



GENERAL DYNAMICS
Electric Boat

**SIBC Supplier Seminars
Additive Manufacturing & Other New Technology**

March 3, 2026

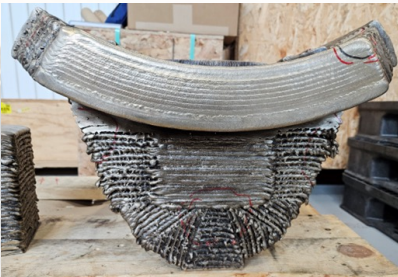
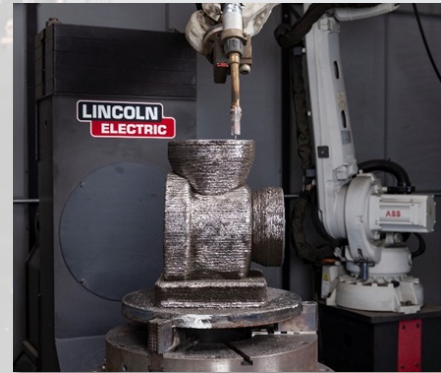
HH **NEWPORT NEWS
SHIPBUILDING**
A DIVISION OF HII



Additive Manufacturing

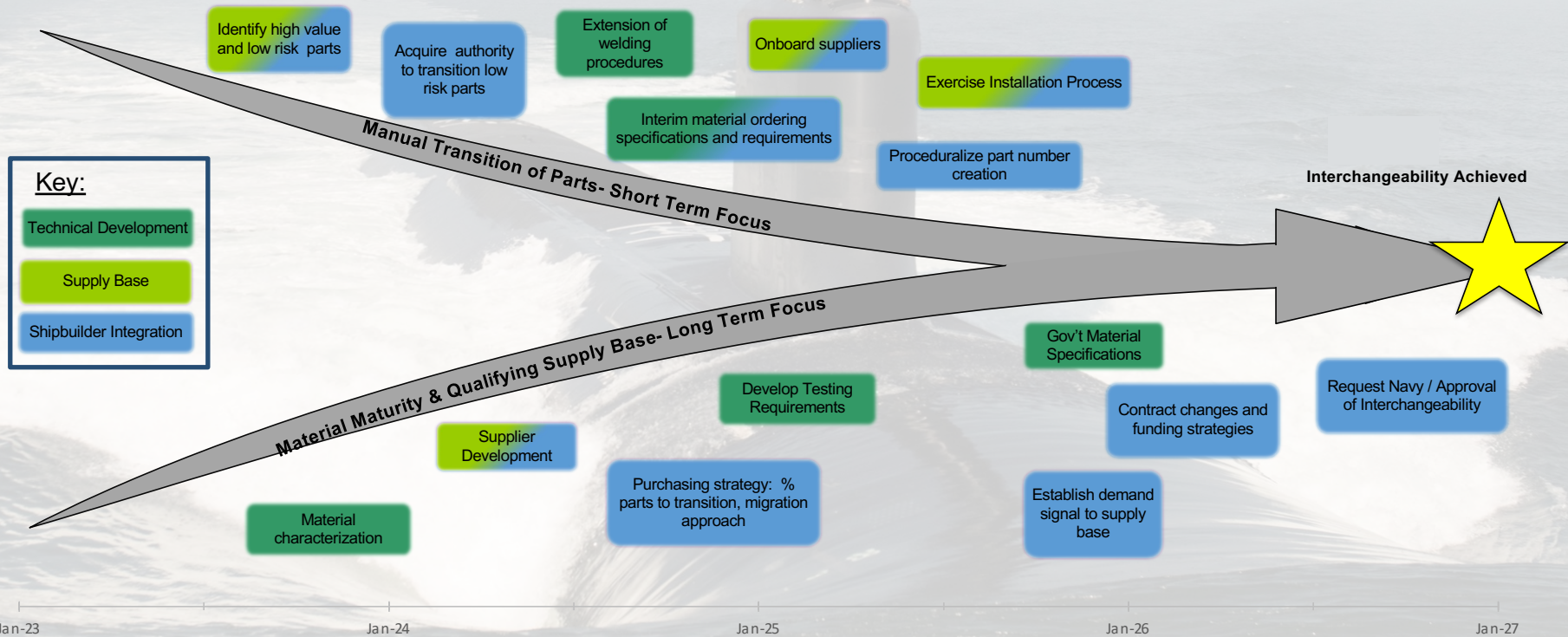
Why Additive Manufacturing?

