika Skowronska, Panel Chair

NSRP SDMT Leadership

Extended Team

Major Initiatives

- Information, Design, & Integration
- Ship Production Technologies
- Infrastructure, Logistics, & Sustainment

Panels

- Ship Design & Material Technologies
- Electrical Technologies
- Workforce & Compliance
- Ship Warfare Systems Integration
- Planning, Production Processes & Facilities
- Sustainment
- Business Technologies
- Surface Preparation & Coatings
- Welding Technology

Ship Design & Material Technologies Panel

Chair: **Monika Skowronska** (NASSCO)
Vice Chair: **Victoria Dlugokecki** (Naval Consultant)

Ship Design and Material Technologies Panel's Mission

The SDMT Panel focuses on providing increased capabilities and cost reduction initiatives across the complete spectrum of design processes and the identification of materials and technologies to support rapid and efficient development, construction, sustainment, and disposal of ships and their components.

* 2025 Technology Investment Plan updates

SDMT Specific Focus Areas

- Improving technologies in early ship design.
- Improving integration of all shipboard systems and undefined mission systems during design.
- Improvement of design technologies, including design and analysis tools, to reduce costs in production engineering and construction.
- Investigate material technologies to improve material performance, standardization, and overall material processes while reducing part count and total ownership costs during all phases of ship design and construction.
- Reduction of re-work in all areas of ship design and construction.
- Improving specifications and standards and investigating new technologies that can be incorporated into Rules or technical requirements documents for both commercial and naval shipbuilding programs.
- Collaborate and partner with other NSRP panels on topics and initiatives that encompass the other panel focus areas.

https://www.nsrp.org/panels/sdmt-panel/

Panel Project Solicitation

- **Participation by one ECB member shipyard is required**. Participation by multiple shipyards is preferable.
- Deadline for Offerors to submit White Papers to **BIDS** is **4:00 p.m. ET on August 25, 2023.**
- Deadline for Panel Chairs to submit up to three White Papers and one joint White Paper to ATI is 4:00 p.m. ET on **September 22, 2023.**
- Deadline for Offerors whose White Paper is one of a Panel's top three and one joint White Paper to submit to ATI the Supporting Cost Data Table, required by the Panel Project Guide – Rev. V, is 4:00 p.m. ET on **September 27, 2023**.
- Tomorrow 8/6 Quad Chart Project Pitch Session

Strategic and Technology Investment Plan

- NSRP holds a workshop every year to update SIP/TIP guidance documents.
- Documents identify high priority issues and current industry challenges where research proposals would be of particular interest.
- Updated ID&I Sub Initiatives:
  1. Reduce time for qualification and application of systems, materials, components and manufacturing technologies
  2. Advance and leverage digital shipbuilding
  3. Identify and implement flexibility, modularity, and scalability across platforms
  4. Investigate and apply solutions and best practices to support enterprise business processes and information management
  5. Develop design guidance to support, maintain, and sustain unmanned platforms
  6. Advance design, materials and processes that reduce sustainment/modernization costs and schedule
  7. Incorporate autonomy in design processes and decision support tools
  8. Define, integrate and implement innovative approaches to cybersecurity compliance, solutions, education & awareness

