



THE U.S. SHIPBUILDING SUPPLIER BASE

Background: The national security justification for building ships in the US is clear—whether it relates to sensitive nuclear technology, to security of the supply chain, or to maintenance of critical capabilities and skills in our industrial base. While statutory requirements are in place to require ships to be built in the US, there are virtually no requirements that critical components be manufactured in the US (only limited components for Navy auxiliary ships). In order to ensure that the entire shipbuilding industrial base is prepared to support the build-up to the 355-ship+ Navy, that same justification must apply to critical ship systems and components.

The US shipbuilding supplier base employs hundreds of thousands of highly skilled workers located in nearly every state. Their contribution to the US economy in the critical manufacturing sector and local, state, and federal tax dollars is significant. Importantly, ***shipbuilding suppliers are an essential, critical national security asset that cannot be replaced or replicated through foreign supply chains.***

The number of companies and facilities engaged in supplying critical shipboard components has declined significantly over the last several decades:

- US government programs that supported robust commercial shipbuilding in the US were abandoned in the early 1980's.
- Other countries (Japan, S. Korea, EU, Scandinavian, China) invested billions of dollars to create modern, integrated steel fabrication and shipyard infrastructures, including the supplier base.
- In addition, many foreign governments subsidize their domestic industries or even wholly or partially own the shipyards and supplier entities.

DOD's "Industrial Capabilities Report" submitted to Congress in May 2019 states that, "Industries involved in the manufacturing of shipbuilding components were among the hardest hit by the global shift in the industrial base over the past 20 years....Since 2000, these industries experienced a combined decline of over 25,000 establishments in the United States....Expanding the number of companies involved in Navy shipbuilding is important to maintaining a healthy industrial base."

Discussion: Several factors currently threaten further contraction of the shipbuilding supplier base and promote increased incorporation of foreign manufactured hull, machinery and electrical (HM&E) components into US Navy and Coast Guard ships:

- Consolidation through corporate acquisitions and mergers;
- Buy American statutes that protect US shipyards but not most critical suppliers;
- Recent acquisition programs that facilitate or encourage selection of foreign components through use of "parent craft" (often foreign); and
- A disproportionate emphasis on initial acquisition cost in awarding shipbuilding contracts, minimizing true cost of life-cycle support by reliance on unproven foreign-based manufacturers.

Impact: US suppliers are keenly aware of the need to be competitive and responsive to the government, for both initial acquisition and in providing life-cycle support. Many have years of experience in this business (over 100 years) and others are recent suppliers, having invested in innovative technologies and facilities dedicated to supporting the Navy. There are several misconceptions regarding competitiveness of US manufacturers and the assumed benefit of allowing foreign manufacturers to compete for US shipbuilding business.

While foreign manufacturers can often underbid US suppliers on initial acquisition cost, most often the cost difference is minimal to moderate. In some cases, there is no difference, but business relationships between US shipyards and foreign suppliers dictate the source. Where there are cost differences, these circumstances frequently apply:

- The foreign manufacturer is wholly or partially owned by the government, who can subsidize the offered price;
- The foreign manufacturer is not subject to the same laws and regulations on cost transparency, employee protections, environmental regulations, anti-corruption laws (FCPA), or other important requirements and protections;
- The foreign manufacturer has a robust commercial customer base with large volume that enables the offering of low acquisition cost.

Even if US components cost more, the overall impact of requiring US-manufactured HM&E components on the cost of a ship is minimal. HM&E components are a relatively small proportion of the cost of an auxiliary or sealift ship and an even smaller proportion of the cost of a major surface combatant. Therefore, even a 10% differential in initial acquisition cost of US components amounts to a few percent increase in the overall cost of the ship.

However, there are offsetting costs to the US government that accompany the use of foreign components:

- To the extent US suppliers already support other US government programs, the loss of any additional opportunity increases the cost of the current programs; this is particularly true for NOFORN programs, such as nuclear aircraft carrier and submarine programs.
- To the extent the foreign supplier is not experienced with meeting US Navy qualifications (shock, vibration, EMI, cybersecurity), the Navy risks incurring expenses for overseeing the qualification and testing process and for dealing with performance issues once in service.
- To the extent the foreign supplier is not experienced in supporting after-market requirements, the Navy risks unavailability or obsolescence of parts (e.g., the commercial market does not rely on heavily specified components and, therefore, is not equipped to support a part for the 30+-year life of a ship) and frequently the foreign supplier does not have the infrastructure near US Navy ports for prompt response for support.
- Most importantly, to the extent the foreign supplier relies on its first, second, and third-tier suppliers located around the world (including China), there is no way to ensure that the Navy can count on availability of these components or that they come from trusted sources.