- Achieving delivery of “1+2” is challenging the submarine industry
- Material availability has continued to be a factor in construction/delivery delays
- AM enables an alternate manufacturing solution to solve unique problems
- AM provides a reduction in manufacturing time compared to castings



AM is a key enabler for the shipbuilder to achieve 1 + 2 delivery cadence.

Shipbuilder Strategy



Scale AM via Interchangeability

Plan to get to Interchangeability

2024

2025

2026

Manual Transitions

Activate the supply base and establish the shipbuilder infrastructure to support scale

- Set initial technical requirements
- On-board first 10 suppliers
- Transition parts across core MPC and Program Benefiting Parts
- Parts procured as AM Spares

Define how to Operationalize Interchangeability

Prove the AM suppliers can deliver a quality product with predictable schedules that can meet the requirements of the shipbuilders

- Refine technical requirements through execution of manual transitions
- Transition Program Benefiting Parts
- Develop more WA-DED suppliers
- Develop framework for interchangeability

Interchangeability Steady State

Scale AM capabilities to enable 1+2

- Enabled via full technical requirements
- Finalize Steady State volume
- Implement Interchangeability

How Interchangeability Will Work for New Construction Subs

Technical Acceptability of Material

Completion to begin in Q1 2026 and last through 2028

- NAVSEA will issue MIL-STD which will declare AM is interchangeable with castings for various material-process combinations (MPC).

Material Process Combinations (MPC)		
Material	Legacy Spec.	Process
316L Stainless Steel	ASTM A351 (and many others)	LPBF/ WA-DED
Titanium (CP Ti 2)	ASTM B367	DED
Copper Nickel (CuNi)	ASTM B369	LPBF/ WA-DED
MIL-100S	Cast HY-80 (NAVSEA TP-300)	WA-DED
Nickel Aluminum Bronze (NAB)	ASTM B148	WA-DED
Alloy 625	MIL-C-24615A	LPBF/ WA-DED

Process To Enable Scale

Plan submitted to Navy in February 2026

Update new submarine construction governing requirements to enable interchangeability of AM with castings

- Various governing documents (tech pubs, etc.) that are contractually invoked on the shipbuilders require revision, modifications, or updates to acknowledge AM



Occur in Parallel

Supplier Allowances – Initial materials expected Q2 CY 26

- Supplier may use allowable AM alternative per EB specification
- Certification package reflects AM requirements
- Shipbuilder receives and processes part no different than if it were a casting

Interchangeability will enable the supplier to select between a casting or AM part at their discretion with no additional approvals required

Where Does AM Fit in the Typical Value Stream?

Direct Buy:

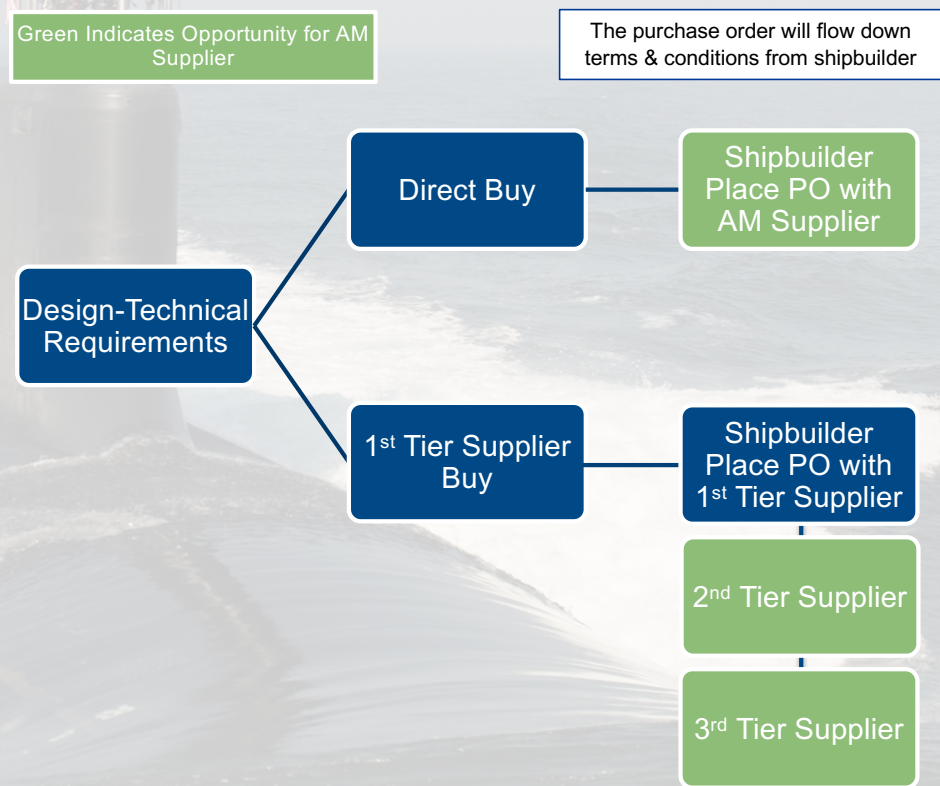
- Generally major assemblies or parts shipbuilders fabricate
- Shipbuilder unique PN have technical requirements
- Need to be onboarded supplier in shipbuilder system

1st Tier Supplier Buy:

- Sub-assembly/piece parts
- Shipbuilder unique PN have technical requirements
- Do not need to be onboarded in shipbuilder system
- Majority of parts that will leverage AM solutions are manufactured by 2nd and 3rd Tier Suppliers

Green Indicates Opportunity for AM Supplier

The purchase order will flow down terms & conditions from shipbuilder

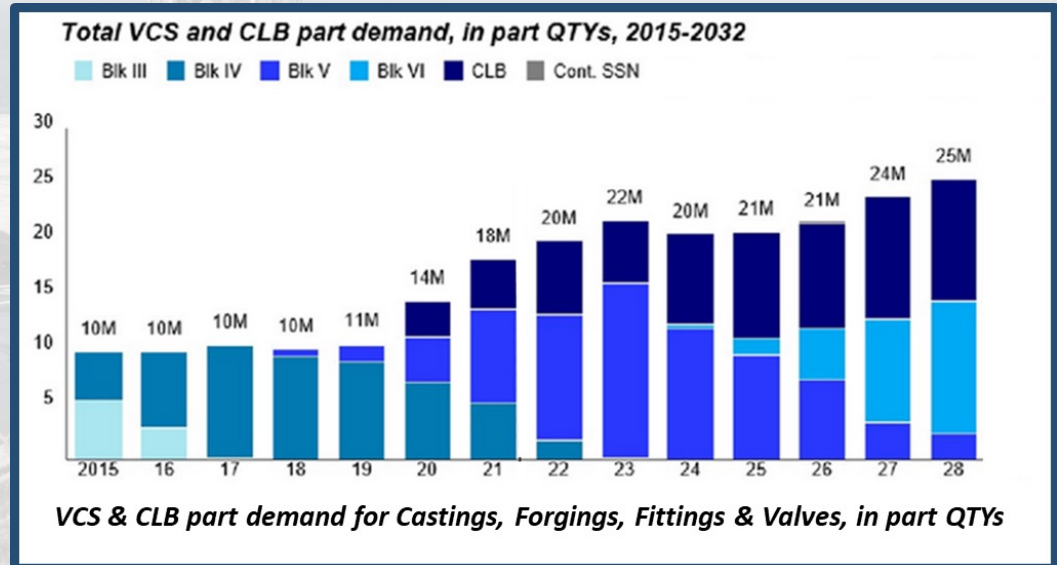


Electric Boat can assist in connecting 1st tiers and AM Suppliers

What are the Expectations for Potential Future Orders?