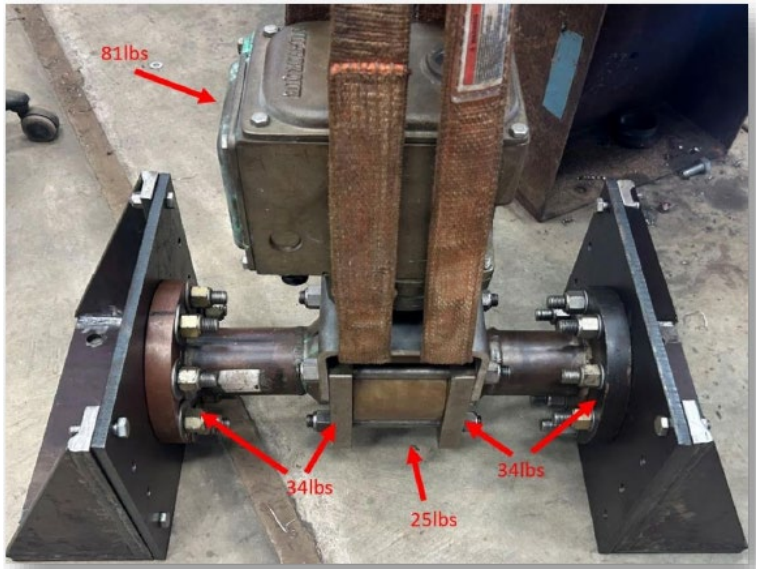
https://www.nsrp.org/resource-library/

Last Year's SDMT Panel Projects

Navy Standard Bookend Fixtures for Shock Testing

Lead: Gibbs and Cox

Project Participants: Ingalls, NAVSEA 05P1



Data-Centric Detail Design and Drafting Process Improvements

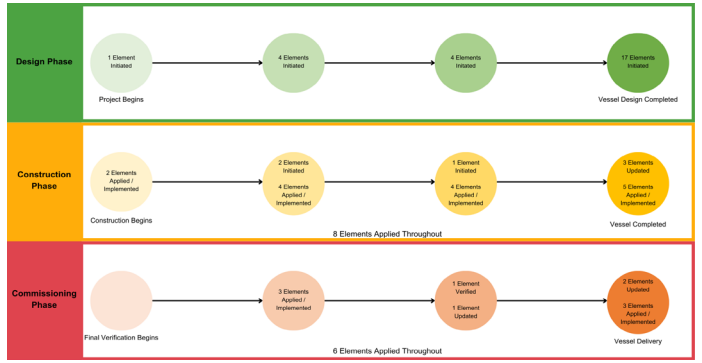
Lead: Hawk Technologies

Project Participants: Fincantieri Marinette Marine, Ingalls Shipbuilding

Industry Recommended Framework and Implementation Roadmap for Delivering Cyber-Ready Ships

Lead: ABS

Project Participants: GD BIW, GD NASSCO, NAVSEA 05D, USCG CG-9, NOAA

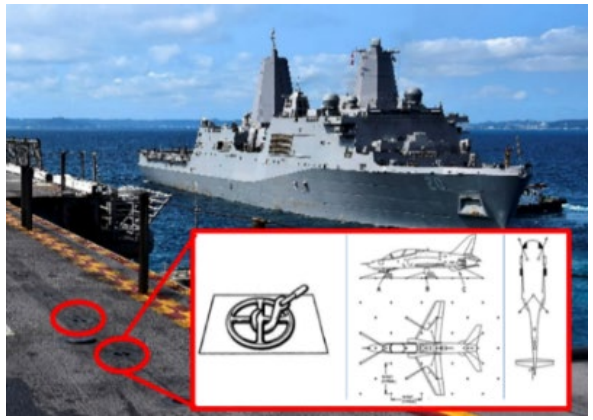


Past SDMT Panel Projects

Using MELD to AM Flight Deck Tie Downs

Lead: Hepburn and Sons
Project Participants:

- MELD Manufacturing
- Ingalls Shipbuilding
- NSWC Carderock
- NSWC Philadelphia



3D Printing of Supply Sensitive Parts

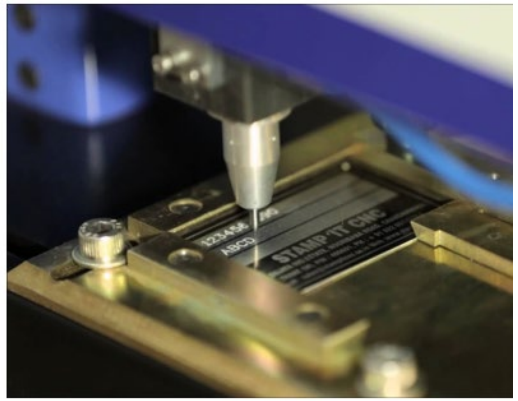
Lead: NASSCO
Project Participants:

- Electric Boat
- NAVSEA 05T, Dr. Justin Rettaliata
- PEO SSBN

Automated Label Plate Generation

Lead: SSI
Project Participants:

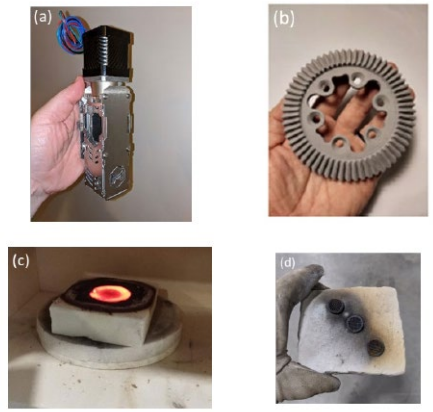
- Austal
- Conrad
- Fincantieri Marinette Marine