There are several steps Congress must take to mitigate the loss of trusted, reliable US manufacturers of shipboard components through legislative action in the FY2021 National Defense Authorization Act and the FY2021 Defense Appropriations Act.

LEGISLATIVE PROPOSALS TO STRENGTHEN THE US SHIPBUILDING SUPPLIER BASE

Expand and enforce Buy American laws. In FY2020, Congress restored the requirement for domestic manufacture of critical components such as propulsion diesel engines on some auxiliary ships by adding them to the NTIB, but excluded “special mission ships.”

- This list of critical components must be expanded to include:
 - o Medium-speed diesel engines (recently added);
 - o Power Distribution, Energy Storage Systems; and,
 - o Auxiliary propulsion systems, including thrusters, waterjets, dynamic positioning systems and hybrid drive systems;
 - o ship service power generators, emergency generators, and hybrid drive systems
 - o Military Qualified Wire and Cable and derived products.
 - o Propulsion shafting
 - o Crankshafts for marine engines
 - o Specialized Valves for pneumatic, fuel, firefighting, countermeasure wash down, and chilled water systems
 - o Air circuit breakers
 - o LV & HV switchgear
 - o Power converters
 - o Power inverters
 - o Frequency converters
 - o Aircraft Electrical Starting Stations (AESS)
 - o Degaussing systems
 - o Static Automatic Bus Transfer Switches (SABTs)
 - o Inertial navigation systems and gyrocompass
- Congress must require that these additional components be engineered, manufactured and assembled in the US.
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- Special mission ships must NOT be excluded from the domestic manufacture requirements, as these ships provide critical support to US Navy operations, such as submarine tending, cable-laying, and others.

Expand and reinforce the requirement that US-manufactured critical components must be installed on the FFG(X) early in the program. The Navy objected to a requirement for US manufactured HM&E components on the lead ship of the FFG(X) class due to concern for potential cost increase and delay in the program because of amending the RFP. Congress directed that propulsion engines and propulsion reduction gears must be procured from US manufacturers beginning no later than the 11th ship, with the Navy being required to report on potential cost and schedule impact for application on fourth, sixth, eighth, or tenth ship. The Navy has already requested and received this information from the bidders.

- Congress must expand the list of critical HM&E components that must be manufactured in the US to include:
 - o Propulsion and ship's service diesel engines;
 - o Power Distribution Equipment; Energy Storage/Magazine Equipment; and,

- Auxiliary propulsion units, including bow & tunnel thrusters and hybrid propulsion systems.
 - ship service power generators, emergency generators, and hybrid drive systems
 - Military Qualified Wire and Cable and derived products
 - Propulsion shafting
 - Crankshafts for marine engines
 - Specialized Valves for pneumatic, fuel, firefighting, countermeasure wash down, and chilled water systems
 - Air circuit breakers
 - LV & HV switchgear
 - Power converters
 - Power inverters
 - Frequency converters
 - Aircraft Electrical Starting Stations (AESS)
 - Degaussing systems
 - Static Automatic Bus Transfer Switches (SABTs)
 - Inertial navigation systems and gyrocompass
- Congress must require that these additional components for the FFG(X) be engineered, manufactured and assembled in the US and must direct the Navy to apply the requirement earlier in the program.

Require the Navy to eliminate vulnerabilities in the shipbuilding supplier base during the development of requirements for any new class of ships before the actual start of the acquisition process.

- Both the House and Senate bills and the conferees on the FY2021 National Defense Authorization Act (S. 1790, P. L. 116-92) included provisions requiring DOD to consider impact to the industrial base in defining requirements for new acquisition programs. This should be a *statutory requirement as it relates to Navy shipbuilding programs, so that all elements of the US shipbuilding industrial base (shipyards, suppliers, and repair yards) are considered*, with greater attention to potential impact on fragile sources of supply, recognition of past performance by a trusted domestic supplier base, impact on life-cycle support, and impact across other government shipbuilding programs.
- *These factors must be included in both the requirements generation and concept design efforts for the “Large Surface Combatant” and the “Next Generation Medium Amphibious” and “Next Generation Medium Logistics” ships.*

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