Purchase Orders After Interchangeability

- Shipbuilder will provide the suppliers the **OPTION** to procure either the traditional fabricated method or AM part equivalent
- Shipbuilder desire to maintain current procurement methods to the extent possible (i.e. if the part is procure by 1st tier, then the AM would be procured by a 1st tier)



Shipbuilders anticipate increasing annual volume of manual transitions through 2026; Interchangeability will provide a step change in AM scale

AM Industry Needs [Future State]

Shipbuilder Industrial Base

To improve the current shipbuilding industrial base the following focus areas need to be advanced

SUPPLIERS

- ❑ Increase Industrial Base of Qualified AM Print Vendors, Machine Shops, Wire Production Centers and Supporting Companies

MATERIAL

- ❑ Focus on priority alloys and machine combination readiness
- ❑ Accelerate interchangeability and machine transferability

MACHINES

- ❑ Deliver incremental releases of MMT data and baseline parameter sets
- ❑ Accelerate interchangeability and machine transferability

RESOURCES

- ❑ Increase number of trained engineers, operators, machinists and inspectors

NNS AM Seed/Catalyst Funding

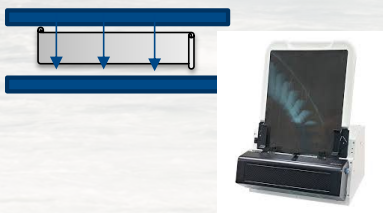
NNS realized an opportunity to leverage AM to support 1+2

- Identifying and vetting industry leading AM suppliers to incorporate into the existing supply base
- Utilize AM suppliers to solve supply chain issues and develop alternate manufacturing methods for existing 1st tier suppliers
- NNS is using MIB funds to identify projects and connect 1st tier suppliers with AM service bureaus to invigorate our supply base

Seed Funding Roll-Up	
Projects in Execution:	38
AM suppliers onboarded	20
Supplier visits completed	18
Level 1 audit	1
Total Material Spend To Date	~\$3.0M

Other New Technologies- Welding, NDT, & Robotics

Digitized Film



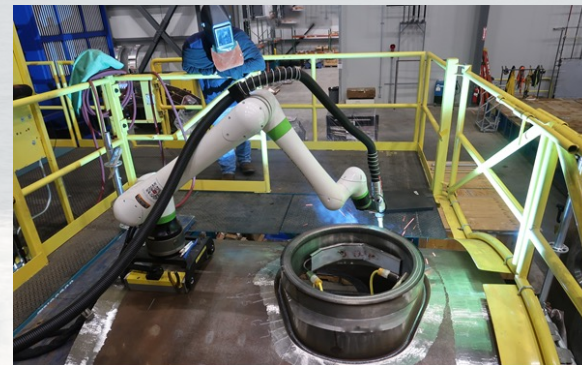
Computed Radiography



Cutting Cobot



Welding Cobot



Semi-Auto GTAW



Use your resources. Reach out to the shipbuilders for more information

Take Action- Advance Manufacturing

- We encourage you to reach out to your Sourcing POC
- Begin dialogue with your Navy representative today
- If you have projects that are “Ready Now”, send your ideas into our Team and we will help you determine next steps - Get the Shipbuilders involved early
- The Shipbuilder teams will ensure that your ideas are properly vetted and a solid two-way communication plan is shared with you

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Questions?