Development of an AM Capability for CuNi

Lead: ElectraWatch
Project Participants:

- Austal
- Electric Boat
- Metallum 3D
- NAVSEA 05T



Past SDMT Panel Projects

Standardization of Watertight Hatches and Scuttles

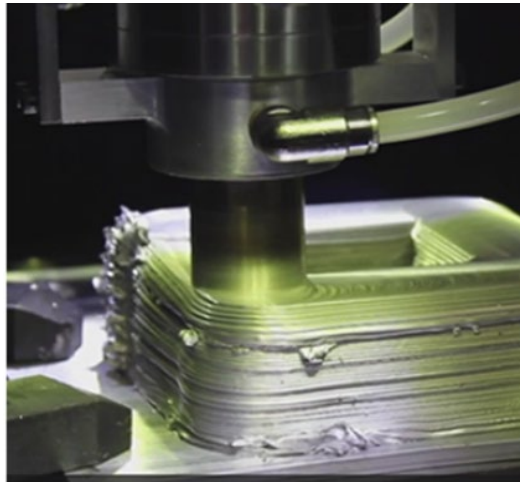
Lead: Ingalls

Standardization of hatches and scuttles, cuts cost of multiple variants.

Scaling Up of 3D Printed Castings

Lead: NASSCO

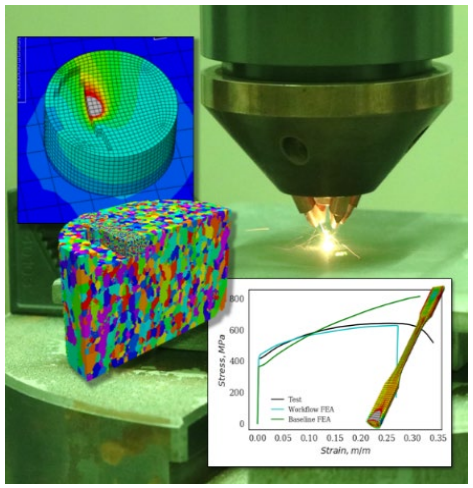
Development of a cost saving, US-sourced, AM alternative to casting manufacturing



Simulation Workflow Development for AM

Lead: ATA

Prediction of AM part performance for faster design and potential for accelerated, model-supported qualification



ASTM F1387 Testing for MA Fittings

Lead: BIW

Testing and approving a new type of fittings that significantly cuts installation cost by eliminating welding, implemented on DDG51

Projects Submitted in 2024: 16 Projects Total

No.	Panel Project	Submitted by
1	Potential for Applying Artificial Intelligence (AI) in Shipyards Processes	Newport News
2	AI-Driven Ship Design Optimization	Fincantieri Marinette
3	Combat Systems Standard Foundations Expansion	Newport News
4	Integrate MAESTRO Ship Structural Design Software with Femap/Nastran Software	Maestro
5	Utilizing Virtual Reality in Ship Design	Nassco
6	Navy PLM Data Requirements	SSI
7	Rapid Qualification of Additively Manufactured Parts	ABS
8	Alternative Fuels Study	Nassco
9	Shock Waveguide Implementation for Ship Foundation Design	Ingalls
10	Label Plate Management	SSI
11	Alternate Hardwood Materials for Dry Dock Blocks	Dry Dock Training
12	Guidance for Large Scale Additive Manufacturing	ABS
13	Alternative Methods for Joining Dissimilar Metals	Hepburn & Son
14	Removable Weld-Less Padeyes for Thin Plate Assemblies	Nassco
15	Marinization of Firefly Reliable Power Generation for LUSV	Hepburn & Son
16	DSSM Latch Adjustment Mechanism	Newport News

Project Down Select by Panel Member Vote

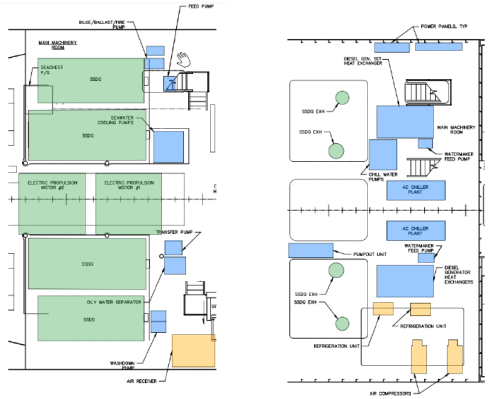
AI-Driven Ship Design Optimization

Fincantieri Marinette Marine, ShipConstructor, Altair Engineering

Tier 1
Propulsion Engines
Ship Service Generators
Combing/Reduction Gears
Steering Gear & Tiller

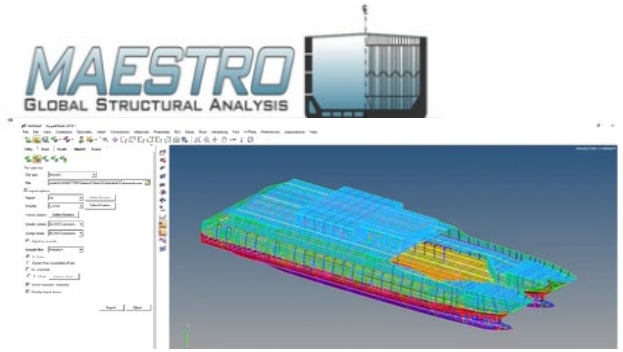
Tier 2
Fuel Service & Conditioning Skids
Lube Oil Service & Conditioning Skids
Desalination Plant
Propulsion Shafting & Bearings
Seawater Cooling Pumps
Fire-main Pumps
Hydraulic Power Units

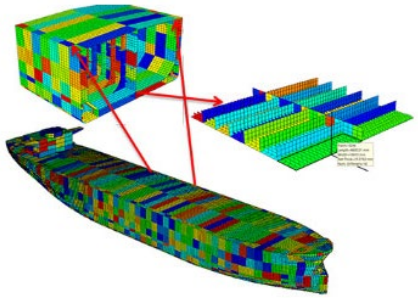
Tier 3
Air Compressors
Switchboards & Transformers
Sewage treatment plant
Shop Machinery (Lathes, Drill Presses, etc.)
Fan Coils
Water Heaters



Integrate MAESTRO Ship Structural Design Software with Femap/Nastran Software

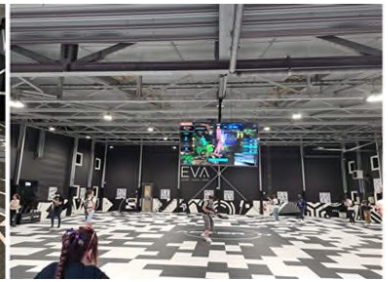
MAESTRO Marine LLC, HII – Ingalls Shipbuilding, Seimens





Utilizing Virtual Reality in Ship Design

GD-NASSCO



Label Plate Management

ShipConstructor, Fincantieri Marinette Marine, Bancroft Enterprises, GD – NASSCO, SEASPAN

Reusing the digital data from the 3D Model to the Label Plate Manufacturer / Supplier

Dry Stores
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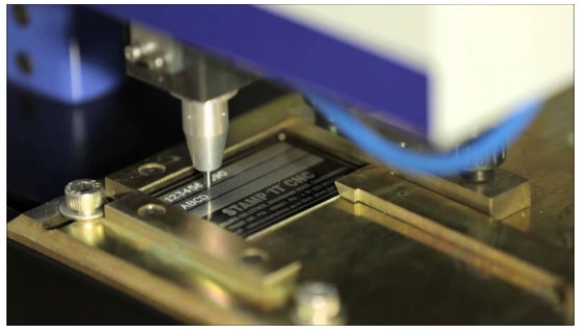

Project Down Select by ECB for funding

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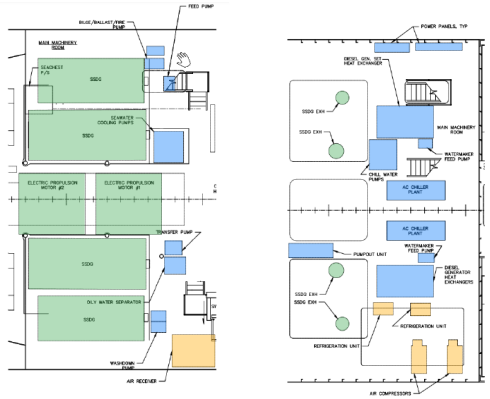

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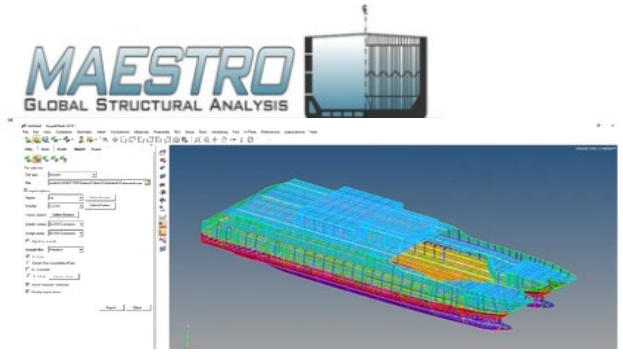

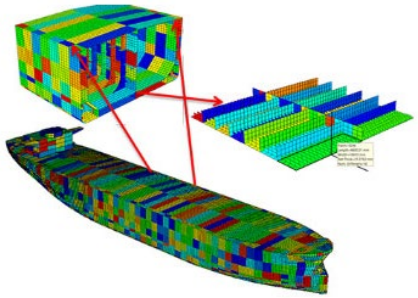

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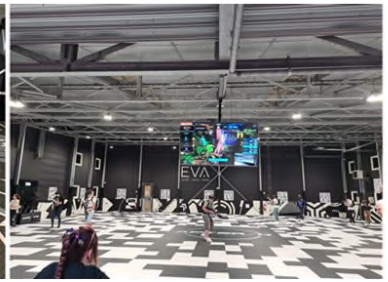

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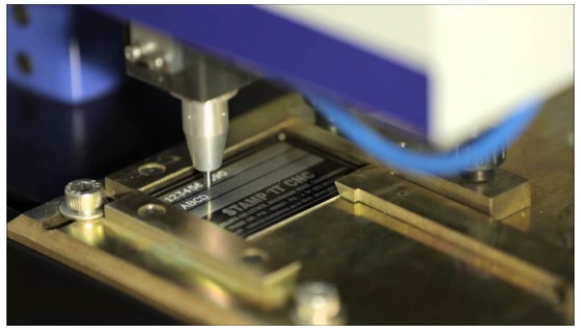


Universal Panel By-Law

1. At minimum, panel voting membership will include all of the member shipyards.
2. Each organization gets only **ONE vote**.
   - If an organization has a qualified voting member in a NSRP leadership position (Panel Chair, Panel Vice Chair, or Major Initiative Team Leader) the organization will have an additional vote (not to exceed **TWO votes**).
3. Except for member shipyards, organizations must meet panel membership requirements to vote.

- Panel Membership Requirements:
  - For members other than the member shipyards, if multiple members belong to the same organization, this organization receives **ONE vote**
  - To become and remain a member, an individual must **attend two meetings**, physically or virtually, **within a two-year period**

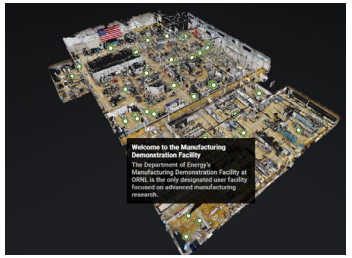
2024 SDMT Panel Meetings: Vancouver

- **Joint Panel Meeting with BT: August 20th -22nd, 2024**

Where should we meet next?

- Coast Guard Research Center
  - New London, CT- Research and Development Center
- St. John's
  - Genoa, Memorial University, Marine Institute
- Hawaii
  - Pearl Harbor Shipyard (iLab) and Pacific Shipyard International
  - University of Hawaii
  - Local Hawaiian Shipbuilding Companies: PacMar, Makai, Oceanit
- Danville, VA: Maritime Industrial Base (MIB)
  - Additive Manufacturing Facility
- Tennessee- Oakridge National Lab
  - 3D Printing – Manufacturing Demonstration Facility
  - Transportation Research Center- Marine Engines
- Block Island, Rode Island
  - Theme: Off Shore Wind Power
- Alaska- Ketchikan or Seward
  - Vigor Yard Tour
  - NOAA Icebreaker
- Woods Hole Oceanographic Institution
  - Technology Transfer: UUVs
- Nichols Brothers Boat Builders
  - Washington State- DARPA Autonomous Ship
- MIT's Sea Grant Lab

OAK RIDGE National Laboratory



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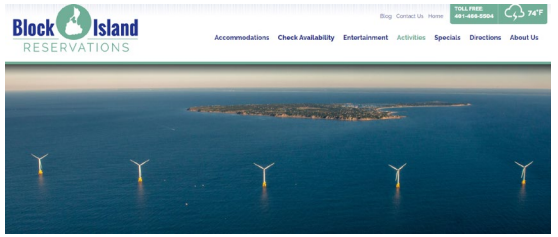
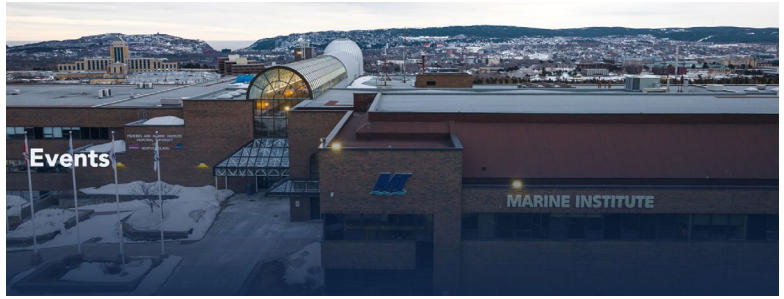


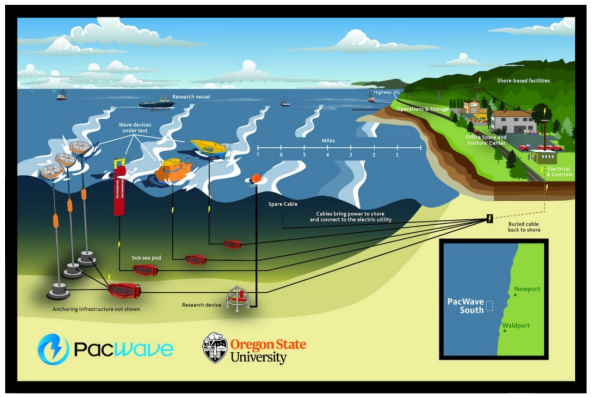
NAVY AI
PRAESCIRE VELOCIUS


Two Coast Guardsmen and a scientist walk on the frozen Arctic Sea from the Coast Guard Cutter Healy (WAGB-20) to conduct an ice survey Oct. 2, 2018, about 715 miles north of Barrow, Alaska. (NyxoLyno Cangemi/U.S. Coast Guard)

U.S. Coast Guard Yard
Since 1899 - Servicing the Fleet that Guards our Coasts

Naval Construction and Engineering @ MIT
MIT Home | Engineering | Mechanical Engineering | Ocean Engineering | 2N Home





Maine Maritime Museum BIW Tour

Maine Maritime Museum BIW Tour ($62)

- Tour 12:30-3:00pm
- Transport and attendance on your own
- Need to sign up in advance on website

The Bath Iron Works Story: By Land & Sea (2.5 Hours)

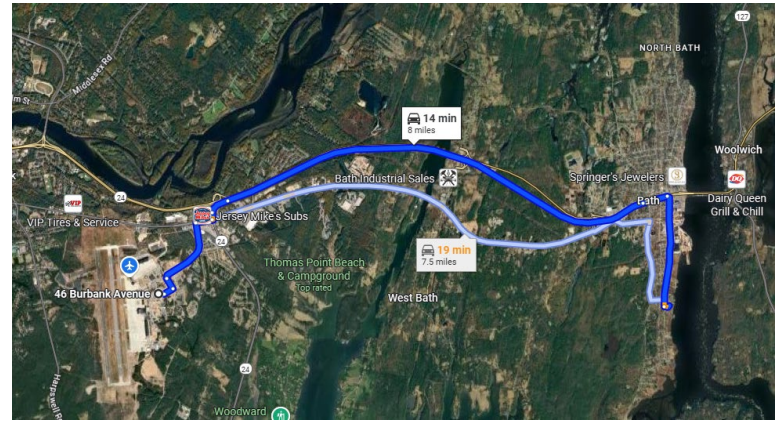
Experience the full Bath Iron Works package! The tour begins in the immersive exhibit *BIW: Building America's Navy*. From there, you'll board the trolley for a narrated tour. Finally, the trolley will drop you off to board the museum's cruise boat *Merrymeeting* for a one hour cruise featuring a spectacular, close-up look at naval destroyers in the water.

Tours (2.5 hours) begin at 12:30 pm, Weekdays, May 19 – October 24

Adults: $62; Children 17 & under: $37

RESERVE NOW

[Lighthouse & Nature Cruises — Maine Maritime Museum]



Questions?

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Taking Shipbuilding and Repair to the Next Level